



SIXTH FIVE YEAR PLAN

FY2011-FY2015

Accelerating Growth and Reducing Poverty

Part-2

Sectoral Strategies, Programmes and Policies

General Economics Division
Planning Commission
Ministry of Planning
Government of the People's Republic of Bangladesh

Cover Designed by
General Economics Division (GED),
Planning Commission
Government of the People's Republic of Bangladesh

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ABBREVIATIONS

AEZ -	Agro-Ecological Zone
AIS -	Agricultural Information Services
AMC-	Alternate Medical Care
APP-	Alternative Private Providers
APSCL -	Ashuganj Power Station Company Limited
AQMP-	Air Quality Management Project
ATIs -	Agricultural Training Institutes
BADC -	Bangladesh Agricultural Development Corporation
BAEC -	Bangladesh Atomic Energy Commission
BANSDOC -	Bangladesh National Scientific and Technical Documentation Centre
BAPA-	Bangladesh Paribesh Andolon
BARI -	Bangladesh Agricultural Research Institute
BARC -	Bangladesh Agriculture Research Council
BAS -	Bangladesh Academy of Science
BASIS -	Bangladesh Association of Software and Information Services
BCC -	Bangladesh Computer Council
BCCSAP-	Bangladesh Climate Change Strategy and Action Plan
BCSIR -	Bangladesh Council for Scientific and Industrial Research
BPDB -	Bangladesh Power Development Board
BDCC -	Buyer-Driven Commodity Chains
BELA-	Bangladesh Environmental Lawyers' Association
BEPZA -	Bangladesh Export Processing Zones Authority
BHWDB -	Bangladesh Haors and Wetland Development Board
BIMSTEC -	Bangladesh India Myanmar Sri Lanka Thailand Economic Cooperation
BIWTA -	Bangladesh Inland Water Transport Authority
BIWTC-	Bangladesh Inland Water Transport Corporation
BJMA -	Bangladesh Jute Mills Association
BMA-	Bangladesh Medical Association
BMD-	Bangladesh Meteorological Department
BMDA -	Barind Multipurpose Development Authority
BMDC-	Bangladesh Medical and Dental Council
BMET-	Bureau of Manpower, Employment and Training
BOO -	Build, Own and Operate
BOT -	Build, Own and Transfer
BNC-	Bangladesh Nursing Council
BPC-	Bangladesh Pharmacy Council
BPPA-	Bangladesh Private Practitioners Association
BPC -	Bangladesh Parjatan Corporation
BRMSS -	Bangladesh Road Materials and Standards Study
BRDB-	Bangladesh Rural Development Board

BRTA -	Bangladesh Road Transport Authority
BRRRI -	Bangladesh Rice Research Institute
BRWT-	Buddha Religious Welfare Trust
BSCIC -	Bngladesh Tourism Board
BTEB-	The Bangladesh Technical Education Board
BTILS -	BIMSTEC Transport Infrastructure and Logistics Study
BTN -	Bangladesh Telecentre network
BWDB -	Bangladesh Water Development Board
CAAB -	Civil Aviation Authority
CAMS-	Continuous Air-quality Monitoring Stations
CASE -	Air and Sustainable Environment
CBAs -	Collective Bargaining Agents
CCA -	Controller of Certifying Authority
CDA -	Chittagong Development Authority
CDM-	Clean Development Mechanism
CDMP-	Comprehensive Disaster Management Program
CDS -	Coastal Development Strategy
CDS -	Central Depository System
CEA-	Country Environmental Analysis
CeC -	Community e-Centre
CEGIS -	Center for Environmental and Geographic Information Services
CERDI -	Central Extension Resources Development Institute
CFW-	Cash for Work
CIC -	Community Information Centers
CMS -	Central Monitoring and Management System
CPA -	Chittagong Port Authority
CSD-	Centre for Sustainable Development
CSBA-	Community Skilled Birth Attendants
CSR -	Corporate Social Responsibility
CZPo-2005 -	Coastal Zone Policy
DAE -	Department of Agriculture Extension
DAM -	Department of Agricultural Marketing
DESCO -	Dhaka Electric Supply Company
DGHS-	Directorate General of Health Services
DGFP-	the Directorate General of Family Planning
DLS -	Department of Livestock Services
DMC-	Disaster Management Committees
DNS -	Directorate of Nursing Services
DoF -	Department of Fisheries
DPHE -	Department of public Health Engineering
DPP-	Development Project Proposal
DSHE-	Directorate of Secondary and Higher Education

DTC -	District Technical Committee
DTE -	Directorate of Technical Education
DTCB -	Dhaka Transport Coordination Board
DUTP -	Dhaka Urban Transport Project
DYD-	Department of Youth Development
EBA -	Everything But Arms
ECA-	Environment Conservation Act
ECA-	Ecologically Critically Area
ECNEC-	Executive Committee of the National Economic Council
EEF -	Equity and Entrepreneurship Fund
EGCB -	Electricity Generation Company of Bangladesh
ESP-	Essential Services Packages
EPZs -	Export processing zones
FAP 17 -	Flood Action Plan 17
FCD -	Flood Control and Drainage
FCDI -	Flood Control, Drainage and Irrigation
FBCCI -	Federation of Bangladesh Chambers of Commerce and Industry
FDI -	Foreign Direct Investment
FERI -	Foundation of Education Research and Education
FMD -	Foot-and-Mouth Disease
FFW -	Food for Work
FMRP -	Financial Management Reform Program
FRB -	Feeder Road type-B
FTA -	Free Trade Agreement
GATS -	General Agreement on Trade in Services
GC -	Growth Centers
GHG-	Green House Gas
GPWM-	Guidelines for Participatory Water Management
GR-	Gratuitous Relief
GSP -	Generalized System of Preferences
GTI -	Graduate Training Institute
HBB -	Herring Bone Bond
HBRI -	House Building Research Institute
HCFC-	Hydro chlorofluorocarbons
HCR -	Head Count Rate
HED-	Health Engineering Department
H5N1-	Highly pathogenic avian flu
HNP-	Health, Nutrition and Population
HOBC-	High Octane Blending Compound
HRWT-	Hindu Religious Welfare Trust
HTP -	High Tech Park
HVDC -	High Voltage Double Circuit

HYV -	High Yielding Variety
IAT -	Institute of Appropriate Technology
ICAO -	International Civil Aviation Organization
ICG -	International Consultancy Group
ICT -	Information and Communications Technology
ICZM -	Integrated Coastal Zone Management
IDDP -	Intensive Dairy Development Program
IEDCR-	Institute of Epidemiology, Disease Control and Research
IGA -	Inter-Government Agreement
ILS -	Instrumental Landing System
IMED-	Implementation Monitoring and Evaluation Division
IMT -	Intermittent Modes of Transport
IMMTP -	Integrated Multi-Modal Transport Study
INVIL -	Information Network Village
IPM -	Integrated Pest Management
IPHN-	Institute of Public Health and Nutrition
IPPs -	Independent Power Producers
IPTV -	Internet Protocol TV
IT -	Information Technology
ITEC -	Independent Textbook Evaluation Committee
IUCN-	International Union for the Conservation of Nature
IUU -	Illegal, Unreported and Unregulated
IWM -	Institute of Water Modelling
IWRM -	Integrated Water Recourse Management
IWT -	Inland Water Transport
JBD -	Jamuna Bridge Division
JMBA -	Jamuna Multipurpose Bridge Authority
JRC -	Joint Rivers Commission
KAM -	Knowledge Assessment Methodology
KDA -	Khulna Development Authority
KEI -	Knowledge Economy Index
KOICA -	Korea International cooperation Agency
LAPM-	Long Acting and Permanent Method
LCC -	Leaf Color Chart
LEI -	Light Engineering Industry
LGI -	Local Government Institutions
LMIS-	Logistics Management Information System
LOB-	Line of Business
MAMS-	Mobile Air-quality Monitoring Stations
MARP-	Maroondah Addictions Recovery Project
MCWC-	Mother and Child Welfare Center
MDG-	Millennium Development Goal

MFA -	Multifibre Arrangement
MFI -	Microfinance Institutions
MIDAS -	Micro Industries Development Assistance and Services
MMCFD -	Millions of Cubic Feet Daily
MMR-	Measles, Mumps and Rubella
MNH-	Maternal and Neonatal Health
MOHPW -	Ministry of Housing and Public Works
MOH-	Ministry of Health
MOE-	Ministry of Environment MoI - Ministry of Information
MOLGRD -	Ministry of Local Government and Rural Development
MoSICT -	Ministry of Science and Information and Communication Technology
MS-	Motor Spirit
MSE -	Micro and Small Enterprises
MTBF -	Medium Term Budgetary Framework
MVO -	Motor Vehicle Ordinance
NAEP -	New Agricultural Extension Policy
NARS -	National Agricultural Research System
NAWASIC -	National Water Supply & Sanitation Information Centre
NCA -	Non-Crop Agriculture
NCS-	National Conservation Strategy
NCST -	National Council for Science and Technology
NFE -	Non-Formal Education
NGN -	Next Generation Network
NHA -	National Housing Authority
NIB -	National Institute of Biotechnology
NIPORT-	National Institute of Population Research and Training
NLTP -	National Land Transport Policy
NMST-	National Museum of Science and Technology
NNS-	National Nutrition Service
NPA II -	Second National Plan of Action
NPWA-	National Policy for Women's Advancement
NSDC-	National Skill Development Council
NSTP -	National Science and Technology Policy
NTCC -	National Technical Co-ordination Committee
NTP -	National Telecommunications Policy
NWMP-	National Water Management Plan
NWPGC -	North West Power Generation Company
NWRD -	National Water Resources Database
NWPo-	National Water Policy
ODC -	Over Dimensional Cargo
OECD -	Organisation for Economic Co-operation and Development
OMS -	Open Market Sales

OPEX -	Operational Expenditure
PC -	Privatization Commission
PDBF-	Palli Daridra Bimachan Foundation
PDCC-	Producer-driven commodity chains
PESP-	Primary Education Stipend Programme
PFDS-	Public Food Distribution System
PKI -	Public Key Infrastructure
PKSF-	Palli Karma-Sahayak Foundation
PMMU-	Program Management and Monitoring Unit
PSIG -	Private Sector Investment Guideline
PWD-	Public Works Division
QR -	Quantitative Restrictions
R&D -	Research & Development
RACON -	Radar Transponder Beacon
RAM -	Road Asset Management
RAMS -	Road & Bridge Asset Management System
RDA -	Rajshahi Development Authority
RDA-	Rural Development Academy
REB -	Rural Electrification Board
RHD -	Roads and Highways Department
RMG -	Ready Made Garments
RMP -	Road Master Plan
RNFA-	Rural Non-Farm Activities
ROB -	Roads Over Bridges
ROIP -	Road Overlay and Improvement Project
ROSC -	Reaching Out-of-school Children
RR -	Rural Roads
RRI -	River Reserceh Institute
RTC -	Regional Technical Committee
SASEC -	South Asian Sub-regional Economic Cooperation
SBA -	School based assessment
SCITI -	Small and Cottage Industries Training Institute
SEC -	Securities and Exchange Commission
SEDA -	Sustainable Energy Development Authority
SESIP -	Secondary Education Sector Improvement Project
SEZ -	Special Economic Zones
SDF -	Sector Development Framework
SICT -	Support to ICT Task Force Project
SLIP -	School-Level Improvement Plans
SMF-	State Medical Faculty
SOE -	State-Owned Enterprises
SP -	Service Provider

SPARSO -	Bangladesh Space Research and Remote Sensing Organization
SPS -	Sanitary and Phytosanitary
SRDI -	Soil Resource Development Institute
SRI -	System of Rice Intensification
SRMT -	Regional Multi Modal Transport Study
SRMTS -	SAARC Regional Multimodal Transport Study
SSWR -	Small Scale Water Resources
STD-	Sexually Transmitted Disease
STEP -	Support to Training and Employment Program for Women
STP -	Strategic Transport Plan
SWAp-	Sector-Wide Approach TAR -Trans Asian Railway
TBIs -	Technology Business Incubators
TBT -	Technical Barriers to Trade
TFYP -	Third Five Year Plan
TB-	Tuberculosis
TBA-	Traditional Birth Attendants
TIC -	Technology Innovation Centre
TQI -	Teaching Quality Improvement
TRIMS -	Trade-related Investment Measures
TRIPS -	Trade-Related Aspects of Intellectual Property Rights
UDD -	Urban Development Directorate
UNCRD-	United Nations Centre for Regional Development
UET -	University of Engineering and Technology
UHC-	Upazila Health Complex
UPCs -	Union Parishad Complexes
UPHC-	Urban Primary Health Care
URCs -	Upazila Resource Centers
USG -	Urea Super Granules
VAT -	Value Added Tax
VAW-	Violence against Women
VCT-	Voluntary Counseling and Testing
VDP-	Village Development Party
VGD -	Vulnerable Development program
VIC -	Vehicle Inspection Center
VTE -	Vocational and Technical Education
WARPO -	Water Resources Planning Organization
WID-	Women in Development
WIPO -	World Intellectual Property Organization
WMIP-	Water Management Improvement Project
WSS -	Water Supply and Sanitation
WZPDC -	West Zone Power Distribution Company

CHAPTER 1: STRATEGY FOR RAISING FARM PRODUCTIVITY AND AGRICULTURAL GROWTH

INTRODUCTION

Although the share of agriculture in gross domestic product (GDP) has declined from over half at the time of independence to around one fifth currently, it remains the predominant sector in terms of employment and livelihood, with about half of Bangladesh's workforce engaged in it as the principal occupation. Agriculture is the principal source of food and nutrition. Therefore the level of farm production and prices are a key determinant of poverty and human welfare. Agriculture also contributes significantly to export earnings of Bangladesh and agricultural output is used as an important source of raw materials of many industries. Therefore, the importance of agriculture sector in generating employment, alleviating poverty and fostering growth is needless to mention.

Agricultural growth has accelerated from less than 2.0% per year during the first two decades after independence to around 3.0% during the last decade. Despite such a steady growth in agriculture as well as in food production, Bangladesh has been facing persistent challenges in achieving food security. This is mainly due to natural disasters and fluctuations in food prices from the influence of volatile international market for basic food items. Sudden increase of price of staple food such as rice and flour erode the purchasing capacity of the poor people. Access to food will continue to depend on comprehensive economic development including faster growth in industry and service sector of the economy. But since almost half of the labor force still depend on the agricultural sector for employment, growth of this sector and favorable terms of trade for agricultural commodities are crucial for increasing incomes of the low-income people and to expand their capacity for accessing food. A rapid agricultural growth will sustain high growth of the economy with better capacity to reduce poverty through enhancing rural wages, creating synergies for diversifying the rural economy, and enabling the supply of low-cost food to improve nutritional status and food security of the people.

Encouraging agricultural growth requires various policies ranging from applying new technology and extension services to providing credit to small farmers. The past growth in agriculture was helped by the new HYV (High yielding variety) technology, particularly in rice, in which both the state and the market played important roles. The Government would continue its pro-active role in delivering key public goods in agriculture, particularly in improving the ability of farmers to adopt new technology and providing appropriate mix of incentives to pursue profitable operations. Efforts would be made to ensure preservation of indigenous knowledge with respect to seeds, plants and herbs, where tapping the traditional

knowledge base of both rural men and woman would be important. Particular attention would be given to develop and adopt technologies and improved agricultural practices in ecologically vulnerable areas such as saline prone areas and flood and drought prone locations. In recognition to women’s various contributions in farm productivity (fisheries, livestock, poultry etc.) and agricultural growth (pre and post harvesting, field crop production) special measures would be taken to increase women’s participation in these sectors.

Bangladesh has made significant progress in food grain and especially rice production but ensuring food security of the people of Bangladesh remains a daunting challenge. The National Food Policy and its Plan of Action identify the objectives to be fulfilled so as to ensure food security, extending the concept of food security well beyond that of food availability. In this context, agriculture contributes to food security by making enough varied and nutritious food available and by providing employment thus ensuring economic access to food. “The 2011 Country Investment Plan (CIP): A roadmap towards investments in agriculture, food security and nutrition” has been formulated within the context of the SFYP to help focus Government, DP and non-Government interventions on priority areas.

PERFORMANCE OF AGRICULTURE SECTOR

Agriculture sector is comprised of four sub sectors, e.g. crops, forestry, livestock and fisheries with crop sub sector being the predominant one. In spite of the gradual decline of the relative importance of crop sector in agriculture and in national economy, it still has remained the most important sector of agriculture. More importantly, the crop sector provides staple food such as rice and wheat, and other daily necessities like pulses, oil, sugar, vegetables, spices, and fruits.

Table 1.1: Growth Performances of Agriculture Sub-Sectors

	FY80-90	FY91-00	FY00-05	FY05-09	FY10	FY11(P)
	(Growth as % Change)					
Agriculture(A+B)	2.5	2.8	3.3	4.2	5.2	5.0
A. Agriculture and Forestry	2.6	1.5	3.6	4.2	5.6	4.8
i) Crops & horticulture	2.7	1.1	3.2	4.0	6.1	5.0
ii) Animal farming	2.1	2.5	4.5	4.4	3.4	3.5
iii) Forest and related services	2.7	3.5	4.7	5.4	5.2	5.4
B. Fishing	2.3	8.1	2.6	4.1	4.1	5.4
	(Share as % of GDP)					
Agriculture(A+B)	31.2	26.7	23.9	21.4	20.3	20.0
A. Agriculture and Forestry	26.5	21.4	18.5	16.6	15.8	15.5
i) Crops & horticulture	20.2	16.1	13.7	12.0	11.4	11.2
ii) Animal farming	4.0	3.4	3.0	2.9	2.7	2.6
iii) Forest and related services	2.2	2.0	1.9	1.8	1.7	1.7
B. Fishing	4.8	5.3	5.4	4.8	4.5	4.4

Source: Bangladesh Bureau of Statistics

Non-crop agriculture (livestock, fisheries and forestry) also plays a significant role in terms of employment generation and contribution to GDP. Although livestock accounts for only 3 per cent of total GDP, it employs about 20 per cent of rural labor force. Fisheries sub-sector contributes about 5 percent of total GDP and employs about 13 per cent of rural labor force. Livestock sub-sector contributes output for both production and consumption. However there exists a gap between requirement of livestock products and their current levels of production and, this gap is expected to widen further due to increase in per capita income and change in food consumption pattern.

Fisheries sector contributes 4.4 per cent of total GDP and 22 per cent of agricultural GDP. The small-scale open water capture fisheries which was dominant in the 1970s has given way to close water culture fisheries, which is now playing an important role in the development of the sub-sector.

Forestry sector contributes about 1.8% of the total GDP. Forests also play an important role in protecting watersheds, irrigation and hydraulic structure and also in keeping the rivers and ports navigable and protect coastal areas from natural calamities. The role of forest in protecting the environment from pollution and its contribution towards bio-diversity is immense. In addition, the participatory social forestry contributes towards rural poverty reduction. For example, in the last three years, out of total sale proceeds of timber and fuel-wood about 308 million taka has been distributed to 23,561 participants.

Bangladesh has achieved remarkable progress in agriculture since her independence in 1971. Within crop sub-sector, food grain, particularly rice crop dominated country's agricultural scenario in terms of both cropped area and production, claiming a share of 74 per cent and 54 per cent respectively in 1996/97. There has, however, been shift in the composition of agriculture over the past few years as indicated by gradual decline in the share of crop agriculture and increase in the share of non-crop agriculture (NCA).

In crop agriculture, Bangladesh has made steady progress in the post-independence period. The cropping intensity increased from 148 to 181 percent. Food grain production although increased substantially over the years, following the introduction of high yielding varieties (HYV) and application of modern inputs like fertilizers and pesticides; but its dependence on weather results in fluctuations in production. Wide fluctuations in production leads to large instability in food grain prices having serious implications for household food security and also for the welfare of the people.

For over a decade, a wide range of policy reforms have been implemented. Few of these are privatization of input distribution, input and food subsidy, import liberalization and a broadening of the scope of private investment in agriculture. In recent years, the coverage of policy reforms in the agriculture sector has substantially expanded to include minor irrigation equipment, agricultural machinery, seeds and agricultural trade.

KEY CHALLENGES

The myriad of existing policies are generally compatible in terms of their avowed goals of rapid poverty reduction, increasing productivity and profitability of farming, creating income and employment opportunities, especially for the rural population. The major thrusts of these policies are largely consistent with the MDGs as well as the strategies and future policy priorities of agriculture and rural development policy matrix suggested in the previous plan documents. However, there are some generic areas of concerns. Those are as follows:

Dominance of cereal food production: The National Agriculture Policy, 1999, National Agriculture Policy Plan of Action 2004, APB and other major crop sector policy documents mainly focus on food production, especially rice production, giving lesser attention to non-cereal crops i.e. vegetables, fruits and flowers. As one would expect, policy prescriptions for input distribution and input levels, extension services, credit delivery and output marketing are directed to major cereal food crop, rice and not much to wheat.

Inadequate progress with diversification and commercialization: The policy documents mention diversification and commercialization of agriculture as a common objective, but very little understanding is given with respect to relative profitability of competing crops, physical and location specific conditions for non-crop enterprise, supply chain of high value products and provision for processing, storage and marketing activities.

Lack of modernization of soil and water tests: Soil tests for proper fertilizer use and water quality tests for fish culture are crucially important interventions. The concerned policies mention these casually to imply that the government should do these, but there does not seem to be much understanding of the recent trends that the private sector has already taken up soil tests (with Catalyst support) and water test by as business ventures, for example by an NGO, Shushilon.

Lack of modern form of production-contract farming and value chain: The policies being reviewed conceive agriculture as individualistic production system, although this is becoming economically and technically unfeasible for increasingly large number of small and marginal farmers due to rapid decline in average farm size. Increase in number of farms vis-à-vis rapid loss of cultivable land is recognized in the documents, but there are no reflections on or contemplation about the emerging new forms of farming e.g. contract farming by the private sector for high value products like poultry, vegetables, aromatic rice, milk and so on.

Absence of farm and non-farm linkages: The most conspicuous shortcoming of all the policy documents is their silence over the growing non-farm sector development. Even the most recent policy documents, e.g. APB, avoid any analysis of linking the growth of farm productivity with development of non-farm activities.

In addition to the above mentioned issues, some other constraints in this sector are:

- Absence of demanding technologies to co-opt with climate change,

- Unstable market price of agricultural products, which is a barrier for farmers to select crops for cultivation in the following season/year,
- Very little stress to agro-based industrialization,
- Depletion of soil health/soil fertility,
- Unusual depletion of underground water table,
- Unwise development of infrastructures (dams, roads etc) blocking drainage,
- Non-zonal based cultivation and lack of development of market chain,
- Overlapping of irrigation units with less command area, causing huge loss of underground water and resulting in depletion of ground water table.
- Overdose of chemical fertilizer by the farmer is a threat to soil health.

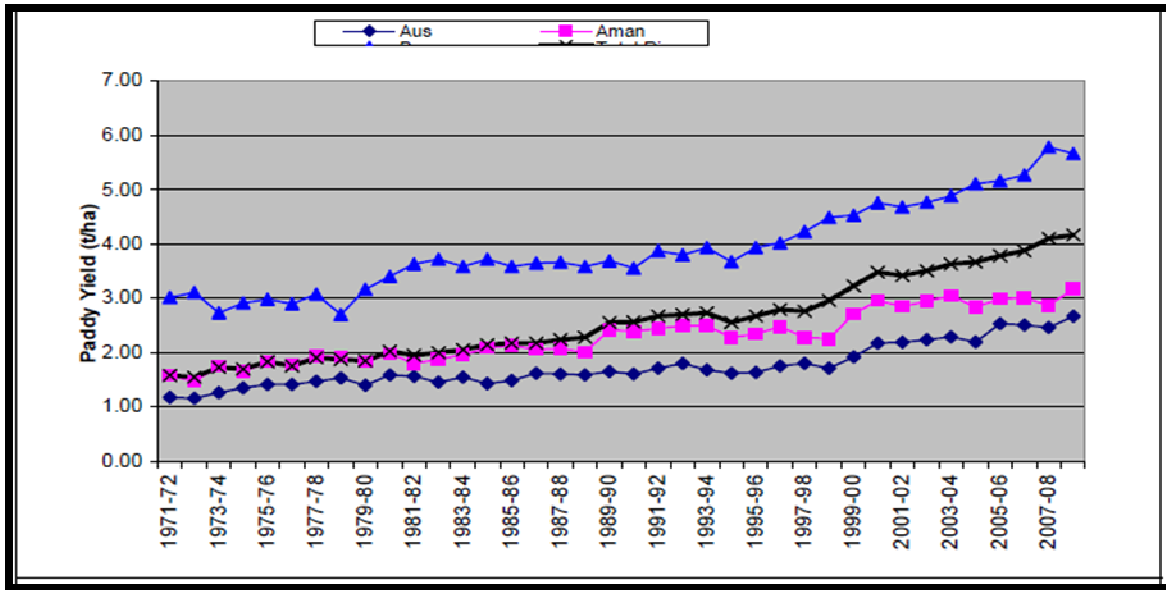
CROP SECTOR

Performance of Crop Sector

Rice, the dominant staple food occupies over three fourths of cropped area of the country. The other major crops are jute, wheat, potato, different types of pulses, chilies and onions and vegetables, sugarcane, tobacco and tea. In recent years, the cropped area under boro rice, wheat, maize, potato and vegetable has increased.

Since independence, rice production has tripled from 11 million tonne (milled rice) to about 32 million tonne. Growth in rice production was 2.8% per year in the 1980s, and 3.5% per year since 1990/91. Most of this growth has occurred since late 1980s, through adoption of improved rice varieties supported by rapid expansion of ground water irrigation (Figure 1.1). Over 80 percent of the increase in rice production during the last two decades has come from the expansion of irrigated boro rice in the dry season, with reallocation of land from low-yielding rain fed aus rice. Over three-fourths of the rice area is now cropped with improved varieties developed by Bangladesh Rice Research Institute (BRRI) and Bangladesh Institute of Nuclear Agriculture (BINA) in collaboration with international research centers.

Figure 1.1: Trends in Rice (Paddy) Yield in Bangladesh: FY 1971/72-FY2008/09



Source: Bangladesh Bureau of Statistics

Wheat, the minor food staple also had a respectable growth till the late 1990s, but has recently given way to maize. This shift has occurred mainly due to favorable agro-ecological environment for maize that gives higher productivity and a stable and expanding market for maize as feed for the expanding poultry sector. The production of maize was negligible till the end of 1990s, but has grown very fast in the current decade and has now overtaken that of wheat. Since maize is used as poultry feed, the substitution of wheat by maize has had a negative impact on the supply of staple food for people and has put more pressure on rice to meet the growing demand.

Over the last two decades significant progress has also been achieved in the production of potato and vegetables. The major problem faced by potato and vegetable production is the volatility in prices leading to large year to year fluctuations in production. It will be difficult to sustain the growth of production of these high-value and labor-intensive crops unless investment is made in the processing and storage to stagger marketing of the crops throughout the year to match the demand that remains stable across the season. In addition, it is also important to exploit international market for the surplus after meeting domestic demands. Penetration in the world market for vegetables is however difficult due to phyto-sanitary regulations and concerns regarding food safety. The production of other crops including pulses, oilseeds, jute and sugarcane has either remained stagnant or has declined over time. The production of oilseeds and jute has picked up in recent years due to favorable markets and due to some progress made in recent years in the development of higher yielding varieties, and identification of favorable agro-ecological niche for these crops.

Major drivers of crop production have been development and diffusion of improved crop varieties, and more effective water management, particularly expansion of irrigation

infrastructure (mostly shallow tube well based groundwater irrigation). In addition to the modern varieties of different crops, developed in the national agricultural research systems, a few Indian varieties have also moved into Bangladesh through farmer to farmer exchange. Farmers have also started growing hybrid rice, the seed of which is imported from China. In recent years some private sector farms have started producing seeds of hybrid rice and maize within the country through contract farming. Gradual adoption of these improved varieties by replacing low-yielding traditional varieties have contributed to increase in yield, reduction in per unit cost of production, and increased profitability in farming. The technological progress has been supported by public and private investment for the infrastructure for irrigation; flood control and drainage, because the optimum exploitation of the yield potential of improved varieties depend on good water control. The area irrigated has expanded rapidly since 1989 with the liberalization in the import of diesel engines and reduction in import duties and withdrawal of restrictions on standardization of irrigation equipment. This has facilitated the cultivation of dry season irrigated rice farming known as boro rice.

Sector Specific Challenges

Dependence on imports: Despite the progress made over the last two decades, Bangladesh is yet to achieve self-sufficiency in food production as it is a net importer of both rice and wheat. It is also a net importer of pulses, edible oils, spices, fruits, sugar, milk and milk products. The import bill on account of food has grown at more than 10 percent in the current decade, and now accounts for over one-fifth of the export earnings of the country. The volatility of prices in the world market for these basic necessities that is transmitted in the domestic market affect the food security of the low-income households. The SFYP would emphasize for import substitution of these crops looking at their competitive edge through promotion of crop diversification.

Food intake and nutritional imbalance: The availability and access to food are major elements of food security. The per capita intake of rice has increased over time and reached the level of 477 gm per person per day for rural area and 389 gm for urban area. The intake of potato and vegetables has also increased over time and has reached almost 250 gm per person per day, close to the recommended norm for achieving balance nutrition. The level of consumption of cereals and vegetables has increased over time and the gap in consumption for the poor and non-poor has narrowed down. However substantial gap remains between the consumption level of quality food items such as pulses, oils, fish and livestock products and level of intake has remained substantially below the level recommended by nutritionists for achieving balance nutrition. In addition, price of pulses, oils, fish and meat has increased at a much higher rate than that of rice, indicating growing demand-supply imbalance for non-cereal food items. The Sixth Plan would emphasize for faster growth of non-cereal food products to address the issue of unbalanced diet of the poor.

Volatility of prices of food items: In recent years, the volatility of prices has increased which is a major concern for poor consumers. Several studies have predicted that volatility in food

prices in the international market is likely to continue indicating that more reliance on international market for food commodities will have negative consequences on the food security situation in Bangladesh. Therefore, the Sixth Plan emphasizes at reducing the dependence on the world market for basic necessities such as rice, pulses, oils and sugar to overcome nutritional imbalance and to reduce volatility in prices of these commodities in the domestic market.

Growth of population and rapid urbanization: In order to meet the demand for food for the growing population, production of cereal must increase by over 300,000 tonnes per year. The expected growth of urbanization requires marketed surplus to increase at a fast rate to feed the urban population. The generation of this marketed surplus will depend on sustaining high levels of profitability in farming and maintaining a favorable terms of trade for agriculture. The population growth will be the main driver of the increase in demand for rice. But the demand for other food items continues to increase much faster than the growth of population due to strong income growth induced demand (high income elasticity) of non-cereal food items and recent acceleration in the growth of per capita income (over 4.5 percent per year) which is expected to accelerate further in future, In addition, diversification of diet in favor of non-rice food items associated with urbanization and income growth is also playing important role for this increase in demand.. Increasing the supply of food to match the demand from domestic production will however be difficult due to several factors:

Decreased Crop Area: The natural resources, land and water and soil fertility, available for agricultural production has however been declining. It is reported that cultivated land has been declining by almost one percent per year due to its demand for increased habitation, industrial and commercial establishment, transport infrastructure, river erosion, and intrusion of saline water in the coastal areas. Therefore the land available for crop production has been declining and the trend will continue. The increase in crop yield will have to be targeted at a faster rate that the required growth in supply.

According to the Department of Agriculture Extension (DAE) per hector production of rice is about 7 tonne in the research field whereas at the farmer's field it is less than 4 tonne. In this context, if the gap of yield of rice could be minimized, total production of rice will be increased without expanding cultivable area.

Decreased Soil Fertility: Soil fertility has declined due to high cropping intensity, unbalanced or over use of chemical fertilizers and less or no use of organic matter. The exploitation of ground water for irrigation for dry season rice farming (boro) has gone beyond the capacity of annual recharge of aquifers, with adverse effects on the supply of safe drinking water. The irrigated area has expanded to over 5.5 million ha out of 8.0 million ha of cultivated land, and over three-fourths of the area is irrigated with ground water, mostly by privately installed shallow tube wells. The arsenic contamination of drinking water in large parts of the country is often blamed to exploitation of ground water for irrigation with shallow tube wells. For sustainable development the dependence on ground water for further expansion of irrigation

infrastructure must be reduced. The SFYP would emphasize for surface water irrigation which will need massive public sector investment.

Detrimental Effect of Climate Change: Bangladesh is projected to be most seriously affected by climate change and sea level rise. The land available for crop farming in the large coastal belt is going to be gradually reduced due to inundation from sea water and intrusion of saline water inwards. The risk in rain fed rice farming will further increase due to erratic monsoons and increased incidence of floods and droughts. Due to high risks farmers will continue to use inputs at sub-optimal levels in crop farming in the monsoon season. The high risk will be a constraint to adoption of improved crop varieties that are input-intensive.

Fragmented Land Structure: The agrarian structure of Bangladesh is dominated by small and tenant farmers and scattered holdings. Despite rapid rural urban migration, the number of farm households is expected to increase and the size of farm is getting smaller. The farms with holdings of over 3.0 ha were only 300,000 in 1996 (out of 11.8 million farms); their number has further declined to 171,000 by 2005. The medium and large farms are investing the surplus for non-farm activities, leaving farming to agricultural laborers and marginal farmers. As a result the tenancy market has been expanding. The area under tenant farming has increased from 23% of the cultivated land in 1996 to 38% in 2005 which is the main factor behind the vast increase in the number of marginal farmers.

Farmers continue to face large fluctuations in farm gate prices. The price of most farm produce remains low at harvest that helps market intermediaries and large farmers to mobilize most of the farm surplus. The rapid migration to urban areas and overseas and an inactive land market lead to increasing concentration of land in the hand of the absentee landowners. The large and middle farmers are increasingly leaving farm in favor of non-farm activities in rural and urban areas and getting the land cultivated by agricultural laborers and marginal landowners with unviable tiny holdings. The exploitative rental arrangements, the inability to mobilize savings and credit to finance working capital needs, and lack of information and knowledge may act as constraints to adoption of improved technologies and investment in agricultural enterprises. In addition, the market for imported food grain has also become unreliable with governments in exporting countries imposing export bans to protect the interest of their own people. The prices of the food items in the world market fluctuate widely making the domestic market highly volatile in case of heavy dependence on imports. Sudden increase in prices emanating from the connectivity with the world market imposes hardship on low-income consumers.

Constraints to raising productivity: Future growth and raising productivity in crop agriculture could come from three main sources: (i) use of additional inputs (land, fertilizer, irrigation water); (ii) productivity gains resulting from technical change or removing market distortions; and (iii) shift to higher- value crops. In this context the challenges are as follows:

Sustained Growth Through The Use of Additional Inputs Seems Limited: Additional land could be brought under crops through increases in actual area cropped (conversion of non-crop

or non- agricultural land and restoration of degraded land) and increases in cropping intensity. But rather than bringing more land under crops in the future some contraction is an active possibility. In terms of cropping intensity, the present rate of 1.8 compares favorably with other Asian countries, including India (Punjab) at 1.78 and Pakistan at 1.25 though it is below Vietnam and Java, Indonesia.

Following removal of restrictions on irrigation, on pump imports and on marketing of fertilizers and crops, 206000 new hectares were added annually between 1978-92, more than double the expansion of the previous five years. Current estimates suggest that during the next two decades, 150,000 – 200,000 new hectares per year could be brought under irrigation, making it a major source of prospective agricultural growth.

Productivity enhancing infrastructure includes markets, roads, utilities (e.g. water, electricity) and communications. Investments in these can improve efficiency by cutting intermediation and transaction costs, leading to lower input prices and cheaper technology.

Productivity gain can come from two sources – technical change and correction of market distortions. Technical progress resulting in improved seeds (HYV) was responsible for doubling yields per acre during the 1970s. Whereas 50% of cropped area today is under HYV, with current rates of conversion, almost all suitable land is expected to come under HYV within the next decade or so. But agricultural research has been a neglected area largely the result of “brain drain” of trained professionals to research centers overseas. This trend needs to be reversed by creating an appropriate environment and providing the right incentives.

After the reforms of the 1980s, Bangladesh’s agricultural economy is relatively free of market distortions from intrusive public interventions. Today, trade protection of agricultural products is minimal though there remains an anti-agriculture bias in existing industrial protection policies. Domestic producer prices of rice and wheat have been closely related to world prices. Understandably in a country with high internal transport costs, prices have long fluctuated between import and export parity prices.

Prospects of Diversification to High- Value Crops

Bangladesh given a receptive market and the right policy environment could have a comparative advantage in certain high-value crops, including traditional fruits and vegetables. The future of non-rice crops will depend on the removal of a number of constraints that currently inhibit their expansion, including comparatively less attention given to development of appropriate technology for non-rice crops and inadequacies of market infrastructure and services. Food processing e.g., pineapple canning, mushroom growing and dried food production also has considerable potential, provided quality control can be imposed. To ensure that their production and export potential are fully realized, the government needs to continue its current commitment to investing in manufacturing and infrastructure.

Jute is the major fibre crop of the country. Potential exists for the fibre to increase its contribution to the economy through productivity increases and diversification. The share of raw jute and jute goods in the total exports of the country has been increasing with increased world demand for nature fibre. In this situation, special measures will be taken during the Plan period to encourage farmers to further intensify jute production in order to satisfy domestic and increased export demand. To enable jute to compete with synthetics, emphasis will be given to related agricultural and technological research efforts.

In addition to the above mentioned issues, there exists several other challenges in crop sub-sector: (a) adulterated agricultural inputs marketing by unscrupulous traders, (b) abrupt depletion of soil organic matter, (c) insufficient discharge of underground irrigation water at the peak demand hours of boro crop due to depletion of ground water table, (d) intrusions of saline water at the ground water table, (e) insolvency of disaster victimized farmers to invest in crop production, (f) weak-matching of explored technologies with climate change, (g) scarcity of seasonal farm labors sometimes even at high wages, (h) flash flood and drainage problem, (i) low quality of agricultural inputs (seeds, feeds, fingerlings, breeds, broods, fertilizers and pesticides), (j) degradation of land (salinity, erosion, water logging etc.), (k) farm gate price support for the producers etc.

SFYP Targets and Objectives for Crop Sub-Sector

Building on past progress, the core objectives of the Sixth Plan are:

- To attain self-sufficiency in food grain production along with increased production of other nutritional crops;
- To increase productivity and real income of farming families in rural areas on a sustainable basis;
- To ensure equal wage for equal work for women-men labor at agriculture;
- To encourage export of agricultural commodities, particularly vegetables and fruits keeping in view domestic production and need;
- To promote adoption of modern agricultural practices in drought, submergence and saline prone areas;
- To encourage research on adaptation to climate change, proper use of genetically modified technology in agriculture.
- To gradually shift the main HYV, irrigation-fed Boro rice production to the Southern areas and to utilize new salinity, submergence, and other Stress tolerant varieties and also to utilize abundant surface water for irrigation;
- To utilize the irrigated north-eastern uplands to grow more high value cash crops like wheat, maize, corn etc. and horticulture products;
- To emphasize on yield gap reduction and also to emphasize on maximization of yield in Aus and Aman crops with similar care as the Boro cultivation for ensuring self-sufficiency in food grain;
- To strengthen farming system/cropping system/whole farm approach based technology transfer;

- To increase production of jute, measures have to be taken to improve jute variety and retting system to obtain quality fibres;
- To include oil crops and spices for increased production;
- To encourage research and extension for the promotion of pulse crop;
- To bring coastal and hilly areas under intensive cultivation;
- To ensure sustained agricultural growth more efficient and balanced utilization of land, water and other resources;
- To encourage comparatively large farm to graduate into commercial farming;
- To promote the use of modern technologies with the help of ICT;
- To form cooperatives and to construct special growth center only for the actual growers to ensure fair price;
- To strengthen agricultural mechanization for enhancing production;
- To develop crop zoning market based agriculture on the basis of AEZ.
- To restore germplasm specially for minor fruits;
- To ensure quality seed at farmer's level through the development of community based seed production, storage, and dissemination system;
- To strengthen decentralized knowledge based extension system.

SFYP Policies and Strategies for the Crop Sub-sector

For achieving the targets of the Sixth Plan, following strategies and policies should be adopted:

- Achieving self-sufficiency in the production of rice, as we can no longer depend on the world market for meeting our needs. Studies show that we have comparative advantage in rice production on the import parity basis. In addition to rice, increased production of wheat will also be given priority. For increasing crop production food inter-cropping will be emphasized.
- Diversification in food production must address the challenge of achieving balanced nutrition. To achieve this objective we must adopt system-based rather than crop based planning for crop sector development. We must also use the rich information on agro-ecological zoning for identifying areas suitable for different crops and also use it for area based approach to development.
- For crop intensification, the coastal zone, the Sylhet region and the char areas must receive priority in crop sector development plans.
- The short winter season, November to February, should be kept for the production of non-rice crops, as this season is ecologically favorable for growing the high-profit non-rice crops. The remaining period could be used for growing two/three rice crops, special emphasis on Aus paddy for meeting our rice needs. It will require development of shorter-maturity drought- and submergence-tolerant rice varieties. This strategy will also help reducing dependence on expensive ground water irrigation.

- For further increase in productivity of land we must continue to focus on expansion and efficiency of R&D system. We must exploit the potential of hybrid rice technology for achieving 20 percent increase in yield and should further explore shifting the yield potential for the favorable ecosystem where technological progress has reached the plateau. In addition, we need to develop and deploy stress tolerant varieties (salt-tolerance, submergence tolerance, and drought tolerance for rice, and heat tolerance for wheat).
- Further potential for increase in yield through reducing yield gap for existing technologies must be explored. There are possibility of substantial increase in yield through use of better quality seeds, efficient management of seed bed, and the adoption of the System of Rice Intensification (SRI) that includes use of young seedlings, one seedling per hill, larger spacing, wet and dry irrigation system, use of compost and farm yard manure, direct seeding etc. The plan also emphasizes the use of technologies like Urea Super Granules (USG) and Leaf Color Chart (LCC). Agricultural Information Services (AIS) will be used to communicate weather forecasting information for agricultural producers.
- To meet up scarcity of quality jute seeds BADC should undertake seed production programmes like rice and wheat.
- Appropriate land reforms such as (i) ceiling of rents for the fixed rent system, (ii) distribution of Khas land among landless and non-viable marginal farmers where ever feasible, (iii) imposition of restriction on conversion of prime agricultural land for non-agricultural uses, (iv) hourly rental system for irrigation equipment instead of crop-share based or season-based fixed irrigation charge, and (v) computerization of records of landownership and land transfer, etc must be attempted.
- The information and communication technology could help information dissemination among farmers Weather forecasts could be made available on a regular basis through T.V., radio, community radio, agricultural information and communication center, and cell phone systems. Bangladesh Space Research and Remote Sensing Organization (SPARSO) can play a vital role in this regard.
- The reliability of official data on area under different crops is often questioned. In order to get reliable data for policy making, a project for accurate estimation of area under different crops either through satellite imagery or through plot-to plot enumeration may be undertaken during the Sixth Plan period.
- In the existing agricultural marketing system of Bangladesh there are many middlemen active in different stages of marketing chain. As a result, on one hand the producer does not receive fair price for their agriculture product, on the other the consumer also has to pay extra price. In order to ensure fair price for both the growers and final consumers through a competitive market environment, it is necessary to reduce the number of middlemen from the marketing chain. In this context, formation of cooperative for the growers and construction of special growth center only for the actual growers could be a way out of this problem.

- In order to meet the growing demand of additional food for the increasing people of the country emphasis should be given in utilizing the unutilized haor land of the north-east part of Bangladesh.
- Strategy, policy and action should be formulated to convert the single crop land into double crop land, double crop land to triple crop land.
- Policies in favor of continuation of subsidization to agricultural inputs e.g. electricity, diesel, fertilizer etc should be emphasized.
- Strategies should be directed towards massive use of USG rather than spilled urea and to encourage use of non-urea (use of balanced fertilizer).
- The plan emphasizes on the importance of farm mechanization.
- Policies to construct new food storage facilities to handle 2.8 to 3.3 million tonnes of food grains annually will be emphasized. In addition, food storage capacity per unit of land will be increased by adopting new technologies like constructing vertical silos and bulk storage.
- The plan considers the importance of land reclamation in coastal areas and reclamation of cultivable land in water logging areas and emphasizes on the intensive cultivation of saline tolerant varieties particularly in Rabi season and will take necessary steps in this context. In addition, the plan also emphasizes policy strategy on protecting agricultural land from inundation, river erosion and other productive purposes.
- It is important to ensure increased use of quality seeds for all crops and stop trading of adulterated inputs.
- Fragmented land structure is a hindrance to mechanization of agriculture in Bangladesh. On the other hand, mechanization would generate surplus labor released from agriculture, which would need employment elsewhere. Policies to engage such laborers will be taken into account.
- Special support for cultivation to the disaster victimized small and marginal farmers;
- To ensure equal wage for equal work for women-men labour at agriculture
- Measures to encourage surface irrigation e.g. dredging of rivers, canals, sluice gate etc. will be taken.
- In order to maintain soil fertility use of organic fertilizer will be popularized.
- In order to meet the demand for additional food for the increasing people, emphasis will be given to utilize the unutilized haor land of the North-Eastern part of Bangladesh.
- The plan emphasizes on the policy of formation of cooperative for the growers and construction of special growth centers so that the growers get fair price. Men and women growers have equal access to these centers and equal opportunity related to market access.

Specific Strategies under Crop Sub-sector

Agricultural Inputs -- Seeds: At present, BADC, as per seed policy 1993, concentrates its efforts on the production of HYV seeds of paddy, wheat, potato and jute in the seed farms and also uses farmers to multiply seed on contract basis. Production program of all other crops beyond foundation seed will be done by contract growers. With the introduction of seed policy, emphasis has been given to private seed grower's development. However, the public sector will conduct basic scientific research, support or conduct breeding work for self-pollinated and minor crops for greater suitability to divergent agro-ecological zone. Public sector will also carry out program for training and support services for private research and development, variety testing and registration, plant material inspection and maintaining germplasm, supporting seed associations and promotion of farmer or community-based seed program. The concerned agencies under the MOA will be further strengthened in order to ensure quality of seed at all stages of its production — breeder, foundation and certified seed. Emphasis will be given on creating facilities and infrastructure support for hybrid seed research, marketing and development. Farmers will be given training and technical assistance to extend improved methods of seed production, testing and storage.

Protection of Plant: Actual plant protection activities are in the private hands. However, the public sector programs are confined to qualitative and quantitative aspects of plant protection: pest's surveillance, monitoring and early warning against pest attacks, advisory service to farmers, traders and others dealing with pesticides and quality control of pesticides marketed by the private sector. In the Sixth Plan period, the integrated pest management (IPM) program will be intensified and expanded in order to safeguard crops from pest and combat environmental degradation due to pesticide uses. Agricultural extension workers are responsible for providing advice to the farmers on appropriate plant protection measures. Within the extension services, the plan will emphasize on controlling maximum residual limit and marketing of adulterated fertilizer and pesticides. Collaboration among the local government representatives, extension workers and the NGOs will be sought to expand IPM program. Farmers will be given training in the use of different pesticides through demonstration.

Mechanization of Agriculture: There is a serious dearth of animal draft power to cater for the growing needs of an expanding modern agriculture. The available animal draft power is inefficient and unreliable. As against this, agriculture mechanization can help in improving productivity, reducing cost of production, increasing efficiency, increasing input use (water, seed, fertilizer, labor) and achieving timeliness of crop production operations. Agricultural mechanization is also required for quick turn-over time and high input use. There is a need for continuous development of more efficient and less costly equipment so that farmers can benefit. Since agriculture is still the mainstay of the economy, promotion and development of agro-related metal working industries to provide support to agricultural production is a major concern. Selective mechanization based on traditional devices conducive to productivity will be adopted. In the context of market economy, emphasis will be given to the collaborative role

of public and private sectors in technology development and its diffusion. An appropriate policy framework for sustainable development of farm machinery manufacturing will be pursued in the Sixth Plan period.

Rural Infrastructure: Empirical evidence from Bangladesh and other countries suggests the critical role of rural infrastructure for farm productivity, both crops and non-crops. Bangladesh has made substantial progress in improving irrigation facilities. Progress has also been made in improving the availability of electricity in the rural areas and also strengthening farm-to-market rural roads. Yet, there is a huge unfinished agenda. Accordingly, the Sixth Plan will put strong emphasis in further developing the rural infrastructure.

Agricultural Prices and Marketing: Prices of agricultural produce are determined by market forces. The main effort will be to improve the efficiency of agricultural marketing to reduce market distortions and the cost of marketing, and to ensure that farmers get proper price for their produce. Regarding rice, the policy approach will be to broadly align domestic prices with international prices on a long-term trend basis.

With a more intensive system of crop production and increasing emphasis on diversification, marketing problems, particularly with perishable crops, have already been multiplied and are likely to multiply further unless necessary steps are taken. Marketing costs are already high because of inadequate infrastructure, high price risks and the lack of credit to traders for marketing activities. Among the vast number of primary and secondary markets in the country (about 10,000), the Department of Agricultural Marketing (DAM) is responsible for fixing market charges in 800 markets only. The market centers are under the control of the Ministry of Land which owns the land and collects marketing fees from sellers. The DAM, during the Sixth Plan period, will be strengthened to provide improved marketing services with a view to ensuring fair returns to the growers for their produces and adequate supply to the consumers at reasonable prices through the improvement of market conditions, reduction of marketing costs, regulation of market practices and market promotion for agricultural crops. Wholesale market development, promotion of agro-processing industries, market management, creation of MIS in DAM, classification, grading and standardization of agricultural products, improvement of storage facilities, particularly for marginal and small farmers, setting up an Agricultural Price Commission to make price forecast, production estimate and to make recommendations on the economics of productions and marketing are some of the specific programs that will be undertaken during the Sixth Plan for ensuring fair price, quality of agricultural products and increased production with stable price. The thrust will be to improve the efficiency of agricultural marketing to reduce market distortions and cost of marketing, and to ensure that farmers get proper price for their produce.

Modernization and mechanization of food storage system along with modern weighing and bagging, conveyors for aeration, adequate drying system, entoleters etc. is needed in order to enhance efficient handling and distribution of food grain, and increase shelf life and maintain quality. It may also call for storage of fortified foods and storage of multiple grains. In

addition, it is important to enhance the use of ICT along with customized software to ensure traceability of stocks, to know the exact supply/delivery of PFDS and quick sharing of data on transactions.

Agro-processing: Bangladesh experiences seasonal surpluses in several agricultural commodities of perishable nature. Development of agro-processing facilities can prevent post-harvest losses and enhance farmers' income. The agro-processing industries are at present in their nascent stage of development. Most of the technologies and facilities for handling, storage, processing and packaging of farm products and by-products are substandard and outdated as they cater primarily to the domestic market. There exists considerable under-utilization of capacity as well. The scope for privatization of support services such as research and extension is likely to remain limited. However, agricultural research institutes like BARI and BRRI will carry out research on technology development for agro-processing. Meanwhile, some technologies are already available with these institutes for the development and growth of agro-processing industries in the country. Nevertheless, some specialized extension activities could be delegated to the private sector such as those related to fruits and vegetables enterprises.

This process of supporting agro-business will be continued and strengthened during the Sixth Plan period. In this regard, the establishment of HORTEX, a private board for horticulture promotion, is an important institutional development. In addition, the SFYP emphasizes the importance of capacity building of government agencies and will take necessary steps in this regard.

Agricultural Research: Autonomous research institutes like BRRI, BARI, BJRI, BINA, BSRI and government organizations like SRDI were established with specific mandates for agricultural research in order to make the research system more service oriented and dynamic. National Agricultural Research System (NARS) with all the agriculture related research institutes under the coordinated leadership of Bangladesh Agriculture Research Council (BARC) has been established.

The research system needs to re-examine its focus and re-order its priorities, avoid fragmenting and duplicating its efforts, orient its approach from commodity based to farming system or integrated production system and strengthen its planning, program monitoring and co-ordination. The research system should also strengthen its linkages with extension in the Plan period. Agro-ecological zone-based research will be undertaken. The criteria for evaluation of research programs towards rates of adoption of research output by end- users and the system of accountability of individual research institution, research administration and personnel will be reviewed and made consistent with actual needs. Problem-solving researches will be given priority. Criteria for identification and selection of contract research programs by the private sector and NGOs will also be developed in response to the changing environment at farm level. In the same way, priority list will be evaluated annually to accommodate

changed circumstances. Keeping in view these objectives and strategies, the following tentative research priority areas have been identified:

- Increase of yield per unit land;
- Improvement of quality of food grain and other agricultural produces with more digestible protein;
- Increase in efficiency in water use in rice cultivation;
- Integrated plant nutrients system and sustainable soil management (soil quality/soil health);
- Post-harvest technology, preservation and relevant agricultural machinery;
- Higher photosynthetic efficiency;
- Nitrogen fixation by non-legumes;
- Technologies for maximum use of commodities and their by-products for value addition;
- Fruits and vegetables for off-season production including preservation, storability and tolerance to transportation damage;
- Environmental issues and IPM;
- Development of varieties tolerant to stresses (e.g. drought, salinity, water logging);
- Development of hybrid technology for vegetables, maize and sunflowers;
- Management of soil and plant nutrients with balanced use of organic nutrients;
- Management of on-farm water resources in both irrigated and rain-fed agriculture;
- Conservation of soil, plant and genetic resources;
- Assessing the environmental impacts of declining ground water level;
- Research on tillage operation to reduce turn-around time, multiple cropping and relay cropping;
- Rainfed technology with major thrusts on development of crop cultivation and management practices (e.g. zero/minimum tillage, relay cropping, appropriate planting schedule and use of fertilizers including micro-nutrients);
- Post-harvest handling and storage, primary, secondary and tertiary processing of farm products and by-products, including pulses, oilseeds, potato, vegetables and fruits;
- Development and pilot testing of different scales of producers-processors agro-business schemes, including contract growing schemes;
- Management of hill agriculture in the eastern and south eastern parts of the country, to harness the agriculture in largely mono-cropped Barind tract, characterized by drought, low organic matter and sub-surface heavy clay through identification of suitable crops varieties and soil/water management and agronomic practices; management of coastal saline soils;
- Genetic modification and tissue culture;
- Bio-technology research;
- Increase production of cereals and other crops by the development of new improved varieties;
- Climate change mitigation/adaptive research;

- Location specific varieties development;
- Germplasm collection and their utilization in crop improvement;
- Development of short duration, heat tolerant cereals, vegetables, pulses and oilseed varieties;
- Improvement of soil health by organic farming;
- Farming system research;
- Strengthening nuclear agricultural research for varieties development for agro-ecologically constrained areas.

In order to support continuous Research and Development (R & D), budget provision during the Plan period will be raised to 1% from current level of 0.6% of GDP.

Agricultural Extension: Transfer of technologies and diversification and intensification of crop production program through appropriate extension services are of crucial importance. The extension services must be able to render required technical advice and management support at the appropriate time and place. Currently, the extension service draws its strength from research findings as well as from farmer's innovation. On the one hand, it acquires up-to-date findings from research and transfers them to the farmers, and on the other hand, it brings feedback in the shape of farmers' problems to the concern of research for possible solution and again takes back the results to the farmers for their field adoption. Strengthening of these three way linkages among research, extension and farmers community is vital for the development of a strong and effective new agricultural extension policy (NAEP). The Regional Technical Committee (RTC) and District Technical Committee (DTC) have been replaced by 18 Agricultural Technical Committees (ATC), each covering 2-6 districts in similar agro-ecological zone (AEZ). The composition of National Technical Co-ordination Committee (NTCC) has been amended to include representatives from NGOs and farming community. Agricultural extension together with nutritional awareness program will receive about 8 per cent of the agricultural development Plan outlay.

The following will be constituents of strategies to develop extension services:

- Development of qualitative demonstration, field days, agricultural exhibition;
- Decentralized and farming system approach to extension system;
- Non-commodity approach, i.e., irrigation technology, seed technology, on-farm water management technology and uses, IPM;
- Strengthening of field level activities through proper delegation of authority from headquarters to field level;
- Priority to marginal and small farmers;
- Development and promotion of environmentally sound farming practices and specially for distressed areas involving local government bodies, especially union and Upazila Parishads in the process
- Mechanized agriculture.

- Community seed production, storage and distribution.
- MIS (ICT) based knowledge management system.
- Ensuring soil health.
- Business development initiative in agriculture especially capacity building of extension personnel.
- Recruit more women agriculture worker and increase their participation and involvement in the modern technology innovation in agriculture sector as well as social forestry.
- Protection of women and children from health hazards during tobacco production

Agricultural and Rural Training: In addition to higher education at agricultural colleges and the university, several other training institutions teach and train personnel who serve agricultural sector. These institutions are Central Extension Resources Development Institute (CERDI) at Joydebpur, Graduate Training Institute (GTI) attached to Agricultural University at Mymensingh and 12 Agricultural Training Institutes (ATIs) located throughout the country; although the training facilities vary considerably among institutes, they are generally inadequate and need support for overall improvement. The curricula equally emphasize both academic and field trainings. During the Sixth Plan period, two ATIs will be established to meet the growing needs of extension personnel including women extension agents. Besides, Academy for Rural Development at Comilla and that at Bogra will train agriculture personnel of the Ministry of Local Government, Rural Development and Co-operatives in addition to pursuing their training program for model farmers and managers of village co-operative societies on various aspects of agricultural development. To make the agricultural extension service efficient and effective, the training and communication support of extension system needs to be reorganized, strengthened and improved. The ATIs and CERDI will emphasize the qualitative aspects of training in agricultural management, instruction in the production of training materials, training of trainers and of extension agents. Training institutes will be given responsibilities for extension work in the nearby villages of their locations with the objective of achieving better organized extension work in the rural communities which will, in turn, result in an improvement in the quality of training. In support of the agricultural extension services, agricultural information service will concentrate on the systematic planning of multi-media communication activities to assist crop production and on taking initiatives in other relevant areas and fields. On regional basis, women farmers will be imparted training on cultivation including modern technology innovation in agriculture sector as well as organic manure production.

In order to reduce 'yield gap' government will try to reduce 'information gap'. Modern ICT tools would be used for agricultural information dissemination besides regional printing facilities development and establishment of community radio would be encouraged for reaching agro-ecologically constrained areas.

Rural communication system would be an umbrella for enhancing rural development services in a very appropriate manner, combination of previous system with modern system for

achieving proper socioeconomic development, people's participation, ensuring food security, narrow down rural and urban divide and ultimately building up the digital Bangladesh by 2021.

FORESTRY

Bangladesh is a densely populated country having 14.757 million hectares of land where forest area is 2.52 million hectares (2007) representing 13% surface area of the country. But Bangladesh is not on track to achieve the MDG target of 20% tree cover with density greater than 70% by 2015. The forest is an integral part of our environment that maintains the ecological balance by controlling soil erosion, water and air quality. It also contributes to our national economy by providing timber, fuel wood, food like honey, wax, medicine, fodder, industrial raw materials etc. Poverty reduction through social forestry is now a success story within forestry sector of Bangladesh. About 0.335 million rural poor are now engaged as participants of the social forestry programme. This sector is contributing 1.7% (2010) of the nation's GDP¹.

Public commons: Public commons including natural resources such as land, wetlands, forests, grasslands, grazing land, reed land, khas land, peat land, rivers, estuaries and the open seas may be one of the most important safety nets available to the poor particularly in the rural areas, provided these are managed in a sustainable manner. In order to increase access to natural resources for the rural poor, participatory social forestry for degraded and encroached forestland and co-management for PAs have been introduced by the Forest Department. It will continue to allow better access of the poor to the public commons.

National forest assessment: National forest assessment and periodic forest inventory will be conducted using MIS and GIS to generate quality and reliable data for future planning and better management. Technical support for developing GIS and training of remote sensing specialists in the Forest Department will be considered in future interventions.

Aforestation: Building forest resources through afforestation will be emphasized. Efforts will be made to establish climate change resilient afforestation in the denuded hill forests and coastal land by accretion.

NON-CROP SECTOR: LIVESTOCK

Performance of Livestock Sector

Livestock sector plays a significant role in Bangladesh economy. Cattle and buffaloes are used for draft power, rural road transport, and threshing purposes. Moreover, livestock provides animal protein through milk, meat, and eggs for human consumption, and dung as fuel and manure. Although livestock sub-sector contributes about 3 per cent of total GDP, it employs about 20 per cent of rural labor force. The development of livestock sub-sector has, therefore,

¹ Detailed discussion of Forestry sector is also contained in chapter 10.

been considered as an important element for generating income and employment, especially in rural areas.

There exists a wide gap between total requirement of livestock products such as milk, meat, and eggs and their current levels of production. Moreover, the gaps between requirement and production are expected to widen due to population growth and more importantly, to rapid increase in per capita income. As income rises, the demand for livestock and poultry products increases rapidly since the income elasticity of these products is quite high: 2.16 for milk, 2.45 for meat, and 1.40 for eggs. This requires urgent and rapid development of livestock sub-sector in general and growth of livestock products in particular, in the future.

However, there are bright prospects for developing the livestock sub-sector given that the sub-sector currently has extremely low per-bird and per-animal production of meat, milk, and eggs as it is constrained by disease, poor genetic stock, shortage of land for pasture, and inadequate feed supplies. Production of this sector is dominated by smallholder farmers who are mostly unfamiliar with basic animal nutrition, the nutrient value of different feed sources, disease control, and breed selection. Hence, output can be increased relatively fast by introducing modern methods of production through wider dissemination of relevant information to the farmers and building a supportive infrastructure for this sub-sector.

The growth of livestock population has been most rapid for poultry (chicken/ducks) and least for cattle/buffaloes over the 1983/84-2005 period. In fact, the number of cattle/buffaloes increased by only 2.57 million (mostly during 1996-2005 period) over the 22 year period. This has led to a decline of cattle/buffaloes per holding and per capita by 37.5 and 30.8 per cent respectively over the period. The number of chicken/ducks, on the other hand, increased significantly (by 52.96 million between 1983/84 and 1996, and by 55.12 million between 1996 and 2005) thereby registering per holding and per capita increase of 38.8 and 64.8 per cent respectively over the period. The differential growth of livestock and poultry largely reflects the scarcity of grazing land and the scavenging nature of chickens/ducks as well as recent growth spurt of commercial poultry relative to cattle/buffaloes.

During the current decade (2000/01-2008/09 period), poultry population registered a satisfactory growth (over 5 per cent) followed by goats/sheep (around 4 per cent). The growth of cattle/buffaloes, especially cattle, however, is most disappointing, registering a growth of only 0.5 per cent over this period. This has led to a per capita decline in the number of bovine animals, especially cattle in the country. Due to robust growth of poultry, however, the livestock population registered an overall growth of 4.6 per cent, thereby leading to an increase in the number of livestock per capita over the period.

Current and Future Challenges in Livestock Sub-sector

The major problems constraining the development of livestock sub-sector in Bangladesh are: lack of feed, incidence of disease, and poor genetic stock. These problems, however, are intertwined. The lack of high-quality feed tends to keep both animals and birds in weak

conditions, which, in turn, make them more susceptible to disease. Diseases increase mortality and make animal production less profitable than it would otherwise be. This, in turn, reduces requirements for feed production. Poor genetic potential reduces feed use efficiency which increases feed requirement.

Feed and fodder: The shortage of quality feed and fodder has been identified as the most important constraint to livestock development in the country. The problem is becoming more acute as a result of dwindling grazing land due to expansion of crop cultivation in general and more intensive cereal production (with short-stemmed HYV rice plants replacing traditional longer stemmed varieties) in particular, and human habitat expansion. Rice straw has been the principal component of feed for cattle and buffaloes, accounting for 80 per cent of total dry roughage, followed by maize. Maize is, however the preferred feed choice in most part of the world because of its high nutrient value relative to its price. The demand for maize as feed ingredient is growing fast in the country with the establishment of new poultry, dairy and fish farms. Poultry farms with an average capacity of 5,000 birds or less use imported maize of only one-fourth of their requirements. The feed mills, on the other hand, use imported maize amounting to two-thirds of their grain requirements. Poultry and dairy industries are, thus, dependent on imported maize despite high potentials of domestic production.

The number of poultry farms has been growing over the last two decades. Most of these are layer farms. Poultry farms use mixed food grains, maize, and wheat, along with manufactured feeds popularly known as ready feeds. Mixed feeds are prepared by farm owners themselves, following the prescriptions from the Department of Livestock Services (DLS) under the Ministry of Fisheries and Livestock and the feed mills. In making feeds, households or small farms seem to be at a disadvantage due to lack of proper technical knowledge and price information. Poultry farms are dependent on imports mostly for feed ingredients and occasionally for chicks. There are, however, no clear rules and regulations regarding their imports and quality control.

There is hardly any disagreement that the main reason behind current feed shortage is the growing scarcity of grazing land; in particular, very little area of land is devoted to fodder cultivation in the country. With programs to improve the productive capacity of the indigenous livestock, there will be an increase in demand for feed as the improved animals and birds will require better nutrition. Thus, the problem of feed shortage will become more acute unless the supply of feed and fodder resources is increased.

Potential varieties of fodder and feeds were developed by BLRI having tested in different AEZs. Extension activities for transferring germplasm of these to farmers as a regular extension work of the DLS will be strengthened further. Feed technologies developed by BLRI (UMS, Fresh and Wet Straw, Maize stover, Banana pseudostem processing and preservation technologies) will be extended to farmers and also utilizing crop by-products effectively to reduce demand supply gaps of cattle feeds.

Animal disease: Climatic conditions in Bangladesh make diseases more prevalent along with other factors such as high animal densities, poor animal nutrition, and lack of veterinary services. A shortage of vaccines further complicates the problems. Among different animal diseases, Foot-and-Mouth Disease (FMD) in cattle causes heavy losses to farmers in Bangladesh. It appears mostly in endemic proportions and sometimes in epidemic form. In case of chicken, Newcastle disease causes heavy losses in the form of mortality. Gumboro has also been identified as a fatal disease of chicken. Highly pathogenic avian flu (H5N1 strain) has recently emerged as a major threat for poultry development in the country.

The major factor hindering any headway in prevention and control of diseases is the unavailability of vaccine and sera in required quantities. In fact, during the mid-90s the supply of vaccine and sera against different diseases were less than one-third of total requirement in the country. Since the cost of local production of major vaccines is less than their import prices, the private sector should be given incentives to undertake production of vaccines that are in short supply or not available in the country.

Genetic breed: The genetic potential of indigenous livestock in Bangladesh is generally poor, characterized by low productivity. Although indigenous breeds are less susceptible to diseases and able to survive on meager rations of rice straw and crop residues, they are also low producers of meat, milk, and eggs.

Cattle dominate the livestock population in Bangladesh, accounting for about 60 per cent of the total stock in 2005. Virtually all cattle in Bangladesh are zebu, with three main types: large deshi (local), small deshi, and Red Chittagong. These animals are genetically small in size and slow growers. The national cattle breeding policy envisaged that cattle breeding operation will be carried in urban, semi-urban and milk potential areas. Whether the breeding policy has been successfully implemented is a matter of in-depth investigation. Some experiences have been gained however, on the basis of which future course of action can be initiated. These are:

- Despite significant increase in use of power tillers, the use of cattle as the main source of draft power for agricultural operations, as well as for meeting the requirements of meat and milk in Bangladesh will continue for years to come. In rural areas, there is a need to improve the working efficiency of bulls through improved breeding and feeding practices. At the same time, breeding for higher milk production has to be emphasized in urban, semi-urban, and milk pockets for meeting the deficit in milk.
- An important constraint to cross-breeding is the scarcity of breeding bulls. These bulls are not largely produced by individual farms because it is not remunerative to them for breeding purpose only. It is, therefore, necessary for the government to set up more cattle breeding stations and farms in different areas of the country to develop improved herds of various breeds.

- The coverage of cross-breeding programs of milking cows is still very limited. However, it is expected that the coverage will expand as organized marketing of milk spreads over more areas and the necessary inputs and services are made available to a large number of farmers for breeding and rearing of cross-breed cattle.
- As mentioned earlier, the low productivity of local breeds of animals and birds is a constraint to livestock development in Bangladesh. High yielding exotic breeds normally do not have adequate resistance against prevalent diseases or thrive well in local environment. It is necessary to develop suitable breeds of animals and birds in the country through selection, cross-breeding, and upgrading along with appropriate management.

Buffaloes are larger than the local breed cows, although the average fertility is about the same. Buffaloes subsist on the same types of feed as cattle but are better able to utilize low grade roughage. Moreover, buffaloes are more resistant to diseases than cattle. However, they thrive only on marshy and swampy lands. There are two varieties of indigenous goats in Bangladesh, the Black Bengal and the Jamunapuri. The Black Bengal accounts for bulk of the goat population. They are well adapted and productive under local conditions. In fact, goats are harder, faster breeders, and better feed converters than cattle. Besides, they rarely suffer from serious diseases. The Black Bengal variety should be encouraged for goat population expansion.

More than 90 per cent of the chicken in Bangladesh are local variety unimproved breeds or cross breeds of local varieties with imported birds. The government and the private sector import improved varieties for parent stocks used in producing chicks. However, the size of the parent stock of imported birds is not large enough to meet the demand for chick. Consequently, the private sector produces about 80 per cent of the chicks from broody hens using local and cross-breed varieties.

Research and management: Apart from the three major constraints discussed above, low investment in livestock research and its poor management are matters of major concern. The livestock and poultry sub-sector has not been a priority of the government or the farmers. The government has allocated its resources mostly for research and development on crop, especially food crop production. Moreover, priority was given to livestock for on-farm draft power rather than for meat or milk production. This low priority given to livestock and poultry was reflected in the small allocation of budgets to this sub-sector. Not only the budget allocation is small but this has actually declined in recent years.

Livestock management is also weak, with farmers lacking knowledge of feeding requirements, disease control, and breed selection. The present livestock management system, therefore, serve as a constraint to livestock development in the country. Small number of livestock is kept by the majority of rural households rather than intensive commercial production. Under the existing management practices, the animals neither receive adequate nutrition nor proper health care for efficient growth and production. Poor management is also reflected in

inadequate effort given to fodder cultivation by farmers and the common practice of feeding cattle only with rice straw.

In addition to the above mentioned challenges, some other constraints affecting the livestock sector are: (a) weak delivery of livestock services of DLS and strengthening of DLS, (b) insufficient diagnostic facilities at upazila level, (c) lack of credit facilities at low interest rate, (d) insufficient facilities for the development of indigenous poultry etc.

SFYP Targets and Objectives for the Livestock Sub-sector

The main goal of development initiative of the current government termed ‘Vision 2021; Bangladesh for resolution of crisis and a prosperous future’ is to reduce unemployment to meet the demand of standard nutrition for 85% of the population. The livestock sub-sector may play a significant role to achieve these goals.

- To promote sustainable improvements in productivity of milk, meat and egg production including processing and value addition;
- To promote sustained improvements in income, nutrition and employment for the landless, small and marginal farmers; and
- To facilitate increased private sector participation and investments in livestock production, livestock services, development and export of livestock products and by-products.

SFYP Policies and Strategies for the Livestock Sub-sector

A useful way of identifying and realizing potentials for accelerated growth of livestock lies in addressing properly the constraints identified earlier. As mentioned earlier, lack of adequate feed and fodder has been constraining the development of livestock in the country. There is ample scope for ensuring improved feed supply in Bangladesh. Also, there are bright prospects for including certain feed crops such as maize into farmers’ cropping pattern by selective inter-cropping with other food or cash crops. Moreover, high yielding perennial fodder crops such as Napier grass and para grass could be grown on embankments, road sides, and other underutilized areas. Ipil-ipil plants which are fast growing leguminous plants with high protein content could also be grown for animal feed. Research will be conducted on unconventional green grasses in hilly and char lands to meet the fodder shortage. A shortage of seeds has slowed down this development and lack of farmers’ knowledge has limited the expansion of these high yielding fodder crops. Also, opportunity exists for Bangladesh to produce significant quantities of fish meal which could be used for animal and poultry feed.

As mentioned earlier, the incidence of a comprehensive program is needed for combating diseases – in particular, to train veterinary technicians to identify and treat common diseases, and also to administer vaccines to prevent diseases. This was done on a limited scale for the poultry in the past. This type of programs needs to be expanded to cover the entire livestock. Moreover, adequate supplies of vaccine need to be made available to immunize the livestock population of Bangladesh.

There is a need for a dual purpose animal which can provide draft power for crop production and milk as well as meat for consumption. This could be achieved through cross-breeding of imported and domestic animals to upgrade the indigenous cattle and buffaloes. Since imported breeds normally do not have adequate resistance to disease and do not thrive in the local environment, it is necessary to develop suitable breeds of animals through selection, cross-breeding, and appropriate management. Despite a government programs to provide AI services at subsidized rates, farmers have been slow to adopt this as an alternative option for insemination. This needs to be seriously looked into and appropriate policy measures needs to be undertaken on a priority basis.

It is necessary to improve livestock management practices so that farmers take better care of their animals and can better understand basic nutrition and health of farm animals. Women folks working in the dairy and poultry will also be provided proper training. This would not only improve the health of animals but would make disease control more effective as farmers will be able to recognize common diseases and health problems. This can be entrusted with government extension agents and specialists from the DLS.

With increased mechanization, the use of cows/buffalos for cultivation of land is reducing. In addition, lack of grazing land is also increasing the cost of raising cattle. Furthermore, mechanized cultivation is relatively cheaper and time saving. All such factors have made mechanized cultivation more popular in recent years. Increased use of power tillers has the potential to replace cattle as the primary source of draft power. This replacement is desirable as it would alleviate the shortage of animal power for cultivation to some extent and an increasing proportion of cattle population would then be reared for meat and milk production. Given the shortage of animals for draft power and severe malnutrition problem in the country, it is desirable to encourage mechanical tilling which would allow limited pastures to be used for grazing animals for milk and meat production while still providing supplementary draft power for cultivation. Char areas should be utilized to produce feed crops. Rearing of sheep and buffalos in the char area will be promoted under the SFYP. For rapid breeding development of buffaloes, artificial insemination activities will be undertaken throughout the potential areas of the country for genetic improvement of local buffaloes.

The local Black Bengal goats that are disease resistant, prolific breeder, and able to live off scavenged food, represent perhaps the most productive component of the livestock sub-sector. The skins of these goats are also of high quality and a major source of export earnings. Efforts should be made to improve the breed to increase meat (and milk) production, while retaining its disease resistance and skin quality. Mortality rate of kids (buckling and doeling) of these goats is, however, high and efforts should be made to reduce it by greater veterinary care, training for goat rearing, and improved feeding.

The livestock sub-sector, still dominated by smallholder producers, has considerable potential to improve its productivity and benefits to the rural poor can be increased by appropriate policies of livestock asset control. The smallholder farms own poultry, goats and sheep rather

than large animals. The pro-poor policies need to assess why poor households tend to own smaller animals, whether to support such ownership or to relieve constraints to increasing their ownership of large animals. A number of factors determine the livestock ownership pattern of the poor e.g. small animals require less capital to buy and maintain, simplify distress sales, and reduce risks of loss due to death or theft, grow and breed faster, and can thrive on harsher conditions. These issues suggest two major policies to enhance the poverty-reducing role of livestock. First, the focus of livestock research, extension, and public goods provision needs to be directed more towards improving management of small animals in small lots (e.g. better management of infectious diseases). In this context, increasing layered farming of chicken needs to be encouraged. Second, barriers that constrain the poor's ownership of large animals need to be removed. An important policy approach could be to create institutional arrangements (e.g. through cooperatives or entrusting large animals owners) to perform management, finance, and sale functions of livestock products while ownership rests with small producers. Along with creating new employment opportunities, such policies would provide inputs and services to small herd owners thereby removing critical constraints for them to emerge as profitable livestock farmers.

In order to protect transboundary diseases, as well as to protect the livestock sector from avian flu, anthrax etc. the plan will take specific measures. In addition, research on production of vaccines will be done in accordance to climate and weather of the country. Given the fact that, cattle and buffalos are more tolerant to saline water, production of these species in the Southern part of the country will be encouraged. Moreover, for upgrading indigenous cattle, in addition to artificial insemination, the Plan will incorporate breed upgradation through Progeny Test. Finally, necessary steps will be taken to conserve the indigenous species of livestock and poultry population.

FISHERIES SUB-SECTOR

Performance of Fisheries Sector

Fisheries fall broadly into three main categories: inland capture, inland culture and marine fisheries. Inland capture fishery plays the dominant role in this sub-sector. Capture fisheries includes rivers, floodplains, beels, haors, etc. some of which retain water throughout the year. Inland culture fisheries include pond culture, ox-bow lakes (baors) and shrimp farms. Marine fisheries of the country are made up of marine industrial (trawl) and marine artisanal fisheries. Inland captured fisheries dominate the whole sector and constitutes more than 40% of the total fish production with an average annual rate of growth of 5.6%. Inland cultured fisheries contribute about 39% of total production with an average annual growth of 6%. Marine fisheries constitutes about 19% of total fish production (with a growth of 5.4% per annum), of which marine artisanal alone contributes 18%. According to group-wise species production for both inland and marine fisheries, *Hilsa*, as a single category, contributes the highest share (11.3%) followed by *Shrimp* (8.7%) in total production.

The main use of fishery resources is domestic consumption. Fish is much preferred by the people of Bangladesh as an important food item. In fact, fish is generally treated as a staple food next to rice. Fish is an important source of animal protein for the majority of the people of Bangladesh and it is the only source for many of them. Another important use of fishery resources, particularly shrimp, is export.

The National Fisheries Strategy (2006) reflects a shift from the way the sub-sector is currently managed. The sector was controlled by the Government through its agents mostly the Department of Fisheries. Their activities largely included the management and control with direct involvement in supplying some of the inputs such as fingerling. The strategy stipulates that their activities moves to one of fostering participation with local communities, the private sector and NGOs; the provision of advice; and establishing a regulatory framework in which the sub-sector can function properly. This strategy emphasizes collaboration linkages and partnerships throughout. The strategy also reflects current government concern for poverty alleviation through more targeted activities by all. Some of the strategies as outlined in the National Fisheries Strategy (2006) are pointed out below:

- Developing Long Term Objective Planning;
- Ensuring People's Participation;
- Coordination, Collaboration and Support from Relevant Other Ministries/Departments for the Fisheries Sector;
- Developing a Regulatory Framework for the Sub-sector;
- Having Pro-Poor Management Strategy;
- Ensuring Gender Equality;
- Providing Alternative Income Generating Activities; and
- Managing the Environment Properly.

Challenges Facing the Fisheries Sub-sector

Major causes of resource degradation in this sub-sector can be identified as: (i) construction of flood control embankments and roads, (ii) siltation, (iii) over fishing and fishing of under-sized, (iv) incidence of fish diseases, (v) discharge of chemical fertilizers and industrial effluents in the water, and (vi) conflict between paddy cultivation and fish production.

The major environmental threat to inland capture fisheries is considered to be the water control, specially flood control structures, and road embankments. The general arguments for such project interventions are two-fold. First, they increase rice production by converting floodplains into irrigated paddy land. Second, they prevent death and damage to property from flooding. There are inadequate institutional arrangements and commitments to integrate fisheries into the planning, designing and operation of these projects. The sustainability of fisheries in the floodplains is very much linked with extensive system of interconnected areas of fish habitat for their migration, breeding, feeding and growth. However, findings of Flood Action Plan 17 (FAP 17) indicate that the negative impact of flood control and water development projects could be mitigated and the floodplain fish production could be increased by the introduction of better water management practices to ensure access of fish from rivers into the floodplains and vice versa. In addition to such intervention, natural siltation of the waterways also reduces the open water aquatic habitats.

With population growth and growing unemployment, pressure on open water fisheries is also increasing, leading to over exploitation of the resources. Effective enforcement of fish laws, providing alternative employment opportunities for poor fishermen during lean period and ensuring redistribution of economic benefits through implementation of equitable and effective management policies can address these problems of over-exploitation of the resources.

Incidence of fish diseases is another problem for fisheries development. Degradation of natural balance of the environment and intensification of freshwater aquaculture are the main causes for fish disease. Maintaining natural balance and practicing good husbandry is the best way to prevent most diseases. The increased use of chemical fertilizers for crop production and discharge of industrial effluents in the water are other problems for resource degradation. These pollute the open water aquatic habitats and cause problems for breeding and feeding of fishery resources. There are also resource conflicts between paddy cultivation and fish production that occur as a result of converting floodplain areas to paddy fields, increased use of water for irrigation in the dry season, and the use of pesticides and chemical fertilizers which have impeded inland fisheries development.

Some other challenges in the fisheries sub-sector are: (a) genetic degradation of carps, (b) decline of food-plain fisheries, (c) problems related to quality feed, fingerlings etc. of inland aquaculture, (d) rapid depletion of the stock of marine fisheries, (e) complicated leasing of public wet lands etc.

SFYP Strategies and Policies for Fisheries Sub-sector

The overall strategy of fisheries sub-sector development should focus more on open water fisheries, ensuring biodiversity and preserving natural breeding grounds, product diversification, value addition, capacity building and development of appropriate marketing infrastructure. The strategy should be to promote a dynamic capture fisheries and aquaculture, involving the key actors e.g. NGOs, private sector entrepreneurs and community based fishing groups. Priority areas of interventions in the fisheries sub-sector may therefore include the following:

- Emphasis should be given on the management of open water capture fisheries since the potential for pond culture has nearly been exhausted. Productivity in the open water capture fisheries in Bangladesh is fairly low. It is only about 200kg/ha. There is a good potential for doubling the productivity in the open water capture fisheries through effective management. There already exist some good practices of better management of open water fisheries which need to be disseminated among the concerned fishermen and fish farmers.
- Although the potential for pond culture has nearly been exhausted, steps should be taken to raise the productivity of pond fishery in the country.
- Initiatives should be taken to enhance the productivity of shrimp culture. While the productivity of shrimp culture in Thailand is 3000kg/ha, it is only 300 kg/ha in Bangladesh. Introduction of intensive shrimp farming may help augmenting shrimp productivity in the country.
- For the marine fisheries, it is vitally important to assess the resources in the artisanal and deep sea levels. Allocation of fishing rights should be contingent upon this assessment so that optimal fishing is carried out at both artisanal and deep sea levels. Introducing modern techniques of fishing in the coast as well as in the sea and providing modern fishing equipment are also required to augment production from the marine fishery.
- Community-based fisheries management should be encouraged. There are already some examples of successful community based management of open water fisheries that can be disseminated and replicated in other places. This ensures broad-based participation of community people in the fisheries management as well as higher production.

However, in most cases, community-based management works better during the project period only and the situation deteriorates soon after the completion of the projects. Hence, to make the community-based management more effective and sustainable, community people should be made more aware about the fishing practices and fisheries management. They should also be given “ownership” of the resources so that they invest and adequately take care of the resources. Introducing long-term leasing system can serve the ownership problem in this respect.

- Better practices of open water fisheries management should be re-introduced in other places. Restocking in the open water fisheries, not to catch fish for some time of the year,

enhancing seasonal culture, pen culture and beel nursery can significantly contribute to augmenting fish production from the capture fishery.

- It is also important to emphasize on the creation of more sanctuaries and proper enforcement of laws in order to ensure the breeding and growth of fish in the open water capture fisheries.
- Providing adequate training to the fish farmers and extending extension services to them is important for the development of fisheries sub-sector in future. The Sixth Five Year Plan should emphasize on this so that the capacities are built at the fishermen and farmers levels.
- The Department of Fisheries (DoF) is suffering from lack of manpower, particularly at the field levels. It cannot provide adequate extension services to the fish farmers at the local levels. In order to take the modern technology of fish farming to the local levels, be it capture or culture, it needs to strengthen the capacity of the department. Capacities of the Fisheries Research Institutes should also be strengthened.
- It is important to regulate the private hatcheries, many of which are producing sub-standard fingerlings. Fish farmers are using these fingerlings without knowing its quality and hence the fish production is also being adversely affected. Policies/strategies should there be adopted in the area of hatchery management. Policies/strategies should also be undertaken in the areas of sanctuary management and fish-feed production.
- Lack of proper coordination among relevant government ministries/departments still a problem in the development of the sub-sector. Ministries of Land and Fisheries should also work together in deciding leasing of the jalmahals. Ministries of Agriculture and Industries should also cooperate with the Ministries of Fisheries in regulating the use of pesticides in agricultural field and controlling the pollution of water in the water bodies. Responsible officials of the Department of Fisheries at the Upazila levels should also be given limited magistracy in order to enforce the fishery law to protect the sanctuaries and control the use of fishing gears.
- Fish preservation, processing and marketing structure, particularly for the capture fisheries, are also weak. It needs to develop proper preservation facilities, processing plant and appropriate marketing structures to reduce market imperfections and the role of the middlemen so that the fishermen get the major share of the price paid by the consumers. Role of Bangladesh Fisheries Development Corporation should also be strengthened so that it can intervene in preserving and processing of fish during harvesting period and marketing during the lean period.
- There should be adequate provisions of credit access for the fishermen and fish farmers. Fishermen in most of the cases work as contract labor of large traders and arottdars. They should therefore be provided with credit so that they can purchase fishing equipment themselves and meet regular expenses during lean seasons. Fish farmers, particularly the small farmers, should also be provided with credit so that they can invest in the fishery.

- There is a growing realization that the fisheries sector cannot continue to support the numbers of people currently engaged in this activity, especially if they have limited access to resources and also during lean/off-fishing period. There is thus a need to work with other agencies (government non-government) that can provide support in the identification of other opportunities and supply training and resources to enable these people to seek alternative income earning opportunities.
- In each of the strategies and programs, focus on the poorest and on female participants should be maintained.
- Policies will be targeted towards improving fish habitat e.g. river/channel dredging, conservation etc.
- The plan emphasizes on reversing stock in breed, managing quality brood stock etc.
- Steps will be taken for establishing of hatcheries, quality fingerlings and feeds.
- The plan emphasizes on co-management of public wet lands, strengthening farmers/fishers organization.
- Strategies and policies should emphasize on the quality control of fish and fisheries product. This has to be done both in the context of international export market as well as for domestic consumption.
- Research on best management practice of high yielding fish species and research on genetic/biotechnological improvement of fish species should be given further importance.
- The plan emphasizes on conservation of aquatic biodiversity and indigenous fish species.

FOOD SECURITY AND MANAGEMENT

Bangladesh has a population of 150 million and is growing at a rate of 1.4 per year. Provision of food for all is therefore a real challenge and Bangladesh may have to depend on imported food to ensure food security. During the last two decades safety net programs were extensively used to channel food to the landless unskilled poor especially during the lean season. This effort has added to the government policy of poverty reduction. In fact poverty has dropped from 56.6 percent in 1991-92 to 31.5 percent in 2010. During the period percentage of under-nourished people declined from 35 to 30 with improvements in child and maternal mortality. Country has made significant progress in food production but the increase in food production has been neutralized by the absolute increase in demand for food due to population growth and the country remained as a low-income food deficit country with an average food grain import of 2 million tonnes since 1990-91. An estimated 27 million ultra poor people survive on less than 1805 Kcal per day and risk losing life and livelihoods to recurrent natural disasters. This is compounded by an increasing disparity in income distribution and high prevalence of malnutrition among women and children. Although poverty has declined in Bangladesh during the last decade, the country has third high number of hungry people in the world.

One of the criticisms of FFW projects is leakage of resource. A leakage study by World Food Program indicated that leakages vary agency to agency as well as program to program. The Vulnerable Development program (VGD) has a leakage of about 11% while LGED implemented FFW projects' leakage was around 4%. Several reasons for leakage were identified which include (i) a flat rate for transportation of commodity @ Tk 250/tonne provided for carrying commodity from food godown to distribution point though it varies from place to place, (ii) no resource is officially allocated to weight and distribute commodity at the distribution point, (iii) Commodity is shared with real deserving non project beneficiary with consent of the project beneficiary (specially in VGD). Despite all this shortcomings FFW probably helps the general poor by keeping food price reasonable. Therefore, strategy could be to improve access to food for the poor rural families vulnerable to shortage of employment, fluctuating food prices and natural disasters and FFW interventions will be planned in such a way that would facilitate agriculture development or address climate change issues.

Vulnerability of domestic production of food grain necessitated building up of an elaborate public food distribution system (PFDS) over the years. PFDS aimed at both meeting emergency needs as well as normal demand of the poor households in addition to meeting institutional demand originating in hostels, hospitals, jails, etc. While the distribution of public food grain continued to expand, it acquired a new emphasis through domestic procurement on a voluntary basis as a tool for stimulating food grain production with price support and open market sales (OMS) for price stabilization at consumer level. Thus, it has both consumption and production objectives and in respect of both, it has undergone changes with the growth of domestic output and greater availability of food grain in markets.

SFYP Objectives

Attainment of food grain self-sufficiency and food security remain the stated objectives of the national food policy and strategies. However, the objective contents of the food sub-sector during the Sixth Plan are as follows:

- Ensuring food security for all and elevating nutritional status of the people living below poverty line;
- Preservation and maintenance of security stock of food grain to meet any natural calamities, production shortfalls and supply hazards;
- Development of a social safety net program for vulnerable groups with special focus on women and children through improvement and enlargement of targeted food distribution;
- Maintenance of price stability within a band to protect interests of producers and consumers;
- Expansion of private sector in storage, distribution and trade of food grain; and
- Development of a sound quality control, grading and standardization system of food grain and food products.

SFYP Policies and Strategies for Food Management

The food sector has undergone major structural improvements over the years both in terms of market operation as well as in the context of Public Food grain Distribution System (PFDS). The present policy and strategy to further liberalize food trade will continue. However, though the private sector is expected to play a greater role in food grain management and trade in future, the government involvement in some specific areas will be continued in food grain management. The following issues relating to food security in particular, will continue to engage the government's attention:

- **Maintenance of Buffer Stock:** Buffer stock will be maintained to make up anticipated production and stock losses due to periodical droughts, floods and cyclones. An estimated 1.5 million tonnes of food grain will be required to be maintained as security stock.
- **Procurement of Food Grain:** Internal procurement of food grain will continue to ensure floor price to the growers and to provide incentive and confidence to growers for further production.
- **Stabilization of Price:** The government will formulate an effective mechanism to avoid wide fluctuations of prices. One of the current public policies is to hold food security stock for price stabilization. Open market sale is one of the short term instruments used for avoiding temporarily wide fluctuations in market prices. Private sector will be encouraged to strengthen food storage facilities at strategic places such as food deficit/surplus areas. This will enable the traders to augment market supply in response to rise in prices, thereby reducing both seasonal and regional price spreads.
- **Targeted Support for Vulnerable Groups:** National level food grain availability does not necessarily ensure household food security. In spite of increasing food grain production and falling real prices of rice, over half of the country's population cannot afford a diet to meet minimum nutritional requirement. Hence, the case for public intervention remains strong and clear. Consequently, targeting the poor for supply of food remains squarely within the public domain. Vulnerable Group Development, Food for Work Program and Food for Education in wider ambits will be some of the specific programs of public interventions. Women's participation in the management of food distribution (nutrition feeding programme) will be ensured.
- **Role of the Government :** To meet any shortfall in the flow of required quantum of food, the public sector may have to intervene for:
 - i. Preservation and maintenance of security stock
 - ii. Development of a safety net programs by improvement and enlargement of targeted food distribution;
 - iii. Providing incentive to growers through procurement of food grain at remunerative prices;
 - iv. Stabilization of price of food grain in relation to production cost and purchasing power of the consumers; and

- v. Modernizing and maintaining existing storage capacity by renovating old food storage facility and, if necessary, constructing new storage facility in strategic areas of the country.

WATER RESOURCES

Review of Past Performance

Water resources sector has undergone significant shift in terms of policies, strategies, plans and programs in the last decade. The Water Resources Planning Act (1992), the National Water Policy (NWPo-1999), the National Water Management Plan (NWMP-2001), the Guidelines for Participatory Water Management (GPWM-2000), the Coastal Zone Policy (CZPo-2005), the Coastal Development Strategy (CDS-20006), the BWDB Act (2000), the National Water Act (draft) have created an enabling environment in the country to practice Integrated Water Recourse Management (IWRM) for economic, social and environmental sustainability. The programs and projects of water sector in Sixth Five Year Plan would be guided on the backdrop of this favorable environment.

LGED's initiatives on the development of Small Scale Water Resources (SSWR) (less than 1000 hectare) started in 1960 under Thana Irrigation Program. During 1986 to 1996, sixty SSWR schemes were implemented under the Rural Employment Sector Program. Taking lessons from the performances of the earlier water resources development projects, sustainable use of water resources has been facilitated with the participation of local stakeholders along with local government institutions involving public and private sectors, communities and individuals in implementation of Small Scale Water Resources Development Sector Project (SSW-1 and SSW-2). Both SSW-1 and SSW-2 have enhanced rural incomes by developing community based water management associations and community managed small scale infrastructure and this approach has proved effective in the drive to reduce rural poverty.

Irrigation is one of the most important and essential part of agricultural production and that is why the Government has given importance to the irrigation for increased agricultural production. Irrigation has got direct positive impact on raising farm productivity and agricultural growth. Irrigation should be given priority to the Monga prone and other less productive areas. This will also help in reducing regional disparities as the Monga prone areas of the country suffer from less rainfall throughout the year.

Government has also given importance on the effective and optimum utilization of surface water rather than extracting ground water for irrigation. Utilization of surface water is more effective and useful for agricultural production. In addition, by preserving available surface water in the monsoon, it can also be used in the dry season for irrigation. This will directly help to recharge the ground water and increase agricultural production. It will minimize regional disparities in agriculture and will help in maintaining sustainable environment.

During the past, about 5.90 million hectare of flood vulnerable land has been brought under flood control and drainage improvement facilities (up to June 2009) by Bangladesh Water Development Board (BWDB). By this time, the organization has also provided irrigation to about 1.40 million hectare land under surface water irrigation project. In addition, about 0.10 million hectare land has been reclaimed from the Bay of Bengal which creates room for settlement of poor people. The direct impacts of about 721 projects implemented so far by BWDB are (i) creation of secured environment for crop production that ensured security of the country, (ii) rural employment generation, (iii) protection of agricultural land, towns, human settlements from river erosion and (iv) reclamation of land. The indirect benefits of the projects are (i) better communication; (ii) security from water-borne hazards (like flood, cyclone, storm-surges, saline water intrusion, water logging, drought), (iii) primary defense against possible sea level rise resulting from climate change and (iv) enhancement of agro-based economic activities in a flood-free secured environment.

The benefits derived from water sector interventions are contributing to the poverty reduction initiatives of the country. Through the FCD and FCDI projects, BWDB creates favorable environment for HYV rice production. This induces enhanced employment generation for rural agriculture laborers. Moreover, construction works and annual operation and maintenance works in the infrastructures of these FCD and FCDI projects provide wage income opportunities for the rural skilled and unskilled poor laborers roughly equivalent to one-third of the total annual agricultural wage income.

SFYP Objectives and Targets for Water Resources

The objectives of the SFYP have been formulated to materialize the vision of 2021 along with other international, regional and national priorities. All water sector programs/projects are pro-poor initiatives, be it an irrigation project or a river management project. These projects are also complementary among themselves. A river management project, by dredging the river, is creating safe passage for flood flow thus controlling the havoc of flood while reducing the fury of bank erosion, a natural hazard causing tens of thousands people homeless and poor. This river management project is also thus helping to attain “food security.”

Under these circumstances, a balance approach is followed in setting the objectives of the water sector of the SFYP. River management, which is commonly known as river dredging, has been given proper emphasis in addition to the flood control, drainage and irrigation project. Trans boundary water sharing has also been given priority because of the urgency of the issue. Arsenic contamination is addressed by fixing priority on utilizing surface water as much as possible. The use of Information Communication Technology (ICT) in water sector has also been considered with due priority as a step forward to convert the country into “Digital Bangladesh”. Land reclamation is also a priority issue as Bangladesh is a land hungry country.

Specifically, the objectives of water sector of the SFYP are as follows:

1. People’s participation in conformity with IWRM principals.

2. Enhancing conveyance capacity of water courses through river dredging.
3. Protection of river erosion.
4. Land reclamation.
5. Conjunctive use of surface and groundwater for sustainable irrigation.
6. Optimum use of available flows of the common rivers for multipurpose use.
7. Regional and International cooperation for basin-wide water resources development and management of trans-boundary rivers.
8. Flood Control/ Flood Management
9. Heights of coastal and flood embankments to be raised.
10. Food security by achieving food grains self-sufficiency through ensuring year-round sustainable irrigation.
11. Water conservation for irrigation and other uses.
12. Prevention of saline intrusion through augmenting the fresh water flow in the south west region including the Sundarbans (the world heritage).
13. Climate change adoption and mitigation.
14. Environmental protection.
15. Culture fisheries in the completed projects of BWDB.
16. Integrated coastal zone management.
17. Strengthening and capacity building of water resources institutions in the fields of
 - climate change issues
 - data management
 - river management
 - ICT arena
18. Studies and research on future water resources management.

The water sector activities will enhance to achieve these targets. Within the SFYP period, the specific targets of water sector are presented in Table 1.2.

SFYP Strategies for Water Management

The programs/projects included in the water resources sector of the SFYP (2011-2015) would require approximately Tk.235050 million for implementation. Institutional, human resources, logistics and financial involvement for the successful implementation of the various programs are huge and need well thought out strategies and policies. The following strategies would be followed in the SFYP plan (2011-2015) period:

Table 1.2: SFYP Targets of Water Sector

<u>Expected Outcome</u>	
Employment Generation	12.5 millions mandays
Poverty Alleviation	Water sector projects are pro-poor
Protection of Environment	EIA is mandatory for all water sectors project
Social Security	Water sector projects are pro-poor
Food Security	Contributing about 10 millions mt food grains annually
Flood Control	0.7 million ha.
Human Resources Development	Train 30000 staff
<u>Output</u>	
Dredging of rivers	318 km.
River bank protection (New)	158 km.
River bank protection (Rehabilitation)	142 km.
Embankment	690 km.
Resectioning of embankment	469 km.
Coastal embankment	45 km.
Resectioning of coastal embankment	480 km.
Coastal cross-dam	19 nos
Excavation of irrigation canal	1067 km.
Re-excavation of irrigation canal	1124 km.
Excavation / Re-excavation of drainage channel	636 km.
Irrigation / Hydraulic structure	1117 nos
Rehabilitation of irrigation structure	440 nos
Construction / Rehabilitation of flood control structures	365 nos
Reservoir	2 nos
Rubber dam	6 nos
Barrage	2 nos
Installation of pump house & rehabilitation	9 nos
Formation of WMO's (in addition to existing 7000 nos)	3000 nos

- **River dredging:** Dredging would be carried out in a systematic and comprehensive way and that has to be done in combination with river bank protection for nondestructive, easy and smooth passage of flood flow of river system. Such a planned activity would help to protect the river banks from erosion, which is also a major vector of rural poverty. BWDB would take the lead role in this context.
- **Addressing dry season water scarcity:** In the wake of continued stress on surface water especially during dry season, top-most priority would be given on water-sharing of the common/trans-boundary rivers with the neighboring country/countries following the model of the Ganges Treaty-1996.
- **Basin-wide water resources development initiative:** Steps has to be taken immediately to enter into agreements with co-riparian countries for sharing water of international rivers, data exchange, resource planning and long-term management of water resources under normal and emergency conditions of flood, drought and water pollution. While moving towards the attainment of basin-wide plans in the long run, it will also be necessary for

Bangladesh to concentrate on the development of individual hydrological areas to meet short and intermediate term requirements.

- **The Ganges Barrage project with ancillary infrastructure:** The project would be undertaken with a view to meet several objectives, e.g. (i) to harness properly the benefits of the Ganges Water Treaty 1996 (ii) to save the Sundarbans and the south-west region of the country from salinity intrusion and (iii) to utilize the surface water in the wake of wide-spread arsenic contamination in groundwater, BWDB would address the issue within the shortest possible timeframe. This project is expected to benefit the South Western region and it is expected that 1.2 lac hectare land would be under coverage of irrigation with fresh water, industrial water etc.
- **Participatory water management:** Such an approach would be followed in all water resources sector projects right from the identification up to monitoring and evaluation. The approach is mandatory for all public sector institutions.
- **O&M of completed projects:** The completed projects of water resources sector especially the projects related to flood control, drainage and irrigation would be properly operated and maintained with the participation of stakeholders so that the targeted benefits of the projects are ensured. Given the importance of these projects in terms of poverty alleviation of the rural population, BWDB would exert its effort to achieve this goal.
- **Achieving “Food-for-All”:** BADC, BMDA and BWDB would continue to pursue command area development activities in surface water irrigation project and to explore expansion of irrigation.
- **Coastal zone management:** Coastal Zone is the zone of prosperity and at the same time is considered as vulnerable point within the country. The area would be treated as a special zone.
- **Public Private Partnership:** As water resources development interventions are costly initiatives, public-private partnership model has to be explored whenever possible.
- **Climate change:** The issue would be assessed on a realistic scale and then the effects of the issue on water resources sector would be addressed with reasonable care. BWDB, BHWDB, WARPO, RRI, IWM, JRC, BMDA, BADC and CEGIS would take joint effort in this field with WARPO taking the lead.
- **Land reclamation:** Bangladesh is facing land scarcity and in this context, necessary projects and steps would be taken for land reclamation. BWDB would implement projects for this purpose.

Continuous Monitoring and Updating of Water Resources

In view of the critical importance of water resources for the economy, the state of the water of the country in the perspective of time and socio-economic setting needs continuous updating and monitoring, WARPO with the help of all the stakeholders of the water resources sector especially with BWDB, BHWDB, JRC, IWM and CEGIS would update the National Water Resources Management Plan (NWMP). The organization will also achieve water resources data in the National Water Resources Database (NWRD). The National Water Management PLAN (NWMP) would be updated through continuous monitoring of its implementation and

the state of water resources in the country in perspective of climate change and social setting. WARPO would implement the update in consultation with all the relevant stakeholders including BWDB, LGED, DPHE, WASA, BADC, BHWDR, JRC, DoE and others. WARPO would also update the National Water Resources Database (NWRD) for future updating of NWMP.

RURAL DEVELOPMENT

Lessons Learned from Past Development Interventions and Key Constraints

Importance of Road Development: Road development is critical to socio-economic development and poverty reduction. An improved road communication system reduces road user costs and costs of production and thus facilitates socio-economic development of the country. It contributes to the reduction of poverty by creating employment opportunities for all, including women, increasing the mobility of working people and facilitating the distribution of capital and consumption goods. Moreover, it contributes to the expansion of markets, augmentation of regional balance and creation of investment opportunities, all of which are conducive to economic growth and poverty reduction. Furthermore, it supports human resource development through improved access to health and education services.

Employment Generation: Through construction and maintenance of infrastructure development and tree plantation activities direct employment opportunity is created for the poor and the destitute women. In addition to the direct employment opportunity, the infrastructure development program implemented by LGED has contributed towards generation of indirect employment opportunities in the following areas:

- Employment in the road transport sector
- Employment in trading activities in growth centers/rural markets
- Employment in the farm sector
- Employment in other non-farm productive activities.

Development Impact of Rural Infrastructure: The development impact of rural infrastructure is highly positive. This is evident from international experience as well as the experience of Bangladesh.

A study done by the Government of Bangladesh in 1996 made the following suggestions for strengthening the rural infrastructure development program.

- The strategy's growth centre approach (which focuses public investments on selected growth centers and are selected based on well-defined criteria to indicate their socio-economic importance) remains valid.
- No major changes are required, only some readjustments or "fine tuning" may be justified in the light of the experience acquired by different rural development projects.

- Targets will have to be reset after the recent increase of growth centers from 1400 to 2100 due to population and regional growth and regional priorities will have to be defined in view of the natural potential of the regions.
- Some minor readjustments will be needed in the spatial distribution of infrastructure investments to be fully in line with agricultural production and potential.
- In addition emphasis should be given on user/community participation in planning, implementation and monitoring, improved use of local resources, such as, local materials and the continued use of labor intensive techniques with appropriate equipment. Co-ordination in the use of complementary modes of transportation, specifically waterways, increasing the role of the private sector and further strengthening the capacity of contractors operating in the rural areas who provide cost effective, labor intensive skills and resources enhancing the future sustainability of the rural infrastructure system may be given priority as well. Institutional strengthening of the Local Government Engineering Department (LGED) and its wide network at local levels with a greater orientation towards community participation will also receive due attention.
- Greater emphasis will be given on building and funding a sustainable maintenance system.

Vision, Goals, Objectives and Targets for SFYP

The vision of Rural Infrastructure Development sub-sector includes, among others, developing, maintaining and managing transport, trading infrastructure at the local level by ensuring LGI and community participation and taking care of environmental and social issues.

The objectives of the sub-sector will include the following:

- Improvement and maintenance of rural infrastructure
- Create direct employment opportunity for the rural poor and the destitute women through improvement and maintenance rural infrastructure.
- Create indirect employment opportunity in road transport, trading and other farm and non-farm sectors.
- Improve utilization of health and education services/facilities
- Facilitate participation of community people in development work and promote good local governance.
- Contribute towards poverty reduction at the local level.

Under the rural infrastructure development program, projects will be taken up for development of growth centers and growth centre connecting roads, bridges and culverts. Road maintenance programs, mostly rural roads, will be implemented through the rural destitute women and eventually they will accumulate savings to undertake income-generation activities by themselves. In addition Union Parishad Complexes (UPCs), Cyclone Shelters and ghats (landing stations) will be constructed in significant numbers.

Current and Future Challenges for the Sector/Sub-sector

The development of road and road transport suffers from a number of challenges/ constraints:

- Bangladesh has a low-lying topography requiring a raised earth embankment. It has a large number of rivers and canals calling for construction of bridges and culverts at frequent intervals. Moreover, there is scarcity of a number of construction materials like stone, cement and lime which have to be imported in large quantities. All these factors make building of a road network in Bangladesh very expensive.
- Bangladesh is located in the monsoon region. Due to the influence of monsoon weather, there are torrential rains in Bangladesh for about half of the year washing away road surfaces, particularly the shoulders and earth embankments of the road network.

Within the framework of the above challenges/constraints, the problems in the development of roads are:

- lack of availability of land
- local conflict in prioritizing roads for development
- conflict of interest of various groups
- shortage of skilled manpower at union level
- inadequate flow of funds
- overloaded trucks causing early damage to the pavement
- number of gaps in road network increasing road development costs
- non-availability of good quality construction materials, and
- frequent inundation by annual floods.

Sectoral/Sub-Sectoral Development Strategies and Policies for the SFYP

Components/Activities under Rural Infrastructure Development

The activities under rural infrastructure development and maintenance will include the following:

- Improvement of Upazila Road
- Improvement of Union Road
- Improvement of Village Road
- Construction of Bridges and Culverts on Upazila Road, Union Road & Village Road
- Development of Growth Centers and Rural Markets
- Tree Plantation on Slopes Roads
- Construction of Union Parishad Complex (UPC) and Upazila Complex
- Construction of Cyclone Shelters and Killas

- Routine Maintenance and periodic maintenance of Earthen Roads, Herring Bone Bond (HBB) Paved Roads and Structures.

Strategies of the Sub-Sector

The strategies for the development of the road system of LGED include finalization and adoption of a Road Master Plan, adoption of a maintenance plan and according higher priority to maintenance over new construction, exploring technological options to construct quality roads with available construction materials, introduction of measures to stop overloading, adoption of procedures to maximize generation of employment for the poor, ensuring quality of construction, more involvement of Local Government Institutions (LGI) and ensuring utilization and maintenance of constructed facilities.

Strategic Plan for Rural Infrastructure Development and Management

The Plan will include the following:

- The rural infrastructure development/improvement will be planned and implemented based on the findings of Effect/Benefit/Impact Studies carried out by LGED in respect of rural infrastructure development projects and the principles/elements as included in the National Strategy for Accelerated Poverty Reduction, October, 2005.
- Government approved Rural Road Master Plan will be followed for infrastructure development projects covering Upazila and Union roads including bridges/culverts, bridges/culverts on village roads and development of growth centers/markets, ghats and Union Parishad HQ etc.
- Rural road improvement which will contribute in a better way towards increasing agricultural production, promoting transport and trading activities, providing access to other socio-economic services and facilitating employment generation will be given priority.
- For sustainability of rural infrastructure, adequate maintenance system and a viable funding mechanism based on local resources and emphasizing local participation and ownership will be arranged.
- Since maintenance needs are increasing, the Government and the local bodies will make special efforts to fully fund these needs and LGED will make continuous efforts to improve maintenance efficiency and ensure local participation.
- The labor-based construction techniques for road improvement will be adopted to enhance employment opportunity, sustainability and affordability.
- There are competing needs for various types of rural infrastructure, such as, Upazila Roads, Union Roads, Markets, Ghat facilities etc. and even for roads alone, there is need for improvement maintenance and bridging gaps. At the spatial level, there are competing

needs for different geographical regions. A guideline for investment prioritization and selectivity will be developed and calculation of economic rate of return will be adopted to guide the major investment decisions.

- The first priority will be to maintain all Upazila Roads, Union Roads and Village Roads which have so far been constructed under different projects implemented by LGED including bridges/culverts and upgrade growth centres having connection with railway and waterway in order to promote and integrate multimodal transport system.
- The second priority will be to improve/upgrade remaining Upazila Roads, Prioritized Union Roads and Village Roads-A including culverts/bridges which have strategic importance to connect railway and waterway.
- The third priority will be to improve Growth Centers and construction of ghat facilities at Growth Centers located on the bank of inland waterways to ensure better integration of road and water ways and thereby stimulating the rural transport and trading system. Also, construction of the Union Parishad Complex for local socio-economic and governance development will be included under this category of priority.
- The fourth priority will be to selectively add roads to the maintainable core road network through rehabilitation and reconstruction, including spot improvement of drainage and badly damaged road sections. Separate provisions will be made for reconstruction works required to keep lower quality roads open and serviceable.

Other Implementation Strategies

Other implementation strategies for development of rural infrastructure will include the following:

- Priority will be given to the creation of macro and micro-level interactions, i.e. through close interactions between the central and the local government institutions.
- Proper decentralization of design, implementation and management of rural infrastructure programs will be adopted to have far-reaching implications for cost effectiveness, maintenance and provision for sustainable infrastructure services.
- To maximize the impact of decentralization, the rural infrastructure programs will focus on provision of basic economic and social services in collaboration with different local agencies, NGOs and the private sector based on sharing of responsibilities through experience and best practice examples.
- To realize the above, the overall responsibilities of Union Parishad will be enhanced to make them focal point of development within the policy framework of the government.
- In order to ensure efficient planning, implementation and operation and maintenance of rural infrastructure, a community participation process will be adopted with involvement of the local government institutions, NGOs, beneficiary groups, user communities, and the private sector.

- The road inventory data will be further upgraded to fully utilize HDM & DSS software for better Road Asset Management (RAM).
- Procurement functions and process and quality assurance including technical audit will be enhanced.
- Environmental and social dimensions will be incorporated into the engineering design after assessing their impact properly and adequate mitigation and enhancement measures will be undertaken.
- Road Safety activities for Upazila and Union Roads will be undertaken and gradually expanded.

Master Plan for Agricultural Development in the Southern Delta of Bangladesh

Bangladesh is part of the largest deltaic floodplain in the world. It slopes gently from the north to the south, meeting the Bay of Bengal at the southern end. The coastal zone constitutes the major part of the southern delta, which is physiologically and ecologically diverse and environmentally most vulnerable. It includes important agriculture, fisheries, livestock, forest and wildlife resources. The delta lies within three hydrological regions – south central, south west and south east. These three hydrological regions illustrate i) tidal and salinity affects to a large portion of the coastal zone; ii) the rivers are subject to frequent tidal surges and coastal inundation; iii) the area is severely vulnerable to climate change including sea level rise leading to occasional devastations; iv) besides shorter cool winter period limits cultivation of many high value Rabi crops.

Due to the vulnerability of these areas to cyclones, storm surges and tidal inundation, salinity intrusion and water logging, the agricultural, livestock and aquaculture activities are at serious risk and need additional supports. Considering these challenges, climate change vulnerabilities and unexplored potentials of the region, the Government of Bangladesh has decided to prepare a comprehensive ten year master plan to provide a road map for an integrated development effort in Bangladesh's coastal zone aiming at i) increased agricultural productivity and sustainable food security; ii) poverty reduction and iii) alternate livelihood development for the poor. The Master Plan will focus on emerging new potentials in the delta mainly i) technological breakthrough for increasing productivity- new varieties and breeds, plant and animal health systems and strengthening Farmers Field Schools etc; ii) harnessing seasonal and occasional quality surface water available for irrigation and iii) enhancement of agricultural productivity through increased cropping intensity, reducing post-harvest losses, modeling of climate events and options of crop diversification.

The Master Plan will unlock the potentials through interpretative analytical outputs, these includes the followings but not limited to these only: soil, land and water resource mapping & zoning; special mapping for land and water suitability to crops/cropping based on seasonal variability; area specific vulnerability assessment with suggested adaptation measures; alternative development options by sectors for boosting sustainable production; identification

of investment opportunities; and linkage with the 6th Five Year Plan and the Country Investment Plan.

The process of preparation of the master plan is ongoing and the draft Master Plan is expected to be available by the end of 2011. The process of formulation is being monitored by an Inter-ministerial Committee headed by the Secretary, Ministry of Agriculture. The Government set local level technical committees to provide and validate information. Food and Agriculture Organization of the United Nations (FAO) is facilitating the entire process through an interdisciplinary team of national experts with occasional backstopping from FAO technical divisions and International Rice Research Institute. In the preparation process, all relevant departments of the Government and other stakeholders' participations including farmers, NGOs, civil society, knowledge institution, private sector and development partners are being ensured.

DEVELOPMENT RESOURCE ALLOCATIONS FOR AGRICULTURE, WATER RESOURCES AND RURAL DEVELOPMENT

Agriculture is the largest private sector in Bangladesh. Much of the investment in production and for diversification will come from the private sector. In view of the large number of small holders, farm credit is critical for helping farmers make the right investments as well as for working capital. So a major policy emphasis of the Sixth Plan will be to increase and improve the distribution of farm credit. The focus of public investment will be to reduce the critical bottlenecks to farm production in terms of rural infrastructure (water, electricity and rural roads), to support the provision of critical farm services such as research and development and extension, and to reduce the impact of flood through flood control measures. The planned allocation of development resources for agriculture related activities in the Sixth Plan in current and constant prices is shown in Table 1.3 and Table 1.4.

Table 1.3: Development Resource Allocation for Agriculture, Water Resources & Rural Development in the Sixth Plan
(Taka Crore; Current Prices)

Ministry/Sector	FY2011	FY2012	FY2013	FY2014	FY2015
Ministry of Agriculture	1054	1563	2046	2606	3221
Ministry of Fisheries & Livestock	373	384	414	492	562
Food Division	320	363	351	421	486
Ministry of Water Resources	1407	1649	1872	2202	2489
Rural Development & Co-operatives Division	469	471	534	629	715
Total	3623	4431	5217	6351	7474

Table 1.4: Development Resource Allocation for Agriculture, Water Resources & Rural Development in the Sixth Plan
(Taka Crore; FY2011 prices)

Ministry/Sector	FY2011	FY2012	FY2013	FY2014	FY2015
Ministry of Agriculture	1054	1454	1779	2127	2481
Ministry of Fisheries & Livestock	373	357	360	402	433
Food Division	320	338	305	344	374
Ministry of Water Resources	1407	1534	1627	1798	1917
Rural Development & Co-operatives Division	469	438	465	513	551
Total	3623	4121	4535	5184	5756

CHAPTER 2: DIVERSIFYING EXPORTS AND DEVELOPING A DYNAMIC MANUFACTURING SECTOR

The SYFP target of reaching 8 percent annual GDP growth in the outer years is premised on a prolific manufacturing sector growing at double digits on a sustained basis. Consequently, the broad industrial sector will continue to account for a larger share of GDP compensating for the secular decline in the share of agricultural sector. This trend is consistent with the stylized facts of structural change in the process of development articulated by development economists. Thus the strategy for achieving the high growth target under the SYFP and beyond includes further industrial deepening supported by a highly-productive agriculture sector. This was the basic thrust of the high-performing East Asian economies in the 1970s and 1980s. For Bangladesh to reach middle income threshold by 2021, industrial expansion must accompany hand-in-hand with highly productive farm and non-farm agriculture. A strong and competitive manufacturing sector is especially important for creating productive high income jobs.

OVERALL MANUFACTURING PERFORMANCE, STRATEGIES AND POLICIES

Review of Past Performance

In the 1970s and the 1980s the performance of the manufacturing sector was lackluster, growing below the average growth of the economy. Following the initial debacle, the manufacturing sector growth performance improved during the 1990s. The faster pace of expansion of manufacturing relative to total GDP since 1990 caused its share to increase gradually, rising from its low level of 12% in 1990 to 17.3% in 2009. The evolution of the manufacturing sector in Bangladesh is indicated in Table 2.1.

In the 1970s and 1980s, manufacturing sector performance was constrained by the dominance of poor performing nationalized enterprises, inward looking trade policies and inadequate private investment due to poor incentives. The policy regime for manufacturing improved significantly in the 1990s, based on investment deregulation, trade liberalization, better exchange rate management and improved financial sector performance. The emergence of the private sector driven, export-oriented readymade garments (RMG) sector as a dominant economic activity considerably altered the structure of the manufacturing sector. Along with a growing share of GDP, the manufacturing sector quickly dominated the export market and contributed to an expanding share of exports. Together with remittance, the RMG sector has emerged as an economic power house in Bangladesh.

Table 2.1: The Structure of Bangladesh Manufacturing Sector, FY1975-FY2010

	FY198110	FY199110	FY200110	FY201010
Size of the Manufacturing sector				
Total (% of GDP)	11.8	12.9	15.6	18.5
Of which				
- Large and Medium Scale	8.0	9.15	11.13	13.1
- Small Scale	3.18	3.7	4.46	5.3
Growth Rate (% annual average over the decade ending)				
Total	2.0	5.0	6.9	7.6
- Large and Medium Scale	2.9	4.9	7.0	7.3
- Small Scale	1.0	5.1	5.8	7.9
Employment				
Share of total employment	8.7	10.1	9.9	12.0
Exports				
Percent of GDP	4.1	6.8	10.6	17.2
Manufacturing share (% of Total Exports)	65.5	78.9	92.1	90.9
RMG (% of Total Exports)	0.1	38.9	56.1	77.1

Source: Bangladesh Bureau of Statistics (BBS),

In Bangladesh the pace of industrialization has been gradual but steady without any shock from internal or external factors. Over the years, there has been a moderate structural shift from a predominantly agrarian economy to a more organized manufacturing sector. The result is evident from the higher share of manufacturing in GDP as agriculture continues to decline as a share of GDP, while services remained fairly steady throughout (Annex Fig. A1).

However, when this record is compared with the performance of the some East Asian economies, it appears as a rather slow industrial deepening over the two decades. In comparison with Bangladesh's increase in GDP share of manufacturing from 12% in 1990 to 17.8% in 2010, Vietnam increased its share of manufacturing from 12.3% in 1990 to 21% in 2008; Malaysia from 24% to 28% over the same period. On the other hand, China's share of manufacturing has been steady at 32-33% over that period. Even Thailand's manufacturing grew so rapidly since 1990 that its share rose from 27% to 35 percent.

The common thread in the policies of these economies is the emphasis on private sector driven growth, trade openness and the effective courting of foreign investment. Since 1990, Bangladesh has also changed economic policy stance in these general directions though in a more gradual way. Progress is most advanced in regards to emphasizing the role of the private sector, but trade liberalization and attracting direct foreign private investment are less advanced. One notable development in the economy is the predominance of manufacturing goods in exports (90-95%) as the latter progressively becomes the driver of high growth.

Why Manufacturing Growth was Stronger in Some Countries

Economies with dynamic manufacturing sectors show at least three characteristics: (a) manufacturing sector typically grows at double digits, (b) its share in GDP reaches 30% or more, and (c) export and manufacturing sector performance tend to go hand in hand. Many

factors – economic and non-economic – determine performance of the manufacturing sector. Asian countries that successfully transformed themselves from predominantly agrarian economies to manufacturing powerhouses had one thing in common: they devised a package of trade, investment and domestic support policies that created an overwhelmingly favorable environment for private entrepreneurs to unleash their hidden talents for innovation, risk-taking, and harnessing of domestic and external resources to their best advantage. For Bangladesh, there is much to emulate from the success of East Asian economies like South Korea, Malaysia, Thailand, and now, China. While East Asian economies of S. Korea, Hong Kong, Singapore, and Taiwan, showed the path to rapid industrialization in the 1970s and 1980s through export-oriented development, emerging economies like Malaysia, China, and India are showing the path to rapid growth within the new framework of globalization. Private capital and entrepreneurship, deregulated industrial policy regime, trade openness, and liberal foreign investment policy, all came together in creating the new export and manufacturing powerhouses of India, China, and Malaysia. China and Malaysia have strongly adhered to the strategy of making trade a strong pillar of economic growth having long ago abandoned the import substitution regime, which lead to the inefficient operations of firms by compromising their cost effectiveness and long-term competitiveness. India came on board with similar policies starting in the early 1990s, but more vigorously since the start of the 21st century. The results can be seen in its export growth of 20% plus with annual GDP growth in the 8-10% range in the past decade.

In particular, low tariffs have been an integral part of their trade openness. With a cheaper price tag on imported inputs, a revamped complementary trading relation with partners in terms of production structure and regional supply chains, together with an enabling investment environment, these countries gave rise to their light and heavy manufacturing industries whose products became highly competitive globally, translating into a greater share of the world market. Vietnam appears to be the new kid on the block, following in the footsteps of India and China, and reaping the benefits of its own comparative advantage based on labor costs coupled with greater linkages with international markets which has made it into an export powerhouse to be reckoned with.

As highlighted before, Bangladesh, like other low income economies is yet to make the transition to a modern manufacturing and services oriented economy. The manufacturing share of China, Malaysia and East Asia on average is over 30 percent as compared with a low 17 percent in Bangladesh. Pakistan's share is slightly higher at 19 percent, but like Bangladesh remains a low industrialized economy. The cases of India and Brazil, which also exhibit low share of manufacturing require a bit of explanation. Brazil, with a per capita income of \$ 4710 in 2009 is in a different league and is already fairly well industrialized with organized services providing the high income jobs and linked to serving the manufacturing sector. India similarly is fairly well industrialized and its lower share is a reflection of the much faster expansion of export oriented modern services such as Information Technology (IT).

Manufacturing Exports and the Diversification Challenge

One important structural change in manufacturing that has happened in Bangladesh is the emergence of a dynamic export-oriented readymade garments (RMG) sector. The emergence and expansion of the RMG sector is the direct outcome of the global Multifibre Arrangement (MFA) regime, as well conducive policies undertaken by the government to ensure global competitiveness of the industry. It was extremely good policy foresight that allowed the RMG industry not to be subjected to high tariffs, in terms of intermediate inputs and raw materials that have to be imported on upfront payment of duties. The RMG sector operates within a “free trade” enclave in that all imported inputs come in under a bonded system duty free. Had this not been the case, RMG exports would not have reached the heights they have reached, given the economy’s import regime which is riddled with complex tariffs and other import restrictions. A few other selected exports, such as leather products, and, recently, shipbuilding, have also been given the facility of bonded imports. For the rest of exports and potential exports, getting world-priced imported inputs is a challenge. As a consequence, export diversification has not made much headway.

Other manufacturing industries such as jute goods, leather and frozen foods, engineering products and pharmaceuticals have strong export potentials for driving the industry towards higher growth. But, unlike RMG, these industries are yet to become major contributors to the economy as can be seen from their export performance (Table 2.2). Thus export concentration in a single product group – RMG – infuses an element of vulnerability to our export performance.

Table 2.2: Export Performance of Major Commodities (in millions of USD)

	Jute Goods	Leather	Frozen Food	Engineering Products	Pharmaceuticals	RMG
FY2008	318	284	534	220	43	10700
FY2009	269	398	454	189	45	12348
FY2010	540	226	445	311	41	12497

Source: Bangladesh Bank

For many decades prior to the emergence of RMG exports, jute and jute goods dominated the export sector making up 70 percent of exports until 1981. By 1990, however, RMG exports had overtaken Bangladesh’s traditional exports and, by the close of the 1990s, *export concentration* emerged afresh, with RMG exports reaching a share of 77 percent. While Bangladesh’s export growth for the last decade and a half could be characterized as robust, a sudden decline in demand for Bangladeshi garments would send shock waves throughout the economy. Such a prospect can be avoided through the creation of a diversified export basket. That remains the major challenge of trade policy.

To promote export diversification, the Government in its export policy has adopted a strategy of according the highest priority to several emerging exports that demonstrate high potential:

- 1) Agro-products and agro-processing products;
- 2) Light engineering products (including auto-parts and bicycles);
- 3) Footwear and leather products;
- 4) Pharmaceutical products;
- 5) Software and ICT products;
- 6) Home textile;
- 7) Ocean-going Ship Building Industries; and
- 8) Toiletry Products.

In addition, the Government is selectively according bonded import facilities to more emerging exports (e.g. agro-processing, ship building). In future, this facility may not be limited to 100% export-oriented industries only but extended to industries producing for both domestic and export markets. Further, the Duty Drawback Scheme will be revamped to ensure world-priced inputs to exporting firms without long lags and high transaction costs for reimbursements.

Manufacturing and the Employment Challenge

Bangladesh has made progress in specializing in labor-intensive manufacturing (e.g. RMG and footwear) where its comparative advantage lies. Yet the employment impacts so far fall short of expectations. The ability of the manufacturing sector to create jobs has been sharply weaker than its growth and export performance. The share of manufacturing in total employment remained virtually stagnant at around 8 percent well until the 1990s. This share began to rise slowly once the job creation effects of the RMG sector began. As a result, the employment share has now grown to 12 percent (Table 2.3). Nevertheless, this is still well short of the role that the manufacturing sector has to play to help create productive jobs in Bangladesh. This is a major challenge for the Sixth Plan.

Table 2.3: Shift in the Structure of Employment, 2005/6-09

	2005-06	2009
Broad Sectors	(In Millions)	
Agriculture	22.9	22.3
Manufacturing	5.3	6.0
Services	19.3	21.7
Total	47.4	50.0
	(In Percent)	
Agriculture	48.1	44.6
Manufacturing	11.2	12.0
Services	40.7	43.4

Source: Bangladesh Bureau of Statistics

Policies Underlying Manufacturing Performance

Successive governments have realized the importance of the manufacturing sector in helping Bangladesh achieve better economic outcomes and hence tried to design policies to create a dynamic and globally competitive manufacturing sector. Seven industrial policies have been designed and implemented in quick succession in between 1972-2005. The impact of such policies has been varied due to both exogenous and endogenous shocks that the sector was exposed to over the course of time.

One of the most notable shifts in policy stance has been the drive towards a liberal market economy since the early 1990s with private sector being the main driving force of growth. This is a notable paradigm shift from the early state-led growth model where the state-owned enterprises were the main force behind growth. Unfortunately and despite best efforts of the Government of Bangladesh a number of policies and incentive packages remained stalled on their tracks due to lack of proper implementation modalities and lack of coordination among various agencies/institutions assigned with implementing the policy. Hence due to the existing challenges and rigidities, the manufacturing sector was unable to unleash its true growth potential.

The trade regime in Bangladesh also went through a series of reforms especially since the early 1990s, resulting in a shift of regime from an inward-looking import-substituting bias to an outward-looking export-orientation bias with higher integration of the economy in the global economy. Moreover, foreign direct investment has increased several times though the growth rate is much lower than some of our comparators like India, Pakistan, or Vietnam.

Over time the Government has employed different measures to provide incentives to manufactured exports. As indicated earlier the reforms of the trade regime initiated in the early eighties continued to be undertaken by successive governments for greater outward-orientation. However, although the export sector has flourished, the momentum in export has been dominated by Ready Made Garments (RMG). Other export items failed to replicate the impressive success of this sector, primarily because the tariff and import regime precluded the absorption of world priced inputs. Exclusive facilities enjoyed by the RMG sector essentially allowed it to exploit Bangladesh's labor cost advantage to the fullest. Footwear and ship-building have been given the RMG treatment and they are booming. Other non-RMG exports still face an adverse policy environment which will have to be addressed early on during the SYFP in order to achieve the export and growth targets of the plan.

Trade liberalization improves manufacturing efficiency and competitiveness. Since much of the impetus to trade liberalization came in the early 1990s, it is possibly most appropriate to compare the performance of the manufacturing sector in phase II and phase III, with the caveat that even phase 2 benefited from significant deregulation and the rapid expansion of the export-oriented garment sector based on establishment of the free trade zones. Nevertheless, it

is accepted that tariff reductions and QR removal introduced a substantial degree of import competition in the local manufacturing sector, forcing enterprises to restructure and raise productive efficiency. Many did, such as ceramics, textiles (new spinning capacities), RMG accessories, electrical goods, etc. Those that failed to adjust including many public and private firms had to close down and lay off workers. In this group there were a large number of SOE's involved in jute and cotton textile mills. Private enterprises which were beneficiaries of high protection for long but failed to adjust following liberalization had no other option but to close down.

The change in trade regime and opportunities created in the world market as part of these developments have been possible also because of the dynamism of the entrepreneurs who could exploit the opportunities in the international market and deal with the risks. The trade regime of Bangladesh has also contributed greatly towards efficient operation of the industry. Manufacturing growth averaged 8.2 percent per annum (only 4.3 percent for non-RMG) in the first half of the 1990s during the peak of the liberalizing period, but tapered off to an average of 5.6 percent in the latter half, to end the decade with an average of 6.9 percent growth, compared to 5 percent in the 1980s. These averages mask the fact that it was the RMG enterprises (in the medium and large scale group) that grew by over 20 percent and drove manufacturing growth, while there was stagnation and even decline in some import-substituting. Import liberalization and the abolition of import licensing improved access of small enterprises to capital machinery, raw materials and implements that could now be purchased readily and at low cost.

An important feature of the export basket has been its concentration on a few commodities. Jute and jute goods, tea, leather and leather products, and frozen foods were the major exports up to late eighties. Since FY88 woven and knit garments, frozen foods, leather and leather products and jute and jute goods have been the major exports. The most remarkable feature of the export basket is the emergence of readymade garment (RMG) in the late 70s as export and its increasing dominance in the basket over the years. Readymade garment has replaced jute and jute goods in importance. Thus while the contribution of jute and jute goods declined from about 69 percent in FY81 to about 3 percent in FY09, readymade garment constitutes more than 75 percent of total exports in recent years. Equally striking is the fact that by the turn of the century, manufactured goods made up over 90% of our exports.

Major Constraints in Manufacturing Sector to be addressed

Weak Investment Climate

Reforms undertaken in the late 1980 and early 1990 led to a secular increase in growth of private sector investment in thus leading to an increase investment in the manufacturing sector. Evidence of this can be seen in the increased average growth rates from the 1980-1999. However, the rate of growth of the private sector has stagnated recently due to various investment climate related and infrastructure issues. Importantly, infrastructure gap has been

widening and is being characterized as a binding constraint for growth. Aggregate investment in the domestic economy has stagnated in the 24%-25% of GDP range in recent years, despite a steady increase in the national savings rate. Although private sector investment has been increasing at a pace slightly above the rate of growth of GDP, a secular decline in public investment in relation to GDP largely offsets that, keeping total investment broadly stagnant in relation to GDP. This low level of investment significantly falls short of the investment rate needed to support the 8% GDP growth target set for the end of the Plan period and a vibrant manufacturing sector. Within the private sector, there has been very little inflow of foreign investment, including in the manufacturing sector.

The strategy for the SYFP is to stimulate gross domestic investment early on through acceleration of public investment in major infrastructure projects (e.g. Padma Bridge, Elevated Expressway) while putting in place a policy and legal framework for implementation of public-private partnership projects and private investment. The ultimate goal is to achieve a rate of domestic investment that will lead to GDP growth of 8% by the close of SYFP, i.e. achieving the rate of gross domestic investment equivalent to about 32% of GDP. Much of the additional investment from private sector will need to go to manufacturing. Making the investment climate conducive to attract both domestic and foreign investment into manufacturing is a key policy challenge.

Table 2.4: Investment Climate in Doing Business 2010

Economy	Ease of Doing Business Rank	Starting a Business	Employing Workers	Getting Credit	Protecting Investors	Paying Taxes	Trading Across Borders	Enforcing Contracts
Bangladesh	119	98	124	71	20	89	107	180
India	133	169	104	30	41	169	94	182
Malaysia	23	88	61	1	4	24	35	59
China	89	151	140	61	93	125	44	18
Vietnam	93	116	103	30	172	147	74	32

Source: International Finance Corporation

A number of factors have contributed to the depressed level of investment and FDI in Bangladesh compared to other regional counterparts. The World Bank-IFC Doing Business 2010 report highlights some of the factors that have led to a favorable/unfavorable business environment in some Asian countries (Table 2.4).

Table 2.4 suggests that Bangladesh has performed modestly in terms of creating a conducive investment climate. Compared to East Asian economies massive improvements are required to reach the levels of the required investment for the manufacturing sector. Bangladesh's weakness in terms of rankings in some of the indicators suggests that the investment climate has not been very friendly, as result of which both domestic and foreign investment suffered. A reversal of the weak investment climate is imperative for achieving the goals of the SFYP.

Anti-export Bias of the Trade Regime

As discussed in previous sections reforms allowed the export sector to flourish, however the success of the export sector is largely attributed to the RMG sector. All other non-RMG major export items have had only a modest growth since the late 1980s. Though some new items have been added to the export basket the country's export base remains narrow and undiversified. Without export diversification Bangladesh may be exposed to negative export shocks. Therefore the existing policy anomalies have to be removed and supportive steps for diversification of exports will be undertaken during the Sixth Plan period.

Despite the measures for export promotion and tariff rationalization, a measure of anti-export bias still prevails. The structure of incentives created by the trade policy regime still favors the production of domestic import substitutes and creates barriers for emergence of new export industries and expansion of export industries not benefitting from special measures. Given that SFYP puts a lot of emphasis on export of manufactures, concerted efforts will be made to remove the remaining anti-export bias to create a neutral policy regime between import substitution and export promotion in order to focus both on manufactures that have export potential and industries which already export but whose potentials are not fully realized.

Manufacturing Suffers from Power Shortages

Firm level survey data provides useful micro-level data concerning the factors that are holding back the performance of the manufacturing sector. Exponential growth in electricity demand induced by strong economic growth performances has strongly outpaced the available electric supply leading to a situation of acute power shortages. As a result private sector performance is severely hampered. One of the main constraints in the manufacturing sector is the persistent under utilization of capacity due to power scarcity. A recent study highlights this point, it reports that on average firms use 80% of their capacity and in general metropolitan firms point to electricity as the major reason for underutilization of capacity followed by working capital financing shortages.

Problems of electricity outages effect both metropolitan and non-metropolitan manufacturing businesses. The heavy reliance on generators in Bangladesh implies understatement of the true extent of damage to the poorly performing electricity grid. Sectors which heavily rely on power such as RMG, chemicals etc are heavily reliant on generators. However, the historically less successful industries with less access to investment resources are the hardest hit due to their dependency on electricity, including textile, leather and light engineering. Moreover generators represent a significant investment of a firm's book value. Therefore SME's are the hardest hit. Continuous power shortages already cost the economy two percentage points of national growth.

The SFYP includes an energy sector plan (Chapter 4) to fully bridge the gap between demand and supply of power by the end of the plan period.

Land Management Emerging as a Serious Problem

Serviced land is the single limiting factor for new or expanding entrepreneurs. The three main issues surrounding access to land are a) the cost of land, b) issues of procuring land and c) availability of serviced land. Other factors such as titling and registration, limited financing for long term commercial mortgages and zoning, have also been identified as obstacles to the growth of the manufacturing sector. Doing Business in Bangladesh 2008 ranks Bangladesh among the ten worst countries for registering properties.

Given the importance of this resource in an entrepreneur's decision to invest in the manufacturing sector further reforms and changes have to be introduced otherwise the growth of the manufacturing sector as one of the major sectors in the economy will be in jeopardy.

Access to Credit Still Inadequate

Bangladesh compares favorably with other countries in the South Asian region in terms of the domestic credit to the private sector, though long term lending as well as lending to smaller firms and firms in rural non-farm sector has remained inadequate. The financial system is dominated by the banking sector and massive reforms during 2000-01 resulted in the declining importance of nationalized banks.

The current lending system is based on collateral and hence is not very conducive for most firms in the country. The existing rigidities of the financial system result in inefficient reallocation of resources and reduce growth potential. In general, banking innovation is lacking. The narrow product mix offered by the banks weakly matches' client preferences. Banks are unable to differentiate between credit worthy customers and offer better financial products suited to their needs.

The situation calls for completing the unfinished reforms in the financial sector to strengthen financial intermediation, and create a modern, dynamic and business friendly banking system, fully equipped to support the goals of the SFYP.

Labor Productivity Remains a Problem

Abundant and cheap labor has been the primary source of Bangladesh's comparative advantage in labor-intensive manufacturing. In addition, existing labor laws allow greater labor market flexibility than in other South Asian countries. However, while Bangladesh's manufacturing labor is cheap and growing at a rapid pace, labor productivity has been low. Despite relatively light labor regulations, structural barriers impact the efficiency of the labor markets, including mismatches between economic performance and labor allocation, pressure from the public sector, skill shortages and mismatches. More attention needs to be directed to assist the transition of workers from agriculture to other sectors, as well as addressing an overall rapidly growing labor force, gender issues and skills and training.

Research has shown that there is a tendency for both small and large metropolitan firms to report an acute shortage of skilled labor. Even though there are a high proportion of temporary workers, the situation is not improved since temporary workers tend to be unskilled. The education qualifications of these workers tend to be low both in terms of quality and attainment. Nearly 20 percent of the workers employed in the manufacturing sector have no education at all.

Gender Bias Hampers Entry of Female Workers

From a regional perspective the participation rates of women in metropolitan areas in Bangladesh tend to be higher in large firms and the garment sector. However, in non-metropolitan areas, studies have shown that 26 percent of all women working in nonfarm enterprises are employed in the garments, 22% in textile, 14% in food processing, 11% in the manufacturing of non – metallic mineral products etc. In general most women working in non metropolitan areas tend to be family workers.

However, women entrepreneurs tend to be less educated and are more likely to be self-taught compared to their male counterparts; however this trend is changing slowly. Moreover due to financial market imperfections and potential segregation, women tend to report that obtaining finance and cost of finance as major constraints compared to their male counterpart.

Weak Research and Technology

Productivity gains remain low due to weak innovation and low investment in technology. Only a handful of firms have internationally recognized quality certification, with highest proportion in garments and manufacturing. Furthermore, even fewer firms use technology licensed from foreign companies, with higher proportion in garments, light engineering and chemicals/pharmaceuticals.

Some general feature of the manufacturing sector has been the low R&D spending as proportion of the firm's sales value and minimal employment opportunities for R&D professionals; however, this is not true for the RMG and pharmaceuticals sector. The main methods of innovation have been new equipment, new management, new products and new worker skills. The availability of new technology and technological change are also vital for the rural non farm sector. However, funding scarcity for investment in new technology also works as a major impediment in innovating.

Recognizing the strong relation between innovation and productivity gains, greater efforts will be devoted during the SFYP to facilitate technological innovation and change in the manufacturing sector. An integrated approach will be considered whereby information, cost and financial market rigidities are weakened in order to let the manufacturing sector reap the benefits of industrial spillover effects and be an innovator in their own right.

Government Regulations and Enforcements are a Constraint

Taxation: Taxation in Bangladesh is marred by complex rules, administrative hassle, poor compliance and low collections. The complexity of the tax rules open opportunities of graft and result in minimum tax payment with frequent underreporting of profit. Furthermore, tax lawyers need to be hired to comply with regulation raising the cost of compliance. In the past, corporate income taxes have tended to be one of the highest in the region. Due to high corporate tax rates, evasion is evident. However, recent simplifications have eased the problem for businesses somewhat. Strong lobbying and complicated regulation leads to companies continue to operate tax free even after their infancy. Actual tax payment show significant use of tax holidays and exemptions relative to declared profit.

Red tape: Research has shown that a good proportion of firms in the country consider the economic and regulatory policy uncertainty a major constraint to business. Entry and exit is also not an easy task and acts as a barrier to business. Entry takes a long time and costs a lot due to registration fees; lawyers cost and trade/operating license. Moreover corporate exit is costly. It takes about four years to go through the bankruptcy procedure; this is lower compared to India.

Enforcement of contract: A well functioning legal and judicial system is imperative to create effective checks and balances and to help enforce contracts and settle disputes. While the constitution and laws are generally sound the justice system is subject to excessive delays and is perceived by many as impartial. A research estimate suggests that firms perceive the functioning of courts on business matter as a major obstacle to business. Most companies use informal mechanism to enforce contracts or to avoid agreements.

Slow Privatization of State-owned Enterprises (SOEs)

After three decades, the program of privatization of state-owned enterprises (SOE) remains incomplete due to delays and complicated procedure in the privatization process, problem of proper valuation, land disputes and delay in registration of land and assets, and so on. The vision of attaining middle-income status by 2021 rests squarely on a dynamic private sector. That on vision will remain unfulfilled unless, on the one hand, SOEs are whittled down and substantial investments are forthcoming from the private sector.

Whilst the privatization of identified SOEs will continue, the SFYP stipulates efforts to strengthen the SOEs that remain in the public sector. Policies will include improving management, commercializing these enterprises, improving labor policies and eliminating all bureaucratic interventions. The Government recognizes that SOEs must be profitable enterprises and be able to compete effectively in the market.

Targets, Strategies and Policies for the Manufacturing Sector in the Sixth Plan

SFYP Targets for the Manufacturing Sector

Vision 2021 stipulates that Bangladesh will attain middle income status by 2021. In order to achieve this goal; the government set its economic growth target that rises to 8% in 2015 and 10% in 2021 with an average of 7.3% for the SFYP. In order to fulfill this vision the manufacturing sector would play a central role. The strategy of the Government has been to facilitate a dynamic, vibrant, pro-export and competitive manufacturing sector that would eventually contribute some 30% to national income and be able to absorb 20% of the work force. A possible growth path that is consistent with this target is presented in Table 2.5.

Table 2.5: Projection of Sectoral Growth and shares in GDP

	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015
	Growth Rate (%)					
Agriculture	5.2	5.0	4.5	4.4	4.3	4.3
Industry	6.6	9.2	9.6	9.9	10.5	11.5
of which Manufacturing	6.5	9.5	9.8	10.1	10.7	11.7
Services	6.5	6.6	6.8	7.1	7.3	7.8
GDP	6.1	6.7	7.0	7.2	7.6	8.0
	Share as % of GDP					
Agriculture	18.6	18.4	17.7	16.9	16.2	15.5
Industry	28.5	28.7	28.9	30.4	31.3	32.0
of which Manufacturing	17.9	18.2	18.7	19.6	20.4	21.1
Services	52.9	52.9	52.9	52.7	52.5	52.5

Source: BBS and SFYP Projections

It is projected that during the SFYP, the manufacturing sector will have to outpace both the agricultural and service sector and follow a smooth upward trajectory. The manufacturing sector has to perform consistently and follow a steady upward trend. The SFYP aims at an average of 10% annual growth in manufacturing, rising from 6.5% in FY10 to 11.7%. Among the manufacturing activities sectors such as ‘food processing’, ‘leather and footwear’, ‘textile and clothing’, ‘pharmaceutical’, ‘ship building’, toys, ceramics and furniture are likely to be the main growth generators (Table 2.6). These labor-intensive activities are expected to

Table 2.6: Manufacturing Growth Projection for SFYP

	FY2010	FY2011	FY2012	FY2013	FY2014	2015
	(Annual growth rates %)					
Manufacturing	6.5	9.5	9.8	10.1	10.7	11.7
Leather Products	7.7	8.5	9.4	10.5	11.2	12.2
Textile & Clothing	7.6	14.4	13.5	13.8	14.2	15.1

Chemical Fertilizer	5.3	6.1	6.7	6.8	7.0	7.4
Machinery	5.9	6.2	6.6	6.7	7.2	7.9
Other Manufacturing	5.8	8.3	8.3	8.5	9.5	10.2
	Share as % of Total GDP					
Manufacturing	17.9	18.4	19.0	19.7	20.5	21.0
Leather Products	0.8	0.8	0.8	0.9	0.9	0.9
Textile & Clothing	7.1	7.2	7.5	8.0	8.4	8.7
Chemical Fertilizer	1.9	1.8	1.9	1.9	1.9	1.9
Machinery	4.8	5.2	5.4	5.3	5.5	5.5
Other Manufacturing	3.3	3.4	3.4	3.6	3.8	4.0

Source: SFYP Projections

experience double digit growth rates toward the end of the plan period. Diversification of the manufacturing base will be promoted by keeping import channels open and facilitating Bangladeshi firms to vertically integrate within the global production chains. ‘Machinery’ and ‘other-industries’ sectors are also projected to become more buoyant due to the expansion of the economy and gradual diversification of exports. One of the thrusts of the industrial policy during SYFP will be to create scope for emergence of new activities (in exports or domestic production) and expansion of SMEs to take advantage of scale economies. However, due to paucity of gas supplies as well as uncertainty with regard to the use of coal, the growth performance of ‘chemical-fertilizer’ and ‘petroleum’ sub-sectors would likely remain moderate. Removal of critical infrastructure bottlenecks in power and transport sectors through massive new investments will be critical for planned acceleration of manufacturing sector growth.

Exports – the driver of manufacturing growth: The main driver of manufacturing growth will be the export markets, although growing domestic demand from higher income generation will also provide impetus to import substitute production. The case for exports is very clear. In spite of a burgeoning domestic market, its size is limited when it comes to the need for creating over a million additional jobs every year with decent wages. The export market is vast allowing industries to take advantage of economies of scale and the scope for creating jobs and income is unlimited. Already manufacturing exports make up more than 90% of our export basket. High manufacturing growth over the next decade will hinge on continuation and improvement on the superb export performance of the past 15 years. The key is to produce competitively products in which Bangladesh has comparative advantage and formulate strategies to open export markets. Based on the recent performance, export sector under the Plan period is projected to grow by 16% per annum in US dollar terms, which is about the same rate as in recent pre-global crisis years. The projection entails an increase in the share of exports in relation to GDP to rise by at least 5 percentage points to 22% of GDP by the end of the SFYP reflecting a leading role that export sector is envisaged to play in the SFYP. While RMG exports would continue to dominate the export outlook, some important non-traditional exports like footwear and leather products, light engineering products (bicycle and electronics), pharmaceuticals, ceramics, jute goods, ocean-going ships, and some labor-

intensive products not yet on the export radar, are likely to grow at a much faster rate. This diversification is a key objective underlying the strategy for manufacturing growth.

Strategic Policies for Manufacturing Exports in the Sixth Plan

In order to get the maximum leverage out of manufacturing sector and its competitiveness in the global marketplace, the Sixth Plan would focus on four strategic approaches.

Export diversification. Bangladesh experienced double digit export growth over the past two decades. Yet this superior performance masks the fact that the surge was limited to one product group – readymade garments – aided not least by the MFA regime. With over two million jobs and 77% of export earnings from the RMG sector, too much of the nation’s fortune is riding on this one sector. Export concentration in readymade garments makes the economy, jobs and income, extremely vulnerable to external shocks arising from changes in global demand for RMG. The government’s focus on export diversification as a cornerstone of its export policy will continue and intensify during the Sixth Plan period.

Export concentration is not a new phenomenon for Bangladesh. For many decades prior to the emergence of RMG exports, jute and jute goods dominated the export sector making up 70 percent of exports until 1981. The shift into manufactured exports materialized for the Bangladesh economy thanks largely due to an external event – the multi-fiber arrangement (MFA) of 1974 – that offered a lifeline for the emergence and rapid expansion of the RMG industry. By 1990, RMG exports had overtaken Bangladesh’s traditional exports and, by the close of the 1990s, *export concentration* emerged afresh, with RMG exports reaching a share of 77 percent. While Bangladesh’s export growth for the last decade and a half could be characterized as robust, a sudden decline in demand for Bangladeshi RMG would send shock waves throughout the economy. Such a prospect can be avoided through the creation of a diversified export basket. Herein lies the rationale for an effective strategy for export diversification.

But in the context of the Sixth Plan, the strategy of export diversification will not be limited to product diversification in the export basket. Rather, the strategy will embrace many different facets, each of which addresses the vulnerability aspect of export concentration, as summarized below:

- Product diversification – introducing range of new products in the export basket.
- Geographical diversification – widening the range of destination markets for exports.
- Quality diversification – upgrading the value of existing products, i.e. moving up market from low end to high end products (described as moving up the value chain).
- Goods-to-services diversification – seeking opportunities to expand non-merchandise exports.
- Intermediate goods diversification – product diversification need not imply adding only final consumer goods in the export basket – as is popularly understood in Bangladesh.

There are global opportunities for plugging into the supply chain of export powerhouses like China, something that East Asian economies have done successfully. That requires Bangladesh to diversify its manufacturing base into backward linkage industries producing a wide range of intermediate goods for exports within the globalized production chain.

Finally, it is critical that the trade policy regime is geared to ensure export competitiveness in general while facilitating emergence and expansion of new export products. Bangladesh's labor cost advantage remains strong though productivity is a question mark. Yet this advantage, properly harnessed, could yield surprising rewards within the current scheme of globalized production and supply chains, provided the trade regime is right. The success of RMG is clear evidence of this phenomenon.

If export diversification is to be the cornerstone of an export strategy, at least three aspects of the trade policy regime will deserve close attention during the Sixth Plan:

- Ensuring export competitiveness in general – by addressing border barriers (e.g. tariffs) and beyond-the border constraints (e.g. trade infrastructure, energy and telecommunications, regulations, finance).
- Reducing anti-export bias of the trade regime – several researches provided ample evidence of anti-export bias of the current import, tariff and subsidy regime that favors import-substituting production over exports. The duty-drawback scheme to provide world-priced inputs for export production has proved inadequate. Eliminating or reducing the built-in anti-export bias that still remain will be key to switching the incentive regime in favor of exports.
- Reducing anti-diversification bias – because of the stellar success of RMG exports, trade policy and incentive regime have a clear focus on this sector which is provided a free trade channel plus logistic support (duty free import of inputs, bonded warehousing facilities, back-to-back LC, rapid custom clearance). While such a policy is appropriate for making RMG exports competitive on a global scale, attention needs to be focused on similar policy environment for emerging and potential exports without which they face formidable barriers in the context of a high-tariff and restrictive import regime in Bangladesh. This particular feature of anti-diversification bias could be unique to Bangladesh and will be addressed during the Sixth Plan.

The China opportunity: A window of opportunity that beckons Bangladesh has its roots in what is going on in China known to the world as the export powerhouse, as the biggest source of cheap exports of all manner of goods, from clothing and toys to consumer electronics and durable goods like air conditioners and refrigerators.

Abundant, cheap, and productive labor was the primary source of China's global competitive advantage. As a natural phenomenon of industrial success, that advantage is fast eroding. Wages are rising in China, where factory workers are paid three to four times the wages of Bangladeshi workers. In addition, acute labor shortages have appeared in key economic

zones. Wage-push inflation in China means that competitive advantage is no longer assured, at least not for the labor intensive commodities whose fabrication is less complex and demands relatively low-skilled workers. Examples of these Chinese products include readymade garments, shoes, electrical goods, car parts, toys, kitchenware, and multifarious consumer goods. In these sorts of products, China's competitive edge stemming from low labor costs is fast eroding.

That is not all. Pressure is mounting on China to revalue the Yuan – a measure that will make its exports dearer and therefore less competitive. Though China has not wilted under this pressure, analysts believe gradual Yuan appreciation in the months ahead is a very real possibility. This adds the third element in the erosion of Chinese cost competitiveness, apart from rising wages and labor shortages. In the current scheme of global competition, the loss in competitive advantage for one country becomes a gain for one or more countries. Those ready to gain from China's falling competitive edge in labor-intensive products are countries like Bangladesh, Vietnam, Cambodia, Indonesia, Philippines, and even India.

What is notable is that developments in China have set in motion some dynamic adjustments around the globe. Investors are scurrying for the next best location for manufacturing clothing, shoes, toys and other labor-intensive manufactures. Why not Bangladesh? Labor costs, investment climate, and trade policy will be the critical factors determining location and success of the next export powerhouses.

During the Sixth Plan period, Bangladesh will position itself comprehensively – with supportive incentive schemes, investment incentives, and liberal import regime – for a solid berth in the new alignment of exporters. In terms of attractive trade and investment policies, Bangladesh will match countries like Vietnam and Indonesia which are vying to take a bigger chunk of the Chinese pie which is up for grabs. This once-in-a-lifetime window of opportunity may not last for long. Success in this effort will ensure Bangladesh's claim for middle income status within a decade.

Export restructuring in a globalized economy: Global production sharing has been a striking feature of world trade in recent years. It generally entails the breaking up of the production process into vertically separate stages carried out in more than one country, involving both backward and forward linkages from the production stage in the commodity chain. Analysts have pointed out that the superior export performance of East Asian countries can be partly attributed to their strategic use of cross-national production networks within a globalized production system. Bangladesh manufacturing exports could also get a strong boost if it positions itself suitably within the global production and supply chain.

Two types of commodity chains have been identified:

Producer-driven commodity chains (PDCC): PDCC tends to be characterized in capital and technology intensive industries (e.g. automobiles, computers, semiconductors, and heavy

machinery). Transnational corporations play a central role in coordinating production networks. International sub-contracting of components is common for most labor-intensive production processes. The main barrier to entry for this type of production network is capital and propriety know-how. Moreover out sourced production is controlled by TNC mainly through equity investment.

Buyer-driven commodity chains (BDCC): These types of chains are most prevalent in industries which are characterized by large retailers, branded marketers and trading companies. These businesses usually set up decentralized production networks in a variety of exporting countries, moreover the branded companies usually provide the design and order the goods and supply the specification. This pattern is common in labor-intensive consumer goods such as garments, toys, footwear etc. The main barriers to entry are product development, advertising etc. Control of production takes place through non-equity arrangements with local firms through sub contracting. In essence the Wal Marts and Nikes do not manufacture the products; they just design and sell. In the BDCC system there is a physical separation of production activity from the design and marketing stages.

Indeed the new aspect of globalization is the ability of producers to slice up the value chain by breaking up the production process into many geographically separated steps such that a good is produced in a number of stages in a variety of locations, adding value at each stage. The assembly stage is a labor intensive activity using unskilled labor in which countries like Bangladesh have a comparative advantage. In readymade garment exports, Bangladesh has already taken advantage of the BDCC system, but could reap similar benefits in other products such as toys, footwear, auto parts, TV parts and components. Trade in parts and components in the machinery sector are the fastest growing segment of world trade. The rise of China as a low cost assembly hub has boosted component production and assembly in other countries. During 2005-06 components manufacturing trade in Asia were above the world average by 15 percent and made up almost 75% of East Asian trade. During the Sixth Plan period Bangladesh will have to position itself as a player in the global production chain based on its comparative advantage within a market niche. Its long experience with garment production chain gives it a competitive edge over newcomers.

Working on market access issues: Producing products of export interest and in accordance with Bangladesh's comparative advantage based on its factor endowments is only the first albeit the key step for export growth. Yet being competitive in exports is only a necessary condition for export success. Global trade is subject to various tariff and non-tariff measures that serve as barriers to market access, particularly for an LDC like Bangladesh seeking new export destinations and trying to open existing markets wider. For export success to be ensured on a sustainable basis, the government will be playing a proactive role in continuing efforts under the bilateral and multilateral umbrella to obtain Bangladesh's rightful claim to market access for diversified products and destinations.

It is well known that the Uruguay Round of trade negotiations opened global trade and reduced overall tariffs, but left the peak tariffs on products of export interest to LDCs like Bangladesh (e.g. tariff peaks on textiles and clothing). Although this has been partly compensated by various preferential schemes offered by OECD countries, such as GSP and EU's EBA, there are formidable challenges to be faced in reducing tariffs on Bangladesh's major export product (RMG) and emerging products that might be subject to WTO-compliant rules under SPS and TBT. A two-track initiative is visualized: (a) the government in partnership with chambers and think tanks will vigorously pursue the LDC option for S&D preferential market access under WTO's Doha Development Round; (b) on a bilateral basis, the government will continue to work on obtaining duty-free access for Bangladesh exports into developed markets such as USA, Japan, and Australia, while pursuing low-tariff market access options via reaching free trade agreements with individual emerging market countries or groups.

Furthermore, Bangladesh will also pursue the regional option to open markets and expand trade with neighboring countries in South and East Asia, under various regional or bilateral trading arrangements (e.g. through SAFTA, BIMSTEC or potential bilateral FTAs). Given Bangladesh's current tariff regime, most research indicate high cost of trade diversion from these initiatives, thus requiring further rationalization of tariffs so that benefits of trade creation offset trade diversion costs from regional FTAs. To gain market access through RTAs Bangladesh will have to reduce tariffs further, without which it would be difficult to forge regional trade alliances.

Industrial Policy 2010 to Support SFYP Strategy

Industrial Policy 2010 initiates the first year implementation of the Sixth Plan strategy for deepening of industrialization in Bangladesh. It lays the foundations for a dynamic manufacturing sector and robust export growth. Slowly but steadily Bangladesh is now gearing up with the right package of policies to attain double digit manufacturing growth during the SYFP, driven by high-performing exports that should be clocking growth rates of 20% plus on a sustained basis.

Objectives of the 2010 Industrial Policy

- Provide a policy and institutional framework that creates and sustains a momentum of accelerated industrial growth, employment generation and improvement in living standards.
- Give clear signal to the private sector highlighting government's commitment to private sector led industrialization strategy.
- Attempts to rationalize the existing incentives structure for attracting higher levels of private investment in areas of dynamic comparative advantage in the economy. The Policy also indicates areas of private-public partnership that are critical for enhanced private sector participation in the industrialization process.

- Identifies needs that are critical for enhancing the competitiveness of the industrial sector and spells out business support and policy measures for meeting these needs.
- Spells out measures for promotion of cottage, small and medium industries.
- Outlines measures needed to develop and diversify the exports.
- Spells out policy and institutional arrangement to ensure that the industrialization process is compliant with internationally agreed environment, health, safety and work standards.

Strategies for Manufacturing Sector

- Private sector will spearhead the industrialization drive. As its central tactic, it will be abetted by the productive nurturing of agro-processing and labor-intensive industries. The government will be limited to the role of a facilitator, pushing for and creating an enabling environment for attracting increased private investment in areas of dynamic comparative advantage. Tariff protection will be given on a time bound basis to activities determined to have potential comparative advantage in the long run.
- Industrial investment by the state will only be in areas where there is a need to complement private-sector investment, or where there is an overriding security concern or social objective to be met. Efforts will be made to stimulate inflow of investment, at once nationally and internationally, and especially from non-resident Bangladeshis. The government will ensure assistance for creating alternative employment, keeping the socio-economic backdrop in mind, for any privatization proposal.
- Meticulous economic feasibility of the defunct public-sector enterprises which have ceased to attract any investment will be done before setting future course of actions. No new activity or rejuvenation involving these structures will be allowed before settling all outstanding dues.
- The legal and regulatory framework will be streamlined, and procedures simplified in the name of shielding investors from Gordian knots, procrastination and legal harassment arising from archaic and unnecessary laws, vague and discretionary regulations, and flawed and weak enforcement. The delivery of start-up and routine follow-up services to industrial clients by the Registrar, Joint-stock Companies and Firms, Board of Investment and all other regulatory agencies will be elevated to 'one-stop service' through more imaginative use of information and communications technologies. Like in some other well-managed countries, industry associations and think-tanks will be taken into confidence and consultation in the effort to keep the cost-of-doing business at their lowest practicable levels. A relentless effort will be made to do away with the culture of an abject dependence on 'sponsorship' by the state.

- The Government will be resolute in easing up on the access to vacant or unused space for startup enterprises. A variety of measures ranging between the allotment of vacant 'khas' land, providing fiscal incentives for setting up private industrial estates, rationalizing BSCIC's industrial estate program, setting up special economic zones. Effort will be made to set up economic zones in full view of successful relevant experience from other developing countries and relevant best-practices, including the practice of public-private partnership, in the field of creating such economic zones.
- Priority will be given to infrastructural needs of industrialization such as electricity, gas, port facilities, road and railway transportation, telecommunications etc. Optimal utilization of natural resources such as gas and coal will be made for power generation along with measures to promote alternative sources of energy such as solar energy, generation of electricity from municipal refuse, biogas etc. Participation of the private sector in all infrastructure development endeavors, and the use of public-private partnership will be strongly promoted through various incentives.
- Necessary reforms of all banks and public financial institutions will be carried out expeditiously preparatory to meeting industries' prevailing demand for long-term finance. Initiatives will taken on hand to establish modern IT parks, Hi-tech parks, incubation clusters in order to attract national and, above all, foreign investment in such knowledge-dense, environmentally-friendly industries as information technology/IT Enabled Services, biotechnology, nanotechnology, and thus to spur the development of an world-class atmosphere for business.
- Existing regime of industrial finance including such schemes as the Equity and Entrepreneurship Fund (EEF) will be reorganized and strengthened with provisions to meet working capital needs of the borrowers. Women will have equal access to EEF. A financial institution will not be allowed to participate in any new project investment unless the package included a binding provision offering accommodation of the working capital needs of the borrower. If the entrepreneur did assure the financing institution that the roll-out of the enterprise would not suffer due to the non-availability of working capital loan, such a loan proposal could be entertained.
- The Government will encourage the private sector to set up and operate venture capital funds. A deep and broad growing pool of venture-capital can throw life-lines at emerging and prospective firms, and can support firms with innovative technologies.
- The on-going campaign to streamline and strengthen the capital market will be intensified. This will involve improving the oversight functions of the Securities and Exchange Commission (SEC), strengthening the central depository system (CDS), development of

the bond market, off-loading government shares in the capital market, introduction of new instruments, and securitization of big infrastructure development projects etc.

- Government will take various measures to meet growing demand for skilled managers and technology and technical workers. In order to better align the curriculum and capability of those public institutions that impart business and technical education, the government will add to their capacities, modernize their curricula, ramp up their research capability.
- Government will encourage and support private sector, research organization and NGO initiative towards skill and management development. Effective arrangements will be put in place to ensure adequate coordination and cooperation among the public institutions that complement private-sector. Public-private partnership will be forged to develop specific skills for catering to demand for high-value products and also for meeting quality and standard requirements in the international market.
- Government will provide support to the private sector industries in their search, acquisition and adaptation of best-practice technologies, which typically originate in foreign countries. The Bangladeshi missions abroad and public institutions involved in technology research and development will play a critically important role in this context. The capacity of local research institutions and the science and technology faculties of Bangladesh's public universities will be strengthened towards this end. The government will facilitate close interaction between the private sector and pertinent public institutions so that the appropriate technology needs of local industries can be addressed and resolved by these institutions. The government will also encourage foreign direct investment that has scope of technology transfer. Fiscal incentives will be provided for firm-level research and technology development.
- Development of small, medium, micro, cottage and IT industries, including IT enabled services, will be two cornerstones of government's industrialization strategy. The achievement of this objective will be the organizing principle governing the implementation of the Small and Medium Enterprises (SME) policy announced by the government. A comprehensive approach to the development of this sector will be adopted which will entail wide-ranging fiscal incentives, preferential access to finance, favorable trade policy, provisioning of land and site services, and the facilitation of technological and marketing support.
- In line with the provisions of the SME policy, special measures will be taken to develop women entrepreneurship ensuring access to land and finance and business support services.
- Fostering exports will become one dominant streak in the industrialization strategy of Bangladesh. Special emphasis will also be given to stimulate import-substitution, food and

agro-processing industries. Necessary measures will be taken for diversification and rapid increase in manufacturing exports. Towards that end, existing export incentives including those relating to fiscal, trade and exchange rate policies will be broadened. Priority attention will be accorded to resolving various supply-side bottlenecks particularly those relating to finance, infrastructure and port facility. The government will provide accreditation and testing facilities for export and adopt various trade facilitation measures for reducing trade transaction costs and delivery time. Efforts for gaining market access will be intensified both at regional and international levels.

- Measures will be taken to attract FDI in firms in both export and domestic market oriented industries to make up for the deficient domestic investment resources, to achieve transfer of technology and gain access to export markets.
- Government will ensure that industrialization in Bangladesh is environmentally sound and compliant with the health and safety and other standards required under the rules of the WTO. As well, the Government will ensure taking the fullest advantage of its time-waiver on the onset of the compliance with rule-book of such globalist agreements as associated with the WTO, Trade-related Investment Measures (TRIMS), TRIPS, GATS, to the point of achieving globalist standards within the deadline on the ground.
- The Industrial Statistics Wing of the Bangladesh Bureau of Statistics (BBS) and the management information system of various regulatory agencies, such as the Board of investment, BEPZA, BSCIC, SME Foundation, Bangladesh Handloom Board, etc., will be strengthened preparatory to the setting up of an information and data bank where investors can find information regarding investment and market opportunities, sources of machinery and technology etc. Coordination between different public agencies will also be fostered to obtain consistent set of information on private investment, output and employment on an ongoing basis from the web-sites of those agencies.
- The prevailing legal framework related to intellectual property rights will be revamped for nurturing industrial research and development, and ventures that intensively demand the husbanding of talent. As well, all reasonable assistance and encouragement will be accorded to such industries.
- Government will actively support growing partnership among financing and training arms of the public-sector, private-sector and non-Governmental organizations to rapidly build investment and skill-base related to eco-tourism. To this end, Government will ensure compliance with the basic standards for protecting environment and safeguarding proper utilization of scarce land.

- Government will pave the ground of global eco-tourism marketing effort through the Bangladesh Parjatan Corporation (BPC) in order to provide impetus to the growth of eco tourism industry in Bangladesh.
- The Government will resolutely move to rid the country of the blight of ‘sick industries’. To this end, initiative will be taken to formulate guidelines for dealing with the sick industries’ syndrome. Terminally sick firms which are beyond cost-effective redemption will be identified.
- Government will provide incentives to the banking sector to proactively exert itself in helping avert the fate of bankruptcy or acute financial distress by firms.
- The Government’s future reform and re-structuring agenda for will the jute industry will include ownership, operation, technological modernization, quality improvement and diversification of jute goods, employment generation, timely arrangement of access to finance during the raw-jute season, sound management practices, human resources development in jute industry, and marketing of jute and jute goods.
- In running public-sector jute mills, effort will be undertaken to eliminate wasteful methods and practices of the past through rational reforms in order to restore them to profitability.
- Government will encourage the establishment of new jute mills for manufacturing innovative, high-value jute goods, and partner the private-sector in the development of new technologies and processes, and sourcing of technical and financial assistance.
- The administrative, monitoring and implementation mechanisms in the Ministry of Textiles and Jute, various relevant departments and institutions will be revamped and reformed so as to have in Bangladesh a dynamic, skilled and vigorous jute manufacturing sector in the country.
- Modernization and backward linkages in the textiles sector will be encouraged on the back of new investment and BMRI in old mills in order to meet the growing demand of textiles and apparels, both locally and internationally.
- Management methods that are fundamentally important in state-owned textile mills will be restructure in the interest of keeping them in operation, including by imbibing greater public private partnership.
- Modernization and backward linkages will be encouraged in private sector dairy farm, poultry and hides and skin businesses.

- The government will maintain transparency and accountability in taking decision for new/old/shut-down factories both in public and private sectors.

Other Policies to Support SFYP Strategy

Trade policy reforms: Although the trade regime in Bangladesh is restrictive when judged by international standards, it is nevertheless true that considerable liberalization has taken place over the past decade or so. Bangladesh's increasing global integration based on trade liberalization and other economic deregulation, especially since the early 1990s, contributed significantly to the acceleration of per capita income growth and poverty reduction.

Nevertheless, the review of progress with trade policy reforms also showed that international trade is still subject to a host of tariff and non-tariff barriers which makes the trade regime quite restricted in the global context. Bangladesh is the only country among its trading partners that still maintains traditional Quantitative Restrictions (QR) with the explicit purpose of protecting local industries. The most important restrictions are on the import of a range of textile products. It has also retained general administrative controls over imports which, depending on how they are implemented, can amount to a form of import licensing.

In view of the above the trade policy focus in the Sixth Plan for the manufacturing sector will be to further reduce the bias against exports by lowering trade protection arising from remaining quantitative restrictions, tariff rates and supplementary duties. The Government recognizes the importance of both protecting tax revenues from custom duties and supplementary duties as well as the need to provide some support to those dynamic national industries that have high potential but require temporary trade protection as it gains more experience and learns to compete in international markets. These trade-offs from reducing trade protection will be carefully reviewed and managed to ensure a smooth long-term transition to a broadly liberal and simplified trade regime that does not discriminate against export enterprises or support inefficient domestic enterprises. Over the longer term, the income tax and the VAT will become the primary instrument for domestic resource mobilization with a sharply lower reliance on customs duties and supplementary trade taxes.

Flexible management of the exchange rate: The main objectives of the exchange rate management policies in Bangladesh have been to accelerate exports, reduce pressure of imports and thereby improve the balance of trade. Bangladesh followed a 'fixed exchange rate' system until 1979. Between 1979 and mid-2003, the country pursued a managed floating exchange rate regime. Continued devaluation of the domestic currency, in order to maintain a stable real exchange rate and avoid overvaluation of the domestic currency, was the hallmark of these regimes. Since the end of May 2003, Bangladesh had introduced a kind of 'clean floating' exchange rate policy by making it fully convertible on the current account, although capital account controls still remain. This flexible exchange rate management since 2003 has

served Bangladesh well and will be maintained in the Sixth Plan to protect the incentives for exports.

Monetary policy: The conduct of monetary policy will be to support lending for infrastructure and other productive industries in 2011, while discouraging lending for wasteful consumption. The Bangladesh Bank will monitor the financial stability of financial institutions, including state-owned and private sector banks, to ensure that there is smooth flow of liquidity in the economy. The Government is also supporting the reform program for public sector enterprises with a view to improving performance and minimizing losses, which will be a key to limiting pressures for credit expansion to this sector. While the interest rate structure will continue to be market determined, efforts will be made to reduce the spread between the lending and deposit rates by creating a more competitive environment in financial intermediation.

Special economic zones, industrial parks: The government is in the process of the creation of special economic zones across the country for both export and local market oriented industries based on the cluster principle of the collection of industries, brought together geographically for the purpose of promoting economic development. A key objective of SEZs and industrial parks would be to stimulate efficient use of skilled labor, land, infrastructure, energy and other resources as well as to facilitate backward, horizontal and forward linkages with local industries. The SEZs will also permit the relocation of pollution-prone and manufacturing enterprises from metropolitan areas. It is expected that the SEZs will trigger a significant flow of foreign and domestic investment leading to generation of additional economic activity and creation of employment opportunities. Furthermore the government will be flexible in using a variety of institutional structures ranging from fully public (government operator, government developer, government regulator) to ‘fully’ private (private operator, private developer, public regulator) as well as public-private partnership arrangements, in which the public sector provides some level of support to enable a private sector investor/developer to obtain a reasonable rate of return on the project in a time-bound way.

Export processing zones (EPZs): Currently there are eight EPZ’s in Bangladesh spread throughout the country .They are namely Dhaka EPZ, Chittagong EPZ, Mongla EPZ, Comilla EPZ, Ishwardi EPZ, Uttara EPZ, Adamjee EPZ and Karnaphuli EPZ. Total investments in EPZ’s aggregated to USD 1582.47 million till June 2009. Moreover BEPZA’s exports earnings stood at USD 2.58 billion. Presently, 300 industries are in operation in the EPZ’s of Bangladesh.

The main fiscal and non-fiscal incentives provided to manufacturing enterprises located in the EPZs are shown in Tables 2.7 and 2.8. These incentives will remain in place during the Sixth Plan to attract foreign and domestic investment focused on exports.

Foreign Direct Investment (FDI)

The investment climate of a country is very important determinant of the countries attractiveness to foreign investment. An interaction of openness and sound investment climate creates a sound regulatory environment for investment and production. Low levels of FDI have meant that Bangladesh has missed out on positive technology spillover. Recently

Table 2.7: Fiscal Incentives for EPZ Firms

Incentives – Fiscal	
1.	Tax holiday for 10 years followed by 50% rebate on export sales.
2.	Duty free import of const. materials, machinery/spare parts/equipments.
3.	Duty free export and import.
4.	Relief from double taxation.
5.	Exemption from dividend tax.
6.	GSP facility available.
7.	Duty free import of 2 vehicles.
8.	Expatriates exempted from income tax for 3 years.

Source: Export Promotion Bureau

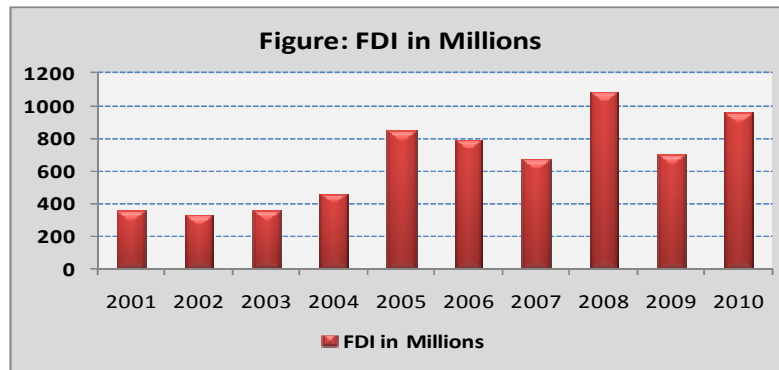
Table 2.8: Non-Fiscal Incentives for EPZs

Non-Fiscal Incentives	
1.	Investment protected under the Foreign Private Investment (Promotion and protection) Act 1980
2.	100% foreign ownership permissible
3.	Enjoy MFN status.
4.	No ceiling on foreign investment.
5.	Full repatriation of Capital and dividend.

Source: Export Promotion Bureau

though FDI has picked up in extractive industries, telecommunication and energy production, however it is still lagging behind in manufacturing. Studies have indicated that Bangladeshi firm with any level of foreign ownership are ten percent more productive on average than firms that are wholly domestically owned .Over the course of the past 15 years FDI has played a key role in the modernization of the Bangladeshi economy. There was an inflow of \$666m foreign direct investment in 2007 which increased significantly in 2008 to \$1086m. In 2009, inflows of foreign direct investment approached \$700 million (Figure 2.1).

Figure 2.1: FDI Investments in Bangladesh



Source: Bangladesh Bank

FDI policy framework: Evolution of the FDI policy in Bangladesh: In the late 1980s and the 1990s, Bangladesh announced a series of measures and liberalized its FDI policy framework. In recent years, Bangladesh has significantly improved its investment and regulatory environment, including the liberalization of the industrial policy, abolition of performance requirements and allowance of full foreign-owned joint ventures. Since 1996, new sectors have been opened up for foreign investment, including the telecommunications sector.

During the Sixth Plan the foreign direct investment is encouraged in all industrial activities in Bangladesh excluding those on the list of reserved industries such as production of arms and ammunitions; forest plantation and mechanized extraction within the bounds of a reserved forest, production of nuclear energy and printing and minting fresh currency notes. Such investments may be undertaken either independently or through joint ventures, either with the local, private or public sector. The capital market also remains open for portfolio investment. The policy framework for foreign investment in Bangladesh is based on the Foreign Private Investment (Promotion and Protection) Act, 1980, which provides measures for the non-discriminatory treatment and protection of foreign investment.

Incentives to foreign investment. The government has liberalized its industrial and investment policies in recent years by reducing bureaucratic control over private investment and opening up many areas. Some of the major incentives are tax exemptions for power generation, import duty exemptions for export processing, an exemption of import duties for export oriented industries, and tax holidays for different industries. Double taxation can be avoided by foreign investors on the basis of bilateral agreements. Facilities for the full repatriation of invested capital, profit and dividend exist.

Concessionary duty on imported capital machinery. Import duty at the rate of 7.5% ad valorem is payable on capital machinery and spares imported for initial installation or BMR/BMRE* of the existing industries. The value of spare parts should not, however, exceed 10% of the total cost and freight value of the machinery. Out of this, 7.5% rate of

duty payable, export-oriented industries and industries in the under-developed areas may enjoy a further concession of import duties as described in Table 2.9.

Value Added Tax (VAT) is not payable for imported capital machinery and spares. Duties and taxes on import of goods which are produced locally will be higher than those applicable to import of raw materials for producing such goods.

Intellectual property rights and investment protection: The government recognizes the importance of intellectual property rights for attracting FDI and is making efforts to update its legislation and improve enforcement. The country has been a member of the World Intellectual Property Organization (WIPO) since 1985 and signed the Paris Convention on Intellectual Property in 1991. The Foreign Private Investment (Promotion and Protection) Act of 1980 guarantees protection against expropriation. If a foreign investor becomes subject to a legal measure that has the effect of expropriation, adequate compensation will be paid to the investor.

Table 2.9: Import Duty Concessions

100% export oriented industries:	No import duty is charged in case of capital machinery and spares listed in NBR's* relevant notification. However, import duty at 7.5% is secured in the form of a bank guarantee or an indemnity bond to be returned after installation of the machinery.
Minimum 70% export oriented industries in developed areas:	Import duty at 2.5% is charged in case of capital machinery and spares listed in NBR's relevant notification. Additional duty at 5% is secured in the form of a bank guarantee or cash deposit to be returned after installation of the machinery.
Minimum 70% export oriented industries in developed areas:	Import duty at 5% is charged in case of capital machinery and spares listed in NBR's relevant notification. Additional import duty at 2.5% is secured in the norm of a bank guarantee or cash deposit to be returned after installation of the machinery.
Other industries outside developed areas:	Import duty at 5% is charged in case of capital machinery and spares listed in NBR's relevant notification. Additional import duty at 2.5% is secured in the form of a bank guarantee or cash deposit to be returned after installation of the machinery.
Other industries in developed areas:	Import duty at 7.5% is charged in case of capital machinery and spares listed in NBR's relevant notification.

Source: Ministry of Finance

Labor laws: Workers are entitled to elect collective bargaining agents (CBAs) to negotiate their demands with management. A trade union may be formed if 30 percent of employees support it. All trade unions need to be registered. There are 47 labor laws covering matters such as wages, industrial disputes, working conditions, etc. Foreign nationals can be employed as long as their number does not exceed 15 percent of the total number of employees.

Tax Policies for Manufacturing Sector

In order induce investment towards the manufacturing sector the Government has made various concessions in past and current Finance Acts (Box 2.1). In 1980 the income tax rates on companies were 60 percent compared to the 27.5% in the 2009-10 FY. The concessions are made to attract investment from both domestic and foreign sources and achieve rapid growth in the manufacturing sector. Tax policy during the FY11-15 will emphasize an expansion of the tax base and rationalization of the tax system. Although the fundamental structure of the tax system is sound, the extensive use of exemptions, incentives and other special provisions have resulted in a tax system that is prone to evasion. The resulting complex structure of trade taxes also gives rise to significant distortion in economic activity and undermines the equity of the tax system. The Internal Resources Division and the National Board of Revenue is reviewing the tax incentives and exemptions with the aim of broadening the tax base and ensuring greater tax equity.

Essentially the tax structure affecting incentives in the manufacturing sector can be broken down into 5 parts: a) corporate tax, b) tax holidays, c) exemptions, d) custom duty e) facilities for NRB. They are discussed in some details below.

Box 2.1: Additional incentives to export oriented and export linkage industries

Encouraging export oriented industries is one of the major objectives of the Industrial Policy 2010 in keeping with the Government's export policy. Among others, these facilities and incentives are offered:

- Concessionary duty as per SRO is allowed on the import of capital machinery and spare parts for setting up export-oriented industries or BMRE of existing industries. For 100% export-oriented industries no import duty is payable.
- Facilities such as special bonded warehouse against back-to-back letters of credit and exemption from Value Added Tax (VAT) are available as per SRO of the government.
- System for duty drawback is being simplified. The exporter will be able to get back the duty draw-back directly from the concerned commercial bank.
- With the intention of encouraging backward linkages, export-oriented industries including export-oriented readymade garment industries using indigenous raw materials instead of imported materials are given additional facilities and benefits at prescribed rates.
- Export-oriented industries are allocated foreign exchange for publicity campaigns and for opening offices abroad.
- Entire export earnings from handicrafts and cottage industries are exempted from income tax. In case of other industries, proportional income tax rebates on export earnings is given between 30% and 100%.
- Facilities for importing raw materials are given for manufacturing exportable commodities under banned/restricted list.
- Import of specified quantities of duty-free samples for manufacturing exportable products is allowed.
- Local products supplied to local projects against foreign exchange under international tender are treated as indirect exports and the producer is entitled to avail of all export facilities.
- Export oriented industries like toys, luggage and fashion articles, electronic goods, leather goods, diamond cutting and polishing, jeweler, stationery goods, silk cloth, gift items, cut and artificial flowers and orchid, vegetable processing and engineering consultancy services identified by the government as thrust sectors are provided special facilities in the form of cash incentives, venture capital and other facilities.
- Export oriented industries are exempted from paying local taxes (such as municipal taxes).
- Leather industries exporting at least 80% manufactured products will be treated as 100% export oriented industries.
- Manufactures of indigenous fabrics (such as woven, knit, hosiery, grey, printed, dyed, garment check, hand loom, silk and specialized fabrics) supplying their products to 100% export oriented garment industries are entitled to avail a cash subsidy equivalent to 25% of the value of the fabrics provided the manufacturers of the fabrics do not enjoy duty draw back or duty free bonded warehouse facility.
- Exemption of tax on income from industrial undertakings set up in an export processing zone for ten years from the date of commercial production.

Corporate taxes: The corporate tax rates in general have been rationalized over the course of time (Table 2.10). From the highs of 60% for public traded companies to 40% for the publicly traded industrial companies in the early nineties to 27.5% in 2010. This rationalization of corporate taxes has helped reduce the bias against the manufacturing sector as compared with income from land and stock holdings that mostly escape taxes.

Table 2.10: Corporate Tax Structure in Bangladesh

Income Tax Year	Public Traded Companies	Non Publicly Traded Companies	Banks, Insurance Companies and Other Financial Institutions
1998-1999	35%	40%	40%
1999-2000	35%	40%	40%
2000-2001	35%	40%	40%
2001-2002	30%	40%	40%
2002-2003	30%	35%	40%
2003-2004	30%	37.5%	45%
2008-2009	27.5%	37.5%	45%
2009-2010	27.5%	37.5%	45%

Source: Ministry of Finance

Tax holidays: The government has decided to continue with its tax holiday scheme for newly set up industries between 1 July 2008 and 30 June 2011. The tax holiday scheme is detailed out below:

(1) For industries set up in Dhaka and Chittagong (except three Hilly Districts) Divisions – 100 percent income for first two years; 50 percent of income for next two years; and 25 percent income for next one year;

(2) For industries set up in Rajshahi, Khulna, Sylhet and Barisal Divisions and three Hilly Districts – 100 percent of income for first three years; 50 percent of income for next three years; and 25 percent of income for next one year;

(3) Keeping the existing sectors under Tax Holiday intact the additional sectors included are agro-processing, diamond cutting, steel production from billet, jute industries, different units of textile sector, underground rail, monorail, telecom infrastructure except mobile phone.

Furthermore Accelerated depreciation will continue be until 30 June 2010 and tax holiday certificate will be issued by NBR for the total period within 90 days of submission of application. This facility can be availed of by industries set up within June30, 2000.

Exemptions: A number of exemptions are allowed. These include:

- Tax exemption on royalties, technical know-how fees received by any foreign collaborator, firm, company and expert.
- Tax exemption on income of the private sector power generation company for 15 years from the date of commercial production.
- Tax exemption on capital gains from the transfer of shares of public limited companies listed with a stock exchange.

- Special facilities and venture capital support will be provided to export-oriented industries under “Thrust sectors”.

Customs Duty: Considering the development needs of local industries, the Government has replaced the current three-tier customs duty structure by a four-tier structure consisting of:

- 1) 3 percent rate of duty on capital machinery and spare parts;
- 2) 7 percent rate of duty on basic raw materials
- 3) 12 percent rate of duty on intermediate raw materials
- 4) Highest slab, for finished goods, to remain at 25 percent. However, 0 percent duty of food stuff, fertilizer, medicines and raw cotton will continue.

Furthermore, duties and taxes on import of goods which are produced locally will be higher than those applicable to import of raw materials for producing such goods.

Supporting Institutions for Manufacturing Growth

Strengthening institutions is an essential part of a strategy to boost manufacturing growth, exports and employment in the Sixth Plan. Several institutions provide essential services that will be strengthened and motivated to provide better services to the manufacturing enterprises.

Board of Investment (BOI)

In order to boost up and promote private investment during the Sixth Plan, the Board of Investment will continue to perform its following mandated functions:

- a. promotion of investment;
- b. providing facilities for capital investment and rapid industrialization;
- c. registration of industrial projects, foreign loan agreements, royalty, technical know-how and technical assistance agreement wherever required;
- d. providing assistance to provide infrastructural facilities for industries;
- e. issuing work permits to expatriate personnel working in the private sector industrial enterprises;
- f. providing import facilities to industrial units in the private sector;
- g. approval of the payment of royalty, technical know-how and technical assistance fee to foreign nationals/organizations beyond the prescribed limits; and
- h. Recommendations for acquisition and allotment of land in the industrial areas/estates for industrial purpose.

Privatization Commission (PC)

The Privatization Commission is entrusted with the overall responsibilities of privatizing state-owned enterprises (SOE) identified for privatization. Ministries having state-owned enterprises under their control have set up privatization cells for assisting the Privatization Board in identifying, preparing, processing, implementing and monitoring SOEs for privatization. The process of privatization till the end of 1996 was not very satisfactory. The Privatization Commission has been reinvigorated to undertake the process of privatization of industrial, commercial and state owned enterprises in an orderly manner. In order to materialize the targets, the Privatization Commission will take-up the following measures to:

- develop selection criteria, recommend SOEs for enlistment in the privatization program and subsequently take measures for the transfer of such enterprises to the private sector.
- determine the priority and sequencing of such privatization, including a detailed work plan and time table for the various enterprises proposed to be transferred;
- identify the optimal methods such as public offering, private placement, sale of assets, management contracts, leasing or management/employee buy outs by which the process of privatization will be implemented in particular cases;
- co-ordinate among and recommend to the Ministry of Finance, Ministry of Jute, Ministry of Textiles and other relevant ministries and agencies steps which may be necessary for the successful privatization of the enterprises, such as revaluation of the enterprises, restructuring of debt in accordance with sound financial principle, retrenchment of redundant workers, closure of obsolete facilities of the enterprises;
- formulate and revisit privatization policies from time to time and advise the government with regard to private sector development, investment and participation in previously reserved sectors such as telecommunication energy and power organize public information campaign about the merits and benefits of privatization; and
- undertake any other activities connected with privatization.

Chamber of Commerce and Industries (CCI)

Under the present policy of private sector led export-oriented growth, the responsibility of the private sector has increased tremendously. Private Sector is now considered to be the pivotal economic player. During the Sixth five year Plan the institutional capability of the Federation of Bangladesh Chambers of Commerce and Industry (FBCCI) and its member organizations will be developed and strengthened so that they can lead the private sector to perform its role so as to attain higher growth target. To prevent unfair trade practices, in particular, circumvention of domestic and foreign laws, rules and regulations, these bodies will be encouraged to put in place appropriate code of conduct for their members to observe. With this end in view necessary promotional and support services will be provided to FBCCI and other chambers to improve their institutional capability so that they can discharge their functions for promotion of trade, investment and industry.

Export Promotion Bureau (EPB)

In the wake of the establishment of the World Trade Organization to administer GATT 1994, GATS (General Agreement on Trade in Services) and TRIPS (Trade Related Aspects of Intellectual Property Rights) under an integrated Dispute Settlement Mechanism, the Bangladesh Export Promotion Bureau (EPB) will have to play a dynamic role to achieve the following objectives: (i) to identify obligations of the government to the business and industrial community of the country, to customers abroad as well as under contracts, agreements, arrangements, conventions, etc. of WTO and other relevant international/regional organizations and take all necessary steps towards meeting these obligations; (ii) to remove existing regulatory constraints; (iii) to provide policy support comparable with those of other competing countries; (iv) to provide improved services for export promotion activities; (v) to provide access to supportive infrastructure services; (vi) to improve entrepreneurial and managerial capabilities through human resources development and (vii) to implement export development program to help expand and diversify the range of exportable products. Towards the fulfillment of the above objectives, EPB will be required to be revamped in conjunction with effective private sector co-operation and collaboration, including establishment of a joint institute of foreign trade involving representatives of both public and private sectors.

Bangladesh Tariff Commission (BTC)

The Tariff Commission will carry out in-depth studies and formulate policies for further tariff rationalization, liberalization of the import regime and evolving an incentive structure for strengthening the domestic production and export base. It will review, on a continuing basis, the tariffs on imported inputs – raw materials and intermediate inputs – as well as on capital goods. While rationalizing the tariff structure, adequate attention will be given to ensure that inputs for any domestic product are not subjected to rates of duties and taxes higher than those on competing finished imports and that the domestic industries do not suffer loss because of dumping on the one hand and denial of access to foreign market on the other. The BTC will establish effective co-ordination with the National Board of Revenue (NBR), the Bangladesh Bureau of Statistics (BBS), the Bangladesh Bank (BB), the Ministry of Planning/Planning Commission and the Ministry of Commerce for establishment of a rational and dynamic tariff structure consistent with existing government policy of pursuing free market economy. For discharging its functions more effectively, BTC will build up its capacity further through necessary strengthening and up gradation as well as human resources development.

Bangladesh Standard Testing Institute (BSTI)

Standardization is the gateway to trade and industrialization. A well conceived standardization program lays the foundation for growth of domestic production, protection of consumer interest through ensuring requisite product quality and progressive assimilation of imported technology through adoption and adaptation. Standardization of products as well as of inputs minimizes wastage of resources and ensures compatibility of manufacturing processes and practices. In view of these factors, during the Sixth Plan period, the performance of the

Bangladesh Standard Testing Institute will be reviewed and effective measures will be introduced to enhance its functional capability through necessary expansion and modernization. Some vital components of modernizing the Institute will be strengthening its methodology, quality control and testing sections and induction of sufficient number of quality professionals into it.

Bangladesh Institute of Management (BIM)

In the Sixth Plan period, BIM will conduct research on management development and will impart training on socio-economic and other functional areas of management. The main objectives of the institute will be to : (i) upgrade the existing centre to a self-sustained higher institute of training , research and learning, (ii) train and develop managers at all levels of the economy, (iii) assist, develop and maintain higher productivity in business and industry through adoption of technological and engineering innovation and services, (iv) give consultancy services for solving management and related problems faced by various sectors of the economy, and (v) carry out research in different fields of management, economics and business. Activities and courses will be designed and implemented to support private sector industrial and business units.

Bangladesh Industrial Technical Assistance Centre (BITAC)

The Bangladesh Industrial and Technical Assistance Centre (BITAC) have been providing technical and advisory services to the entrepreneurs. Presently BITAC Dhaka, Chittagong, Chandpur and Khulna are in operation. During the Sixth Plan the performance of existing centers will be duly evaluated and new centers will be established keeping in view the needs of the industrial areas. BITAC will assist the private sector entrepreneurs, particularly the small entrepreneurs, to solve their technical problems as well as in adopting/adapting new technologies in their production practices.

National Productivity Organization (NPO)

The National Productivity Organization (NPO) was established in 1989 under the Ministry of Industries. The institutional capability of this organization will be further developed to create productivity consciousness and awareness to the people for launching productivity as a national objective to be pursued by a national movement in the country, undertake program for human resource development for productivity improvement, build productivity infrastructure and convert industrial enterprises into an efficient and profitable organization, work as a catalyst to promote plant-level productivity through consultancy services, conduct survey, study and research work on productivity, and assist the government in formulating productivity policy.

SPECIFIC LARGE AND MEDIUM SCALE MANUFACTURING ACTIVITIES

The philosophy of the current government is for Bangladesh to attain middle income status by 2021. It is felt that the industrial sector has to fuel the much needed dynamism that is required to attain the challenge of earning middle income status. In line with this belief the government has identified three pivotal aspects of the industrial sector of Bangladesh that has to be further developed and improved. These three pivotal areas are a) promotion of domestic content in output, b) wherever practicable substitution of imports and c) sustainable development and husbandry of export oriented industries .Moreover the government aims to create a more investor friendly atmosphere for both local and foreign investors to fuel industrial growth. Moreover the government aims to improve access of khas land for industrial usage and more efforts will be directed at setting up EPZ and SPEZ .In order to unleash the large scale industrial sector the government is taking an integrated approach i.e. there will be increased concentration in improving the infrastructural needs of industrialization and improvement in the financial sector. The government realizes that in order to extract the true potential of the labor and improve total factor productivity the labor force has to be trained further both vocationally and academically and hence various government agencies will work very closely to the industrial sector in order to improve the skill gap. In order to improve Bangladeshi goods the government would support the sector by aiding and encouraging them to carry out .Research so that the goods produce could be of high value and unique and thus greater value exports. Finally it is the firm belief of the government that the private sector would be the leader of industrial development and there the government aims to aid this sector by various policy measures including industrial policy.

The Readymade Garments (RMG) Sector

The Ready-Made Garments (RMG) industry contributes to the Bangladesh economy in a distinctive manner. The last 20 years witnessed unparalleled growth in this sector, which is also the largest exporting industry in Bangladesh. It has attained a high profile in terms of foreign exchange earnings, exports, industrialization and contribution to GDP within a short span of time. The industry plays a significant role in terms of employment generation. Nearly three million workers are directly and more than ten million inhabitants are indirectly associated with the industry. In addition to its economic contribution, the expansion of RMG industry has caused noticeable changes by bringing more than 2.5 million women into the workforce. RMG's growing contribution to GDP is remarkable; it has reached 13 percent of GDP in 2010 compared to about 3 percent in 1991. It also plays a pivotal role to promote the development of other key sectors of the economy like banking, insurance, shipping, courier services, hotel, tourism, road transportation, railway container services, etc.

Since the inception of the trade liberalization program in the early 1990's, the RMG sector has grown by leaps and bounds (Table 2.11). From a miniscule share of about 4 percent in total exports in the early 1980s, garments now constitute more than 80 percent of total exports from Bangladesh, raking in nearly \$12.5 billion of foreign exchange, out of total export earnings of

\$15.5 billion in 2008-09. Net domestic value addition—hitherto a weak point, on account of the heavy dependence of the sector on imported fabrics, yarn and accessories—has risen substantially, so much so that nearly 60 percent of the required inputs are now domestically sourced, as compared to a mere 36 percent in 1991-92.

Table 2.11: Growth of the RMG sector

Year	Export Volume ('000 dozen)	Export Value (US\$ million)	Share in Total Exports (%)
1990-91	30,566.60	866.8	50.5
1995-96	72,005.00	2,547.10	65.6
1999-2000	111,905.80	4,349.40	75.6
2001-02	140,444.60	4,583.80	76.6
2002-03	152,013.00	4,912.09	75.1
2003-04	182,080.00	5685.76	74.8
2004-05	212,390.00	6424.27	74.8
2005-06	273,840.00	7899.59	75.1
2006-07	332,620.00	9211.31	75.6
2007-08	389,030.00	10699.8	75.8
2008-09	460,510.00	12348.2	79.5

Source: Bangladesh Bureau of Statistics

One of the key advantages of the RMG industry is its cheap labor force, which provides a competitive edge over its competitors. The sector has created employment opportunities for about three million people of which 80 percent are women who mostly come from rural areas. Notwithstanding the fact that this sector's emergence and expansion is the direct outcome of the global MFA regime, there is no denying that it has had a stellar impact on overall economic growth, income generation and poverty reduction in Bangladesh

A Snapshot of RMG Sector: Since the late 70s government initiative such as special bonded warehouse schemes, duty drawback systems and export policy reforms (mid eighties) all helped the RMG sector to operate in almost a free trade environment .Currently, there are nearly 5,000 RMG firms in Bangladesh. More than 95 per cent of those firms are locally owned with the exception of a few foreign firms located in export processing zones. The RMG firms are located mainly in three main cities: the capital city Dhaka, the port city Chittagong and the industrial city Narayanganj. Garment companies in Bangladesh form formal or informal groups. The grouping helps to share manufacturing activities, and to diversify risks; horizontal as well as vertical coordination can be easily found in such group activities.

Readymade garments manufactured in Bangladesh are divided mainly into two broad categories: woven and knit products. Shirts, and trousers are the main woven products and undergarments, socks, stockings, T-shirts, sweaters and other casual and soft garments are the main knit products. Woven garment products still dominate the garment export earnings of the country. The share of knit garment products has been increasing since the early 1990s; and now accounts for just over 50% of the country's total RMG export earnings. Although various

types of garments are manufactured in the country, only a few categories, such as shirts, T-shirts, trousers, jackets and sweaters, constitute the major production-share. The United States was the main export destination for Bangladeshi RMG products in the early 1990s followed by the European Union, but the European Union has surpassed the United States over time. These two destinations generate more than 90 per cent of the total RMG export earnings of Bangladesh (Table 2.12).

Table 2.12: Bangladesh RMG Exports to EU and US (in million USD)

Year	EU	US
2007	6036.2	3191.2
2008	6480.2	3537.5
2009	6998.7	3519.7
2010	7783.7*	4076.3*

Source: Export Promotion Bureau

**Annualized*

It is important to note that the RMG sector helped create jobs in complementary industries or services, such as accessories, packaging, toiletries (demanded by newly employed female RMG workers), courier, finance, transport and telecommunications services, etc. BGMEA claims that the RMG sector creates as many jobs in these complementary enterprises as there are in RMG units themselves. Although RMG operates in a free trade enclave environment, its growth is clearly based on Bangladesh's comparative advantage in a labor- and non-skill intensive activity – one that has been sustained by trade and exchange liberalization in addition to the quota regime offered under the MFA.

Challenges for the RMG Sector

While the export-quota system cushioned the Bangladesh RMG industry, enabling it to remain competitive as a prominent garment supplier in international markets until 2004, the phase-out of the system was expected by many analysts to threaten the very survival of this industry. That apprehension was proved wrong as RMG exports continued to grow after 2005 putting Bangladesh securely on the world map as a leading exporter of garments. Yet there are challenges. Backward and forward linkage expansion, meeting compliance standards, product/market diversification and upgrades are some important strategies for the industry to improve competitiveness and seize global opportunities.

Linkage Expansion

Thanks to domestic investments in textiles, the consumption-production gap of yarn decreased over time, although actual consumption increased every year. The fabric-manufacturing capacity of the country also increased over time. Such a trend indicates that the linkage expansion process of the Bangladesh RMG industry, started in the early 1990s, has not lost momentum. Still, many garment manufacturers in Bangladesh are prefer using imported raw materials instead of using local raw materials owing to price and quality differences. The price

of RMG inputs supplied by local sources is relatively high. Bangladesh is just a price taker in sourcing RMG inputs from external sources, whereas competitor countries such as India and China have a certain level of influence on RMG input pricing, as they themselves are prominent textile suppliers in the world market.

Compliance Issues

In addition to speedy supply, the social dimensions of the RMG industry are getting more attention from consumers, social workers, welfare organizations and brand name international buyers. Currently, many international buyers demand compliance with their “code of conduct” before placing any garment import order. Although Bangladesh was able to solve the problem of child labor very successfully in the mid-1990s, the country’s performance in improving the factory working environment is not yet satisfactory. Informal recruitment, low literacy levels, wage discrimination, irregular payment and short contracts of service are very common practices in the RMG factories in Bangladesh. It is true that the country still enjoys some comparative advantage in manufacturing garment products based on low labor costs. However, such advantages cannot be sustained forever nor can they be expected from a humanitarian perspective. Rented factory premises, narrow staircases, low roofs, closed environments, absence of lunch rooms, unavailability of clean drinking water and no separate toilets or common rooms for female workers, low wages etc are other concerns in the garment factories of Bangladesh.

Product and Market Composition

The product and market composition of garments from Bangladesh requires special attention to ensure the long-term sustainability of the Bangladesh RMG industry as a prominent supplier in the global market. The export-quota system diverted the attention of some international garment suppliers from quantitative expansion to qualitative improvement of exportable garment products. China and other competitor countries took that opportunity, but Bangladesh failed to do likewise. The country stands far behind in the race to upgrade products compared with its rivals. Bangladesh is still focused on manufacturing lower-end products, although recently the country has emerged slowly from being a lower-end producer towards becoming a middle/high-end producer, from being a simple male-wear producer to become a producer of fashionable female wear. Strengthening the process of upgrading products is very important for the Bangladesh RMG industry if it is to enhance its competitiveness and continue to augment foreign exchange earnings.

Medium-term Goals for the RMG Sector

- Diversify export destination.
- Improve supply of both skilled and unskilled workers.
- Improve the availability of more skilled people in the managerial levels
- Further product diversification
- Vertical integration, developing brand name

- Improve competitive edge through higher productivity, investment in R&D
- Produce more high value goods

Strategies under the SFYP

- Have both Bilateral and Multilateral agreements with various countries
- BGMEA and BKMEA will have to invest more in their training facilities to increase and improve on both coverage and training curriculum.
- Improve capacity of owners of RMG by providing training on how to move up the value chain.
- Public infrastructure (such as electricity and roads etc) would have to improve to ensure that RMG factories are operating at full capacity.
- Political stability along with other features pertinent to the enabling environment has to be improved in order to attract more FDI and make the business environment more conducive for business.
- Greater use of IT in order to quicken the pace at which business is conducted both with local and international counterparts.

Non-RMG Textiles and Selected Thrust Industries

Non-RMG Textiles

The non-RMG textile industry has gained added significance with the emergence of the RMG sector. The textile industry provides the very important backward linkage in terms of raw materials for RMG as well as for the domestic market. Indeed with the growth of per capita income, the domestic demand for textiles has grown rapidly and has provided the basis for a buoyant textiles market.

Challenges faced by Textile Industry

The textile sector as a whole faces various constraints and problems majority of which are described as under:

- i. Inadequate infrastructure and logistic support: port and shipping, road and telecommunication, E-commerce etc.
- ii. Shortage of skilled manpower: particularly in weaving & dyeing-finishing.
- iii. Dependence on imported raw cotton (Basic raw material);
- iv. Fast changing technology (costly for investors);
- v. Competition with low cost countries like Vietnam, Cambodia, Indonesia, Nepal, etc.
- vi. Weak immediate backward linkage of export-oriented RMG i.e. weaving & dyeing – finishing.

Policies and Medium-term Goals in the Textile Sector

- a. To attain self reliance in supply of textile products for domestic market as well as supply of yarn and fabrics required for export-oriented readymade garment industry of the country through establishing backward linkages and to ensure direct export of textile goods by expanding production of quality fabrics at competitive prices.
- b. To enable textile sector to play the major role for economic development of the country by creating more employment opportunity, enhancing export earnings and value addition.
- c. To ensure integrated development of Primary Textile Sector such as spinning, weaving, knitting, dyeing-finishing, hosiery, terry-towel, handloom, sericulture and silk industry to play their appropriate roles based on integrated planning and efficient implementation.
- d. To create scope for marketing of textiles and RMG products by ensuring duty free access in global markets.
- e. To create investment friendly special fund for financing new investment in the textile sector in line with the facilities provided by the competing countries.
- f. To create facilities for development of skilled human resources for textile sector in order to make the products competitive in the global market by increasing productivity and quality.
- g. To place emphasis on product diversification and their marketing.

Strategies under the SFYP

- i. To facilitate setting up of new textile mills in different regions to meet the present and future demand gap of textile products for the domestic market and export demand.
- ii. To set up new educational and training institutes to meet the demand gap of manpower needed for rapidly expanding textile mills;
- iii. To increase skill levels of the technical and marketing manpower employed in the existing industry;
- iv. To make the textile products competitive in the domestic and export market through increasing productivity, quality and competitiveness.

Jute Industry

Jute Industry has long been playing a significant role in the national economy of Bangladesh. Soon after independence of Bangladesh, Jute mills under private ownership including abandoned Jute Mills and the then EPIDC sponsored Jute Mills were nationalized through promulgation of the Bangladesh Industrial Nationalization Order-1972 and the responsibility for managing, supervising, controlling and co-coordinating the activities of the mills were

vested with Bangladesh Jute Mills Corporation (BJMC). Subsequently in pursuance of the Privatization Policy, 50 mills have been privatized during 1977 to 1985-86, 2 mills have been scrapped and another 2 mills handed over to the Privatization Commission. So there remain 27 Jute mills under BJMC including 3 closed mills and 3 non-jute mills. At present, there are 88 mills under Bangladesh Jute Mills Association (BJMA) – the association of privately owned jute mills - including 38 denationalized and 50 mills established by the members of BJMA. The jute sub-sector has been making considerable contribution to the economy by exporting jute and jute products and a large number of workers are involved in jute and jute goods production. Majority of the locally produced raw jute are used in the domestic mills and the remaining jute and jute goods are exported to overseas countries.

Challenges faced by the Jute Industry

- i. Inadequate availability of good quality seeds. (ii) Jute products have to compete with low cost packaging products of polypropylene / man-made fibers;
- ii. Rotting of raw jute is a major problem for the farmers of the areas where water is not available;
- iii. The cost of production of jute goods in public mills tend to be high due to engagement of excess labor;
- iv. Power shortage is a major problem for attaining desired level of production;
- v. Due to lack of aggressive marketing, jute products cannot enter into new overseas market;
- vi. There is no legal provision/Act to make the use of local jute products compulsory in the domestic market.

Policies & Medium-term Objectives

- i. Production of raw jute and jute goods according to their demand in the domestic and export markets;
- ii. Proper coordination between Ministry of Agriculture and Ministry of Textiles and Jute for ensuring production of good quality seeds. To encourage raw jute growers to use high yield and quality jute seeds.
- iii. To encourage the farmers for adoption of modern technology and use of appropriate fertilizers;
- iv. Improvement of productivity through use of modern machinery;
- v. To initiate integrated measures including but not limited to marketing and promotion campaigns for increasing production of eco-friendly raw jute and jute goods for consumption in the domestic and export markets;
- vi. Appropriate initiative for increased production and marketing of diversified jute products.

vii. All possible efforts will be made to make the public sector jute mills profitable.

Strategies under the SFYP

- i. Modernization of old machinery of public and private sector jute mills for improving productivity and quality of products;
- ii. Facilitating the establishment of new jute spinning, weaving and finishing units with modern technology to make the jute products competitive in the domestic and export markets;
- iii. Appropriate initiatives for human resource development will be made for improvement of productivity and quality of jute products.
- iv. Proper marketing networks will be developed and promotion campaigns undertaken for increasing the overseas market for jute goods;
- v. The new entrepreneurs will be encouraged to produce diversified and high valued jute goods including technical textiles, geo-jute textiles, and health care, automotive parts and bodies etc.
- vi. Research activities on jute cultivation and jute product manufacturing should be brought under the Ministry of Textiles and Jute with effective coordination maintained with private associations, BJMA and BJSA.
- vii. Activities of Jute Research Institute will be revamped to facilitate innovation and creation of diversified jute products that can cater to the latest demands of consumers at home and abroad.

Footwear and Leather Industry

Bangladesh is on course to be the next manufacturing hub for the global footwear industry. Many international manufacturers are now interested in setting up factories in Bangladesh mainly due to a good supply of cheap labor. Moreover a number of foreign investors have planned to setup their factories in the EPZ's. Buyers from the EU and Japan are showing a lot of interest in Bangladeshi produce. All in all, the footwear sector seems very promising but competition from China, India and Vietnam is severe. Exports of footwear doubled from about US\$100 million in 2007 to US\$ 204 million in 2010. Further surges in growth in export are expected from Bangladesh despite competition from China, India and Vietnam who already possess a well developed leather and footwear export industry. The growth in footwear exports will aid in achieving the goal of export diversification and will act as a safeguard against fall in revenue from leather products for instance. Given the economic slowdown high priced products may register negative growth as consumers tighten their finances and look for slightly low priced goods. This provides a golden opportunity for Bangladesh and mainly for the footwear and leather sector to increase its share. With a good policy environment this sector is likely to succeed and follow in the footsteps of RMG.

Leather manufacturing is one of the oldest manufacturing sub sectors in Bangladesh. Essentially there are three broad components of the leather industry and they are a) leather tanning, b) leather footwear and c) carry bags, wallets etc. The industry requires modest level of fixed capital and mostly uses hand tools and sewing machines. Moreover, most of the enterprises may be classified in the small to medium category. Most of the entrepreneurs take advantage of the liberalized trade regime and import significant part of their inputs from abroad and manufacture footwear inputs locally. However, initially availability of footwear based imported ingredients has been one of the key factors in spurring the growth of small footwear making enterprises in Bangladesh.

Interestingly, pre-1990 there was no export of leather footwear and during 1990-91 export of leather footwear stood at a paltry US\$ 2.8 million. Since 1990, however, export of leather and leather products increased from US\$137 million in 1990-1991 to US\$ 415 million by 2007-2008 having a trend growth rate of 11.6%. As of 2010-11 the country has a fixed export target of US\$ 564 million. Industry analysts have argued that given the rapid growth of exports the 1billion mark can be reached by FY 2012-13. Furthermore the demand for Bangladesh leather is picking up pace mainly due increase in production cost (wages in particular) in competing countries. The government's decision to allow concessionary 1% duty on export oriented capital machinery also had a major positive impact on the sector. Given the high quality leather and leather products that Bangladesh produces at the moment the export contribution is likely to jump in the near future. Bangladesh has to gear up and be able to deliver on its orders to stamp its authority in this market as orders from China and India are shifting to the local manufacturers. Many buyers from China are coming to Bangladesh for the low cost of production. Moreover many European buyers are trying to take advantage of the duty-free export facility to the EU as an additional 16.5 percent tax is levied on footwear exports from China.

Challenges Faced by the Footwear Industry

Some of the challenges faced by the footwear and leather industry are common to other industries as shown in the constraints to manufacturing section. Listed below are some industry specific challenges:

- Lack of an integrated comprehensive policy with proper inputs by all the stakeholders such as exporters, government, suppliers and buyers;
- Shortage of adequately trained and skilled human resources for production as well as for managerial personnel in the leather footwear industry;
- No training institute or facilities for skill development;
- No support industry in terms of linkage factories such as lasts, cutting dies etc, so there is a high import dependence thereby reducing price competitiveness as well as increasing lead times;
- Low awareness amongst international buyers as not enough factories are working in the industry

- Poor representation in major international product fairs and shows;
- No design, product development or product testing capability in the country;
- No awareness of international quality standards such as eco-labeling and packaging, occupational standards and environmental management requirements and their growing importance to foreign buyers;
- Lack of a suitable enabling environment in the customs facilities of the country at time of import of raw materials, due to harassment and delays in clearance;
- Inadequate working capital finance as most banks insist on Master L/C and back to back L/C procedures for import. Unfortunately in today's highly competitive market most buyers no longer operate on L/C. Our competitors offer much easier payment terms such as open account, D/A basis delivery, etc;
- No easy access to the local market for exporters, making them highly vulnerable to the perils of stock lots and cancellations. In China as well as India up to 50% of the total output can be sold onto the local market, whilst still enjoying exporter status. In contrast, in Bangladesh local sales are taxed at such high rates of duty which makes the price too high for the mass market;
- Political instability may be a binding constraint.

Medium-term Goals

- Be a market leader in producing high quality but low cost shoes and products.
- Simplify the process of setting up of leather industries.
- Make the production and disposal process environmentally safe.
- Improve the communication strategy to international markets so that more people are aware of Bangladesh as an upcoming market player.
- Improve the trade environment further to help the industry expand.
- Recruit high quality managers and workers.
- Modernize production techniques and communication strategies

Strategies under the SFYP:

- Set up training institutes to train workers and managers and potential designers.
- Advise private and public sector financial institutions to design financial products tailor-made for this sector.
- Bangladesh missions abroad should start up information campaign and host trade shows to bolster the industry.
- Design an integrated policy for the industry
- Provide more favorable import and export regimes.

Light Engineering Industry (LEI)

LEI sector plays an important role in the economy in terms of its contribution to employment, output, value addition and exports. Essentially, LEIs are labor intensive industries requiring

less capital and generating more employment per unit of capital. This sector has been playing an important role in the growth of many industries by supplying various types of machines, spare parts and providing essential repair services (Box 2.2). Most industries of the manufacturing sector has been historically dependent on imported machines and analysts have suggested that if Bangladesh is able to produce high quality light machinery then value addition of most products that are exported will rise significantly. LEI sector comprises of various types of engineering enterprises and a most of them are small in size comprising of

Box 2.2: Product Lines of LEI

Automobile Sector: The areas of work in this sub-sector cover Bracket, Accelerator, Brake Drum, Bubble, Oil Expeller, Bumper, Bush, Carburetor, Clutch, Crankshaft, Cylinder, Dies, Differentials, Engine Over Hauling, Fans, Free Ball, Gasket, Gear & Pinion, Gudgeon Pin, Hatch Bolt, Head, Hubs, Jack, liner etc.

Marine: Accelerator, Bush, Crankshaft, Differential, Diesel Engine, Fans, Petrol Engine, Liner, Piston & Piston Ring, Marine Spare Parts, etc.

Agricultural Sector: The line of work of LE for this sector (Agriculture) mostly relates to Power Tiller & Spare Parts, Generator, Irrigation Pump, Crankshaft, Gear & Pinion, Piston & Piston Ring, Bearing Case & Cover, Bush, Chain Cover, Chassis Bas, Gland, Grass Cutting Machine, Garden Sprayer, Insecticides Sprayer, Hubs, Liners, Suction, Tube well etc.

Textile: Handloom, Power loom, Spare Parts of all Textile Machinery, Bobbin, Bracket, Carding, Die, Dye, Gear & Pinion, Liner, Pulley, Ring, Silver Can, Spinning Tubes, Spinning Can, Dobbins & Jacquards, Timing Wheel, Rubber Roller, Twisting Machine, Doubling Machine, Scroll Roller etc.

Capital Machinery: Lathe Machine, Packaging Plant Machinery, Precision Welding Machine, Power Loom, Biscuit & Bakery Plant, Washing Plant, Printing Machinery, Laminating Machine, Color Paint machine etc.

Jute & Tea: Precision Winding Machine, Jute Mill Machinery Spares, Base Plate, Softener Machine, 48/64 Pair Roller, Spare Parts of Jargon Broad Loom, Complete Tea Processing Plant etc., are very well covered by LES.

Construction: Concrete Mixture, Brick Crasher, Crane, Grill & Window, Door, Grand Roller, Roof Whist Machine etc are successful examples of the performance of LES.

Food Processing: Biscuit & Bakery Plant, Spare Parts of Sugar Mills Machinery, Flour Mill, Shemai & Noodles Making Machines, Juice (Sugarcane) Machine etc., are very economically fabricated and supplied by the fellow members of LES.

Furniture: Household furniture, office furniture & equipment etc., made of steel, wrought iron, fiberglass, laminated board, are the recent line of work which is well accepted in the market.

Other Machinery & Spare Parts: All types of Bearing, All kinds of Pump, Gas Regulator, Lock Wing Cock, Forged Elbow & Service Tee, Cast Iron Elbow & other Spare Parts for Gas Sector, Machinery & Spare Parts of Poultry, Blister (Pharmaceuticals Sector) etc.

Source: A strategy for developing the Light Engineering sector of Bangladesh – August 2008

10-49 workers. As of June 2010 there are about 40,000 LE firms generating 0.6 million jobs. Moreover about 12200 LEI firms enlisted with Bangladesh Small and Cottage Industries Corporation (BSCIC). The main products of this sector are metal, electrical, electronic and electromechanical products. Since this sector plays a pivotal role in fuelling growth in a number of sectors such as jute textile, food processing, fertilizer, shipping, marine transport,

automobiles etc it has received special attention from past and present industrial policies of the government. In 2005, 2009 and 2010 this sector has been considered as a thrust sector for development. Moreover, the current and past Export Policy has highlighted the LEI sector as a priority sector.

LEI enterprises are spread across the country. Table 2.13 below indicates the concentration of various products across Bangladesh.

Table 2.13: Regional Product Concentration of LEI

Region	Product Concentration
Rangpur	Concentration on spare parts of automobiles, railway, mills, maintenance works etc.
Sylhet	Concentration on spare parts of factories, mills, maintenance works etc
Dhaka/Gazipur /Narayanganj	Concentration on capital machinery, bicycle, construction equipment and spare parts of automobiles, factory mills, maintenance works etc
Barisal/Khulna	Concentration on spare parts of mills, factories and industries, maintenance, works, etc
Bogra	Concentration on foundry, agro machinery, spare parts of mills factories, LPG Cylinder and maintenance works etc
Chittagong	Concentration on spare parts of shipbuilding automobile, industries ,factory mills and maintenance work etc

Apart from a few items most light engineering products are mainly produced for the local market. The LE products are mainly exported to the EU and the US. Exporters receive 10 percent cash incentive from government on export value. Furthermore along with this benefit LE products from Bangladesh also enjoy zero duty under the GSP facility in the European markets. In general products that are exported include paper and Cement Mills, Bicycle, fancy light fitting, battery, voltage stabilizer, Iron chain etc. The share of light engineering goods in total exports have gone down in the past few years however in the first half of the 2000`s the export of LEI items increased substantially (Table 2.14). Given the massive potential for the sector (both catering domestic needs of rapidly growing industries and international demand) the focus should be to obtain greater show casing of local works in international markets. Given the focus on having a strong manufacturing sector the next few years will be crucial for strengthening LEI and reducing and managing the challenges that the industry faces.

Table 2.14: Export of Light Engineering Products (million US\$)

Products	2006-07	2007-08	2008-09
Engineering Products Total	236.91 (1.95)	219.68 (1.56)	189.48 (1.22)
Bicycle	54.05 (0.44)	64.28 (0.46)	84.54 (0.54)
Iron Chain	9.66	2.09	1.62

	(0.08)	(0.01)	(0.01)
Others	173.2 (1.42)	153.31 (1.09)	103.32 (0.66)
Total Exports	12170.3	14108.37	15561.85

Source: Export Promotion Bureau

Key Challenges Facing LEI

- Occasional price hike of raw materials such as scrap, sorted scrap, plain carbon steel, alloy steel etc
- Certain special and high quality raw materials are required for some specialized items which need to be imported after being subject to high duties.
- Entrepreneurs entering this market have very little basic education and training and thus expansion of business and production of high quality products become tough.
- Little or no R & D and thus the industry depends on learning-by-doing.
- Very little working capital available.
- Obtaining bank loans can be cumbersome.
- Extremely difficult to get financial support for technological innovation.
- Lack of metal testing facility making it difficult to identify the metal and its quality.
- Lack of Heat testing facility
- Lack of skilled manpower for product diversification
- Power cuts
- Poor marketing techniques by unqualified managers
- Lack of designing ability.

Medium-term Objectives

- Develop a LEI which would strive to be a regional leader in producing spare parts, basic electrical equipments and components
- Improve quality of finished products.
- Have more diversification in the types of LEI goods that are now being exported.
- Improve the skill of the labor force such that they are able to cope with international orders
- Encourage R & D in the sector so that firms are able to innovate and introduce new technology.
- Provide encouragement to entrepreneurs to invest in this sector.

Strategies under the SFYP

- Banks would be encouraged to design financial products that would be suited to the sectors needs.
- Show-casing of potential talent in the labor force and products in international trade shows. Bangladeshi Missions abroad will have to play a key role in this.

- Provide financial incentive along with holding training sessions and workshops to aid entrepreneurs and managers.
- Develop testing facilities to improve the quality of both inputs and finished products.
- Develop specialized degree/certificate programs to obtain an increase in skilled labor so both the design and making of the product takes place in Bangladesh thus having more value addition.

Pharmaceutical Industry

Pharmaceutical industry is one of the most promising sectors in the economy. After the promulgation of the 1982 Drug Control Ordinance the industry took off. The knowledge, innovative thoughts and ideas of the professionals working in this sector are the key factors for the development of the sector. The sector has been supplying about 97 percent of total medicine requirement of the local market. Due to recent improvements and development in this sector it has been successful in exporting medicines to the global market including the European market. Furthermore with growing local and international demand a number of new companies are being established with high tech equipments and skilled professionals. Industry analysts have suggested that due to healthy investment and favorable government policy to explore foreign markets the sector has grown by 13 percent in 2010 this compares relatively well (given the low starting point for Bangladesh) with other countries such as India and China which has grown by 21 and 18 percent in the same year (Source: Armttek Pharma LLC, Consulting firm). With over an investment of 250 million USD the sector has emerged as a major player in the Bangladeshi economy. From humble beginnings, pharmaceutical exports are expected to reach \$45 million in 2010-11.

Bangladesh is already exporting medicine to over 72 countries across the globe including the EU. Furthermore, the industry is also trying to break into the massive African market. This sector has been a prime example of how the private sector can thrive in a favorable policy sphere. Investment worth up to Taka 20 billion is already on process as the government has decided to set up an API Park in Chittagong with the facility to house 20 plants. In the last few years as many as 10 firms each investing Taka 400 million or more have emerged. Some are already marketing their products while others are in the process. Moreover, the sector has set its target to take advantage of TRIPS and the Public Health agreement which allows Bangladesh to export pharmaceuticals worth potentially billions of dollars in the period between 2005-2016 during which Bangladesh companies are allowed to produce patented products.

Key Challenges

- Overall poor image of Bangladesh in general also hurts the image of Bangladeshi companies.
- Lack of promotion capacity of Bangladeshi Missions abroad.

- Embassies have not been very effective and export of an upcoming industry requires full support of embassies.
- The new drug policy doesn't deal with the issue of pharmaceutical export let alone outlay plans for the development of the industries export.
- Lack of much needed information regarding overseas market. For example starting from product registration to other documents such as bioequivalence study, validation report, and manufacturing plan audit report may be required depending on the export destination.
- Quality of government documents and has been poor.
- There are limits to sending product samples abroad. Given the export potentials of the country the limits are not justifiable.
- There are also limits on the imports of raw materials and these may lead to cutting down of production. Furthermore the limits were set some time back and hence needs to be reviewed in light of the current situation and future possibilities.
- Lack of local testing facilities means that companies need to conduct their laboratory tests abroad.
- Registration fees and the documentation procedure can be cumbersome in certain export destinations.
- Bangladesh Bank has limits relating to foreign currency transactions. Since there are no proper banking relationships with some export destinations and the fact that pharmaceutical companies need to maintain marketing offices abroad this limit is low and essentially works as a hindrance.

Medium-term Goals for the Industry

- Be a major player at the regional level in the next 5 years.
- Carryout more R&D activities to develop new products.
- Improve the quality of professionals entering into this industry.
- Have a more favorable straight forward policy stance for this sector.
- More showcasing of industry achievement abroad.

Strategies under the SFYP

- Foreign Missions will be oriented to help the industry.
- The import limit will be reviewed to ensure that the production schedule of firms are not hurt
- More investment will be put into place to ensure that high quality laboratories are set up so that firms do not need to go abroad for testing their product.
- A one stop information service could be developed under the ministry of commerce to ensure that all the required information to export abroad is found in one place.
- Bangladesh Bank may review the limit on foreign currency in line with the complaints from the industry to ensure that exporters don't have to go through a lot of hassle.

- Improve Pharmacy/Business management courses both in the Private and public universities to ensure that the industry has access to high quality skilled labor.
- Improve the quality of government documentation

Agro-processing Industry

Within the manufacturing sector, the growth of the agro-processing industry is particularly important for Bangladesh as this is one of the major industries in terms of contribution to total manufacturing production and employment. Some industry analysts have argued that the agro-processing industry is a US\$4.5 billion industry. In general, Bangladesh has a rapidly growing agro-processing sector, which mostly relies on domestic agricultural production focusing on serving domestic demands. Furthermore, despite having good potential for high volume exports, these potentials have not been realized. In recent times, fisheries, fruit and vegetables processing have received more attention though export is limited to a few countries. The agro-processing sector includes rice and wheat milling, sugar refining, production of edible oils, processing and preserving of fruits and fruit juices as well as fish processing, both white fish and shrimps. The export coverage of agro-processing industry is increasing at a rapid rate. Local food processors and exporters have mostly focused in and have been successful in entering into ethnic markets with ethnic products. The sector has been successful in exporting around 90 types of agro processing food products to over 70 countries across the world. 81percent of the products are exported to 10 major importing countries including Italy and UK in Europe and USA and Canada in North America and a number of Middle Eastern countries including KSA, UAE, Kuwait etc.

The investment climate in Bangladesh with regards to agro-processing and production is attractive and the policy support from the government is quite healthy. The sector has been declared as a “Thrust Sector” in the current Industrial Policy 2010 and therefore receives preferential treatment. Till now the mainstream supermarket chains with processed food products of international standards has not been targeted despite vast production opportunities within fruits like pineapples, mangoes and different kinds of vegetables, spices, oils etc (these could be only produced for supermarkets). Bangladesh only has 0.1% of total world export. It is strongly believed that only changes in product range and ensuring strict standards of compliance combined with increased market knowledge could create enormous export opportunities for the US and EU mainstream markets.

Key Challenges

- Improving the quality of inputs, products, technology, business services and environment etc vital for a successful food processing sector.
- Increase production efficiency and product quality to better meet consumer and export demands.
- Limited number of products

- Lack of information about compliance requirements for export items at various destinations.
- Improve Food safety and agricultural food standards.
- Weak supply chains.
- Lack of information about Bangladeshi agro-processing produce in countries where Bangladesh is not currently exporting to.

Medium-term Goals

- Develop a dynamic high quality export driven sector creating massive employment opportunities for both skilled, unskilled and semi skilled workers.
- Develop an effective supply chain so cost can be further minimized
- Develop and improve food quality both by investing more in R&D within firms and also reviewing Bangladesh's food and health standards

Strategies under the SFYP

- Bangladeshi missions abroad will show case the achievements of the sector by holding trade fairs, seminars etc
- Make available more funding for increasing R&D to increase quality and variety of products that can be exported.
- One stop service at the EPB so that exporters can find information about overseas markets and their requirements

Shipbuilding Industry

Shipbuilding has a long history in Bangladesh. Aided by wide coastlines it potentially has the capacity to be a leader in the small ship building industry in the Asian region. Furthermore, it is expected to be one of the key sectors fuelling export growth during the SFYP. As it currently stands there are roughly 200 shipyards in the country which are mainly involved in building and repairing low quality inland vessels. However, a growing number of shipyards have received orders for and delivered international class vessels. Some analysts suggest that it is roughly 15% percent cheaper to produce ships in Bangladesh than anywhere else in the region. Unfortunately till very recently shipbuilding only catered to domestic demand.

Over the last two decades shipbuilding has moved away from European countries to low cost countries in Asia such as Korea, China, India, Indonesia Vietnam etc. Due to the high cost of skilled labor in the overall cost of smaller ships as compared to larger ships, some Asian producers have moved away from building small ocean-faring vessels to large vessels to enjoy economies of scale. As of 2008-09 Japan and Korea are still the market leaders accounting for

73 percent of world output, China and the EU region has also got a share of 13.5 percent and 7 percent respectively. Due to its relatively late start Bangladesh has a world share of less than 0.1 percent. It is currently understood that shipyards in China, Korea, Taiwan, Singapore and Japan are completely booked for the next ten years for building super-ships and many owners are not finding yards to build smaller ships and this has provided Bangladesh the opportunity. Moreover, the growth of international trade volume to areas where shipments do not take place in large volumes has also increased and along with it increased the market for small ocean faring ships to be as big as \$200-400 billion. Industry experts are optimistic that if Bangladesh is able to obtain at least 1% of the market in the coming years exports will rise substantially. As measured by a recent study the value added in shipbuilding varies between 30-40% compared to Bangladesh's biggest export (RMG) where value addition vary between 20-40%. It has been argued that if certain raw materials and components could be produced in Bangladesh value additions will increase further. There are a number of types of vessel that can be produced ranging from container ships to gas carriers. Germanischer Lloyd indicated recently that Bangladesh should concentrate on multipurpose vessels than specialize.

Currently the three main ocean faring ship builders are Ananda Shipyard Ltd, High Speed Shipbuilding and Engineering Co Ltd and Western Marine Shipyard Ltd. Of the three companies Ananda is by far the most advanced in terms of executing orders. Furthermore, some reports have indicated that orders worth up to \$225 million dollars were received in 2005 and the ships are to be delivered by 2011. In general most of the shipbuilders are trying to increase their capacity in order to both increase the number of ships they can build and be able to take on larger orders. As a sign of excellence in quality Ananda received Geneva Century Golden award for quality. Western Marine was awarded the World Maritime Day Award in 2007 for its contribution to the shipbuilding industry in Bangladesh. Furthermore, all these business have a number of orders in the pipeline and therefore rapid expansion is must from avoiding losing orders. There are several requirements that are quintessential in a decision to enter the ship building industry or to change from building riverine and coastal vessels to ocean faring vessels. A successful shipbuilding industry requires certain basic features: (a) the country has to be a riverine country, (b) have decent infrastructure, (c) have skilled manpower, with (d) quality management system. Bangladesh poses all these features in varying degrees. Essentially there are a number of factors that act as a barrier to entry in this business. Some are listed below:

- **Availability of suitable land:** The shipyards need large tracts of land and moreover the land has to be adjacent to relatively deep water so that newly built vessels can be launched.
- **Significant funding:** Roughly \$9 million is required to convert established shipyards to one producing ocean faring vessels.
- **Skilled labor:** Skilled labor is a key requirement for a successful shipbuilding industry. The availability of good quality artisans, welders etc are crucial. Furthermore, a major proportion of the total cost involved in ship building is involved in the actual design of the

ship and as a result the abundance of high skilled naval architects, marine engineers is imperative.

- ***Meeting international standard:*** International ocean faring vessels have to be built to a certain class such as Germanischer Lloyd (GL) Class. If a vessel is not certified a buyer will not take delivery of the vessel.
- ***Access to raw materials and components:*** A variety of components are required in the ship building industry. The most expensive items of these include Engines, steel, furnishings, piping and cables etc. Engines are usually by the relatively new ship building nations. Bangladesh is completely dependent on importing its entire requirement for ship building.
- ***Import and export processing requirements:*** Procedures used to clear imported raw materials and components have to be simplified. Moreover, it is crucial that ship building obtains the free trade environment that RMG operates in.

A Regulation entered into force on 27 March 2002 that established a timetable for phasing out single-hull oil tankers from EU waters by 2015. Therefore Bangladesh can play an important role in obtaining orders for replacing these ships. Moreover, the shipbuilding capacity of Bangladesh also has to be increased in order to absorb these orders. Listed below are a number of shipbuilders that have been identified: 1) Khulna Shipyard Ltd, 2) Meghna Group (Signed a \$35 million deal with a South Korea Ship building giant to build the country's largest ship manufacturing facility, 3) Dockyards and Engineering Works limited, 4) Desh Ship Building and Bengal electric. All these facilities have to be upgraded to bring it up to international standard.

Challenges of the Ship Building Industry

According to estimates made in 2009 the industry has grown by 10 percent every year and about 100,000 skilled workers and 150,000 semi skilled workers are employed in the ship building industry. Moreover, around 2 million people are linked directly or indirectly to it. Furthermore, by 2011 at least ten more ship yards are expected to have reached international standard. Other ancillary services may grow with the ship building industry for example over the course of time world class components and service suppliers may develop. This in turn may grow into a lucrative export opportunity. Essentially, more growth will take place in the industry for five main reasons they are:

- a) Labor rates are one of the cheapest in the world.
- b) Human Resources are available (Thousands of skilled engineers, architects graduate each year and little training is needed to elevate their skills to international standards).
- c) The Government has declared ship building a priority area and has given five years of tax holiday. Furthermore, a green channel program has been put in place for easing import and export of components.
- d) Business culture is close to western style and the main communication of business with clients is in English.

- e) Bangladesh is placed in a convenient geographical location in regards to imports and exports of materials and closeness to regional high growth markets.

However, the industry faces a number of challenges

- Almost all raw materials, ranging from engines to steel, electronics, furnishings, cabling and piping etc have to be imported from abroad. Moreover, local component and service suppliers are not of international standard. Only about 10 percent of classed vessel component is locally produced.
- Due to imperfections in the credit markets, ship builders tend to face higher interest and service charges from local banks than other sectors.
- Poor quality and public utilities also affect the sector considerable.
- Problem of Red tape, especially when trying to obtain licenses and exporting and importing goods.
- A shortage of qualified mid management workers.
- The cost of doing business has to be substantially reduced to attract more FDI and joint partnerships with foreign firms in this sector.

Medium-term Objectives

- Develop and produce high quality ocean going ships
- Improve both technical facilities and develop financial services tailor made for the industry
- Maintain the almost 'free trade environment' to ensure rapid growth in the sector
- Attract more skilled professional from abroad to give training and insights in regards to the technology
- Focus on how to diversify and move into developing large ocean going ships and components

Strategies under the SFYP

- The government will invest in setting up training institutes to ensure the right kind of manpower is available for the industry.
- Bangladeshi Embassies abroad will showcase and further the cause of shipbuilding industries
- Maintain the free trade environment to help the sector develop a competitive edge
- Develop and ensure public utilities so that ship yards are close to working in full capacity and are able to deliver on time.
- Reduce the license raj that currently exist by making simple application procedure and reduce the number of days required for processing documents.

Electronics Industry

Electronics industry has tremendous prospect for efficient import substitution as well as exports. Trade in semiconductors is very large and it is relocating to developing countries. Through subcontracting substantial employment can be generated in this sector. An embryo of this industry already exists, mostly in the export processing zones. Internationally some of the electronics industries, particularly those with low technology content, have become sunset industries in countries like Japan, Hong Kong and Singapore. During the Sixth Plan, efforts will be made to attract foreign direct investment in these areas.

Steel and Engineering

The engineering industries produce investment goods which determine the technological capability and consequently the production level and efficiency of an economy. The engineering industries are also suppliers of important consumer durables. This is particularly so in the electrical and transport equipment industries. In the developed economies, the growth of the subsector generally exceeds that of the manufacturing as a whole. In the developing economies, on the other hand, the sub-sector lags behind.

Bangladesh has a 'mini' steel plant at Chittagong which has been out of operation for quite some time. Its engineering base is very weak despite the fact that the country has a machine tools factory, a diesel engine manufacturing plant as well as a plant for manufacturing general electrical equipment. The performance of the sector has not been satisfactory for various reasons though this is the basic sub-sector for industrial development. During the first four years of the Fourth Plan (1990-95), the production volume of this sub-sector showed downward trend because of the low capacity utilization, low productivity, lack of investment fund in the public sector, major constraints in the private sector consisting of demand constraints, inefficient operation of existing units both in the private and public sectors, dearth of skilled and trained personnel, inadequate R&D, inadequate infrastructures, inconsistent tariff policies etc.

Under the current industrial policy, the growth of this sub-sector has come to depend on private sector initiative. In pursuance of the government's privatization policies, BSEC is endeavoring to increase the efficiency of the enterprises under its control. Proposals for financial re-structuring of some of the enterprises are under consideration by the government. BSEC has already issued public shares to the extent of 49 percent in three of its enterprises namely Atlas (Bd) Ltd, National Tubes Ltd and Eastern Cables Ltd. Bangladesh Machine Tools Factory (BMTF) and Bangladesh Diesel Plant have been handed over to the Bangladesh Army. Furthermore, Karnaphuli EPZ is being established on the property of Chittagong Steel Mills Ltd. Both General Electric Mfg. Co. Ltd and Bangladesh Blade Factory Ltd are SOEs under BSEC and in the context of their cumulative losses, new projects have been undertaken to make these enterprises viable and profitable. Moreover, properties of Bangladesh CAN Company Ltd is under the process of selling out to Progoti Industries Ltd which is another SOE under BSEC for constructing their head office in Chittagong

The objectives for the Sixth Plan for the Steel and Engineering sub-sector are to:

- a. support mechanization of the agricultural sector;
- b. supply capital goods and spares to various sectors of the economy, e.g., agriculture, power, gas, natural resources, transport, communication, construction as well as manufacturing sector itself;
- c. substantially reduce dependence on import of machinery and essential spares and components for jute, textile, sugar mills and electronic industries, thereby improving the balance of payments of the country;
- d. strengthen and diversify the existing export structure through production and export of engineering goods;
- e. maximize capacity utilization of the existing capital intensive industries through necessary balancing, modernization, replacement and expansion;
- f. provide linkage, through sub-contracting, to light engineering industries throughout the country and thus create gainful employment opportunities with special emphasis on rural employment through promotion and development of industries in rural areas;
- g. create employment opportunities through development of skills in major sectors like steel, engineering, ship-building and electronics;
- h. accelerate transfer of appropriate technology through establishment of project design and engineering company and thereby reducing dependence on expatriate consultants/experts with regard to undertaking feasibility study, project design, engineering services, etc.; and
- i. accelerate research and development activities for consolidating the industrial base as well as for the development of indigenous technology.

The general development strategies for the steel and engineering sub-sector as a whole are outlined as follows:

- a. consolidation and effective utilization of existing capacities will be achieved through planned capacity expansion, product diversification, BMREs and introduction of additional working shifts;
- b. with a view to improving the balance of payments position, reducing dependence on imports and promoting self reliance, necessary programs will be undertaken to diversify the industrial base and to set up import substitute industries for the progressive manufacture of agricultural equipment, jute textile, sugar, electrical machinery and equipment as well as their spares and accessories;

- c. measures will be taken to develop viable products which are high technology based and require venture capital for which private investment is not forthcoming;
- d. a significant feature of the strategy for industrial development in general and for steel and engineering industries in particular will be to set up projects under joint-venture with the reputed local/foreign manufacturer mainly to create strong export base and thereby to improve country's balance of payments position;
- e. new capacity will be created in the areas of steel making, electrical cables and conductors and basic electronic components manufacturing; and
- f. viability of sick projects like Bangladesh Machine Tools Factory, Bangladesh Diesel Plant and other projects will be restored through improvement of management capability of the enterprises and also through phasing out of inefficient manpower for progressive transfer to the private sector.

In line with the objectives and strategies mentioned above a number of projects would be implemented in the next five years for example there will be an MOU signed with Mitsubishi, establishment of shipyards and dockyards for sea-going vessels etc with the proposed budget for all the projects under the steel and engineering sub-sector of around Taka 383 crores.

Chemical Industries

BCIC is currently managing thirteen enterprises under its control. Among these enterprises, there are six urea fertilizer factories, one TSP fertilizer factory, one DAP fertilizer factory, one paper mill, one cement factory, one glass sheet factory, one insulator and sanitary-ware factory and one hardboard mill. It may be mentioned that as per the government decision, ten enterprises of BCIC were included in the privatization list of which, four enterprises have recently been privatized and handed over to the private entrepreneurs by the privatization commission.

With a view of attaining self-sufficiency in Phosphatic fertilizer and to reduce dependence on Triple-Super-phosphate (TSP), Di-Ammonium Phosphate (DAP) plant-1 was constructed at a cost of Tk.510.64 crore and Di-Ammonium Phosphate (DAP) plant-2 was constructed, at a cost of Tk.519.64 crore at the premises of Chittagong Urea Fertilizer Limited. The production capacity of each plant is 800 metric tons per day. Since inception of these two plants, a total of 1,88,678.00 metric tons Di-Ammonium Phosphate was produced up-to June, 2009.

In order to achieve the goals of SFYP a number of projects will be taken up by the government, for example, the accreditation of the national metrology laboratory, establishment of the office of South Asian Regional Standards Organization, strengthening product certification system of BSTI in line with international standards etc. It is expected that in order to implement the entire range of projects for the chemical sector the government will need to allocate a sum of Taka 198 crores in the chemical sector.

On the basis of data compiled from various sources and using estimates, Table 2.15 gives a snapshot of some key manufacturing industries discussed above.

Table 2.15: Summary of Key Manufacturing Sub-sectors

Industries	Employment in 2010 (thousand)	Gross value added 2010 (% of mfg)	Exports FY2010 (million US\$)
Leather footwear industry	16.6	0.8	204.1
Food & beverage	1340.0	4.1	687.5
Light engineering	718.4	0.5	17165
Pharmaceuticals	69.0	1.0	40.97
RMG	3100.0	36.7	12496.7
Jute textile	18.2	0.8	540
Shipbuilding	250.0	n/a	9.34
Textile industry	6007.7	13.1	598.1
Agro processing	1529.1	38.2	921.9

Source: BBS, EPB, and websites of various industry associations

Thrust Sectors to Get Priority

On the basis of past performance and some notion of future potential, the Government has prepared a list of thrust manufacturing sectors which will deserve priority in assigning favorable treatment with regard to taxes, subsidies, credit facilities, land allotments, foreign exchange allocations, and the like. The list is given below:

1. Agro-based and agro-processing industry
2. Ship Building
3. Renewable Energy (Solar Power, Windmill)
4. Basic chemicals/dye and chemicals
5. Readymade Garments Industry
6. Active Pharmaceuticals Ingredient Industry and Radio Pharmaceuticals Industry
7. Herbal Medicinal Plant
8. Radio-active (diffusion) Application Industry (e.g. developing quality of decaying polymer/preservation of food/ disinfecting medicinal equipment)
9. Development of Polymer Industry
10. Jute and Jute products
11. Leather and Leather products
12. Light Engineering Industry
13. Plastic Industry
14. Furniture

15. Handicrafts
16. Energy Efficient Appliances/Manufacturing of Electronic goods/Development of Electronic materials
17. Frozen Fish Industry
18. Tea Industry
19. Home Textiles
20. Ceramics
21. Tissue Grafting and Biotechnology
22. Jewellery
23. Toy
24. Innovative and import substitute industry
25. Cosmetics and toiletries
26. Light engineering industry.

Several service activities are also in the list: tourism, ICT, hospital and clinics, container service, and warehousing.

By and large, the list contains the name of sectors that have already achieved success in domestic or export markets or both. In the context of limited public resources, according them priority attention could yield benefits in terms of higher growth performance of the manufacturing sector. But this should not mean that other activities not listed lack the potential for achieving export success. History has shown that neither RMG nor shipbuilding was expected to become high achievers but they did. In the current globalized production system, where different stages of production can be fragmented, it is possible to locate these various stages in different countries in accordance with their comparative advantage. What is more important is to maintain a favorable policy environment and an open trade regime where imports of intermediate inputs can be seamlessly ensured. For the next decade, Bangladesh can be the center of diverse labor-intensive production activity, some of which, like RMG and shipbuilding was in the 1970s or 1980s, are not on the radar as yet.

SMALL AND MEDIUM ENTERPRISES (SMEs)

In a labor surplus country like Bangladesh small and medium enterprises can play a substantial role in providing the impetus to the development of a modern manufacturing sector and in job creation outside of agriculture and informal services. Unfortunately the lack of data makes it very difficult to understand the role of SMEs, especially the small industrial enterprises. Some rudimentary data is available from The National Report of BBS based on the nationwide census of all non-farm economic activities in 2001 and 2003.

An overwhelming majority—98 per cent of establishments—are micro units having less than 10 workers. Only 13 per cent are in manufacturing and the remaining 87 per cent are involved in trade and services (Table 2.16). Within manufacturing, 58 percent of the enterprises are in the category of SMEs (less than 50 workers) employing about 20 percent of total manufacturing labor force.

Table 2.16: Total Non-Farm Enterprises in Bangladesh, 2003

	Micro < 10	Small 10 – 49	Medium 50 – 99	SME 10-99	Large 100+	Total 10 +	All
<u>No. of Establishment (000)</u>	3620	76	5	81	6	87	3708
<u>% of total units</u>	97.6	2.0	0.13	2.18	0.16	2.35	100.0
<u>% of 10+ units</u>	-	87.4	5.7	93.1	6.9	100.0	-
<u>Sectoral composition (% of total)</u>							
Manufacturing	12.6	34.8	45.1	35.5	66.4	37.5	13.2
Trades and Service	87.4	65.2	54.9	64.5	33.6	62.5	86.8
All	100	100	100	100	100	100	100
<u>Rural-urban distribution (% of total)</u>							
Urban	35.5	60.1	73.6	60.9	83.1	62.4	36.1
Rural	64.5	39.9	26.4	39.1	16.9	37.6	63.9
All	100	100	100	100	100	100	100

Source: Compiled from Economic Census 2001 & 2003, National Report, BBS, July 2005.

Performance of SMEs

The target of achieving double digit growth hinges largely on the performance of the small and micro enterprises. So far SME enterprises have contributed only about 5.2 percent to the total GDP in 2008-09 and this share has not increased much over the last decade (Table 2.17). In terms of value addition, the performance is also not very satisfactory as the growth of value addition has declined in 1995-2000 from the period 1989-95 (Table 2.18). Over the period 1989-2000 value addition of SMEs had grown at an annual rate of 6.6 percent while in the later five years it grew at only 5.5 percent.

Table 2.17: Contribution of Large & Medium scale and Small Scale Industries to GDP (%)

	Large & Medium Scale Industry (%)	Small Scale Industry (%)	Total (%)
1999-2000	11.01	4.39	15.40
2000-2001	11.13	4.46	15.59
2001-2002	11.16	4.60	15.76
2002-2003	11.29	4.68	15.97
2003-2004	11.41	4.76	16.17
2004-2005	11.66	4.85	16.51
2005-2006	12.14	4.94	17.08
2006-2007	12.47	5.08	17.55
2007-2008	12.60	5.16	17.77
2008-2009	12.61	5.17	17.78
2009-2010	12.68	5.20	17.80

Source: Bangladesh Economic Review, Ministry of Finance, GOB, 2009

Table 2.18: Value Addition by Small Industry and its Growth

Year	Value added in small industry (million taka)	Yearly compound growth rate (%)
1989-90	45037	-
1990-91	48316	7.3
1991-92	51929	7.4
1992-93	55925	7.5
1993-94	60334	7.6
1994-95	65220	7.7
Annual Average 1989/90-1994/95	54460	7.7
1995-96	70619	8.3
1996-97	76091	8.0
1997-98	81240	7.6
1998-99	81849	5.8
1999-2000	85122	5.5
Annual Average 1995/96-1999/2000	78984	5.5
Annual Average 1989/90-1999/2000	65607	6.6

Source: Bangladesh Bureau of Statistics

Sectoral Performance

Though current overall performance of the SME sector is not adequate, there have been stark differences in performance across sectors. Moreover, sectoral composition of SMEs is so diverse that overall aggregate picture may sometimes be misleading as some sectors may completely outperform the rest. Therefore, it is imperative to paint a sectoral picture in order to be able to craft sector specific policies. A comprehensive report for six key sectors was prepared by SME Foundation and this background report will rely mostly on this study for sectoral analysis. The report is based on a survey carried out in 2006/2007. The sectors included in the study are:

- i) Agro and Food Processing
- ii) Designer goods
- iii) Electrical and Electronics
- iv) Leather and leather goods
- v) Light engineering
- vi) Plastic

The following discussion provides the major findings of the survey report. Based on quantitative analysis the survey reports the size, employment, factor intensities and productivities and some other diagnostics. The survey followed the BBS definition in defining the micro, small, the medium, and the large enterprises².

² Following BBS definition respectively micro, small, medium and large enterprises are those employing 1-9, 10-49 workers, 50-99 workers, and 100 or more workers.

Table 2.19 describes the sectors in terms of gross value added by each firm. Gross value added is defined as the difference between gross value of output and the cost of all material goods and services that have been used in the production. The designer goods industry has the highest average percentage share that gross value added has relative to value of gross output for all firm size, including small and micro ones. The reason is that the industry has the lowest percentage share of materials in the total (see Table 2.20). Plastic industry has the smallest value added among the sectors for all firm-sizes.

Table 2.19: Gross Value Added Relative to Value of Gross Output in Six Sectors

Firm Sizes	Agro & food processing	Leather & Footwear	Designer goods	Electrical & electronics	Plastics	Light engineering
	All	All	All	All	All	All
Micro	40.4	47.33	74.1	38.82	32	58.4
Small	44.3	22.59	59.4	36.79	32.4	34.8
Medium	52.2	45.32	46.8	29.61	30.4	36.74
Large	51	56.95	60	34.61	35	31.03

Source: SMEF survey of six sectors, 2006/07

Table 2.20: Material Cost as Percentage of Total Cost

Firm Sizes	Agro & food processing	Leather & Footwear	Designer goods	Electrical & electronics	Plastics	Light engineering
Micro	72.9	83.7	40.87	71.7	76.7	76.89
Small	71.8	91	53.05	77	76.4	90.52
Medium	64.1	91.6	54.07	68.7	83.6	82.51
Large	62.5	86.9	53.53	78.4	74.4	81.13
Micro Small	71.9	90.9	52.68	75.8	76.5	89.99
Medium Large	63.6	88.2	53.7	73	79.7	80.28
All	69.2	88.8	53.54	75.2	77.5	85.99

Source: SMEF survey of six sectors, 2006/07

Table 2.21 profiles the average firm size in terms of employment across six sectors. The designer goods industry has the highest average employment size, followed by leather and leather goods. Agro processing and plastics are in the middle whereas light engineering is reported to have the

Table 2.21: Employment per Firm across Four Size Classes in Six Sectors

Firm Size	Agro processing	Leather & Footwear	Electrical & Electronics	Light Engineering	Designer goods	Plastics
Micro	5.9	5.9	6.3	4.6	6.5	5.6
Small	23.6	21.8	23.9	19.1	35.7	21.0
Medium	70.6	69.7	65.8	74.4	71.9	75.8
Large	254.2	620.8	170.3	196.9	666.7	261.2

Source: SMEF survey of six sectors, 2006/07

smallest average size in terms of employment. Among the small and micro industries, designer goods industry employs the highest number of labor per firm.

Products of electrical, light engineering and agro processing are mostly targeted for the domestic markets; revenue from domestic sales is higher in those industries. Revenue from export is higher in designer goods and in leather and leather goods industry. Table 2.22 and Table 2.23 report percentage revenue from domestic sales and from exports for the six sectors. It is noteworthy that more than 80 percent of revenue comes from export of leather & footwear and designer goods of micro-sized industries.

Table 2.22: Percentage of Revenue from Domestic Sales

Firm Size	Agro & food processing	Leather & Footwear	Electrical & electronics	Light engineering	Designer goods	Plastic
Micro	100	15.38	100	100	16.67	100
Small	94.76	50.22	100	100	40.31	58
Medium	86.18	54.48	100	100	53.14	62
Large	86	90	100	100	39.25	37

Source: SMEF survey of six sectors, 2006/07

Table 2.23: Percentage of Revenue from Export

Firm Size	Agro & food processing	Leather & Footwear	Electrical & electronics	Light engineering	Designer goods	Plastic
Micro	0	84.61	0	0	83.33	0
Small	5.24	49.77	0	0	59.69	39
Medium	13.82	45.51	0	0	46.86	38
Large	14	10	0	0	60.75	57

Source: SMEF survey of six sectors, 2006/07

Limited access to modern technology is a major challenge facing the Bangladesh SME sector. Table 2.24 presents the average number of machines per firm. Agro and food processing industry uses the smallest number of machines. Leather and leather goods industry uses the largest number of machines followed by designer goods industry and this is true for small and micro enterprises too.

Table 2.24: Average Number of Machines in Use across Six Sectors, 2007

Firm size classes	Agro processing	Leather & Footwear	Electrical & Electronics	Light Engineering	Designer goods	Plastics
Micro	2.1	6.15	3.8	7.0	6.13	2.7
Small	4.2	9.93	7.8	13.2	8.44	6.7
Medium	6.6	21.95	11.2	17.18	19.17	16
Large	24.4	87.82	29.3	29.63	59.29	41

Source: SMEF survey of six sectors, 2006/07

Table 2.25 reports the average capital-labor ratio for each of the six sectors. Capital-labor ratio is calculated as the replacement cost of machinery of the firm by dividing the employment size. The estimates show that for small and micro industries, leather and plastic industry are the most capital intensive than others.

Table 2.25: Capital-Labor Ratio across Six Sectors

(Tk. 000s)

Firm Sizes	Agro	Leather	Design	Electrical	Plastics	Light. Eng.
Micro	53.5	283.5	63.5	38.58	229	69.97
Small	80.12	248.8	93.7	27.99	243	75.99
Medium	160.51	289.1	284.6	30.37	438	63.12
Large	217.28	52.7	988.5	22.31	542	77.36

Source: SMEF survey of six sectors, 2006/07

Table 2.26: Labor Productivity per Worker

Firm Sizes	Agro	Leather	Design	Electrical	Plastics	Light. Eng.
Micro	830.0	3081.89	78.6	1635	6812	2000
Small	967.6	3543.86	138	1076	7853	4110
Medium	396	6045.96	164.8	457	10636	2490
Large	784.7	3502.24	57.6	587	8501	2350

Source: SMEF survey of six sectors, 2006/07

Table 2.26 reports the average labor productivity of each of the six sectors. Labor productivity is calculated as physical volume of the firm divided by the employment size. Plastic industry ranks the top for all firm sizes. Designer goods industry has the lowest labor productivity per worker among the sectors.

In summary, the designer goods industry rank the top in terms of gross value added, average employment size, revenue from export. However, capital-labor ratio is relatively high and labor productivity is relatively low in this industry compared to other industries in the study report. Leather and footwear goods industry produce for both domestic market and for export. Products of electrical, light engineering and agro processing are mostly targeted for the domestic markets. In terms of capital labor ratio the agro and food processing industry is in the middle. However labor productivity per worker is relatively lower in this industry compared to other industries. Plastic industry has the smallest value added among the sectors. The industry has the highest unit replacement cost, lowest labor productivity and the highest capital-labor ratio. Leather and leather goods industry is the second highest in terms of value added, employment and capital-labor ratio. Labor productivity is highest in this industry among all the six. Light engineering industry has the lowest value added; employment per firm in this industry is the smallest.

Past Government Policies for SME Development

All governments have emphasized the importance of developing the micro and small enterprises. Some of the recent policy initiatives include the following:

National Taskforce on Small Enterprise Development: The Government constituted a National Taskforce on small enterprise development to draw up a realistic strategy for promoting rapid growth and vigorous competitiveness among these enterprises. The Taskforce submitted its report including a comprehensive slate of recommendations that, if implemented, will mount a coherent strategy to promote the development of small enterprises in Bangladesh in three phases: short, medium and long-term. The Government accepted most of the recommendations with some modifications.

Small Enterprise Cell and Small Enterprise Foundation: Considering the importance of small enterprise financing, a Small and Medium Enterprise (SME) cell was created in 2003 in the Ministry of Industries (MoI). The cell has announced that 80 percent of total resources available for Small and Medium Enterprises would be allocated specially for small enterprises. The SME cell also decided that BASIC and BRAC bank will be working together as lead banks and will be responsible for distribution of credit and venture capital fund in the short run.

Creation of Special Funding Arrangements: The following funds are now in operation in Bangladesh governed by different entities like the Bangladesh Bank, the SME Foundation and the Ministry of Finance (Banking & Financial Institutions Division)

i) Bangladesh Bank Fund:

- a) Total fund of Tk.600 crore (revolving).
- b) 17 banks & 23 non-bank financial institutions have signed Participation Agreement.
- c) Tk. 853 crore is refinanced up to December 2009 to 17 banks and 21 nonbank financial institutions signed the agreement.
- d) Total number of enterprises being served is 8317.

ii) EGBMP/IDA Fund:

- a) Total fund of Tk. 116 crore (revolving).
- b) 18 banks & 23 non-bank financial institutions have signed Participation Agreement.
- c) Tk. 244 crore is refinanced up to December 2009 to 14 banks and 14 nonbank financial institutions.
- d) Total number of enterprises being served is 2541.

iii) ADB Fund:

- a) Total fund of Tk.202 crore (revolving).
- b) 13 banks & 15 non-bank financial institutions have signed Participation Agreement.
- c) Tk. 335 crore is refinanced to 9 banks and 7 non-bank financial institution up to December 2009.
- d) Total number of enterprises being served is 3264.

Major Constraints Faced by Micro and Small Enterprises in Bangladesh

Despite these measures, the development of SMEs has been lack luster and requires a big push to enable it to play its potential development role. SMEs are heterogeneous by their characteristics, mode of operation and types of SME products and processes. As such it is difficult to make sweeping generalization about constraints facing SME entrepreneurs. Some of the major issues are:

Inability to market products: The present and future growth prospect of any product depends to a large extent upon marketing activity. This requires having a well-planned marketing strategy including advertisement campaign as well as resources for implementing that strategy. Unfortunately, most SME entrepreneurs are heavily constrained in this respect as they cannot make adequate investments in marketing and also lack necessary marketing skills.

Inability to maintain product quality: A major constraint to the sustainability of SME growth in Bangladesh is the inability to maintain the quality of SME products. At present Bangladesh produces mostly common consumer goods which are labor-intensive and require relatively simple technology. But due to poor quality these products cannot stand competition from imported products. The challenge for Bangladesh today is not in competing with high-tech products of developed countries but to make its SME sector survive competition from its rivals.

Lack of investment and working capital: It goes without saying that access to finance particularly working capital finance and investment finance to enable them to expand their business is a prime constraint facing the SMEs. Banks in general do not consider SME financing as profitable activity. SMEs are also regarded as high risk borrowers because of their low capitalization, insufficient assets and high mortality rates, and consequently banks are not keen to offer them credit at comparable interest rates. SMEs in the export sector also face problems of access to working capital.

Lack of skilled technicians and workers: Lack of skilled manpower is a perennial problem in Bangladesh. This problem is particularly acute for small and medium scale export oriented enterprises. Bangladesh has made large inroads in the world's apparel market through commendable performance of RMG sector. However, the value addition of the products is low. Despite high demand, Bangladesh cannot make much entry into high value fashion wear exports due to dearth of trained workers. Supply capacity is thus constrained by non-availability of skilled workers.

Poor management skills of entrepreneurs: In the modern day economy, managerial skills for undertaking planning, marketing, and cash-flow management are vital for survival of an industry, small or large. SME entrepreneurs in Bangladesh are very much lacking in managerial skills and are not used to strategic planning. It is natural that they are unable to survive market failures. The concept of managerial training for SME entrepreneurs is yet to take root in Bangladesh.

Lack of information: In a competitive world, market information regarding demand and supply situation for a product at a particular period, changing consumer tastes, etc. are crucial elements for the success of an SME. In Bangladesh, although some financial institutions and few trade bodies like Dhaka Chamber of Commerce (DCCI) have introduced help desk and knowledge centers with internet facilities, such services are too few to provide service to the SME entrepreneurs on the whole. Lack of market information is a serious constraint to SME development.

Non-tariff barriers (NTB) and changes in world trade regimes: Liberalization of industrial and trade regimes in the wake of globalization are likely to have significant effects on Bangladesh's SMEs. Over the past decade there has been a significant change in the world trade regime with new regulations coming into effect. WTO agreements such as Application of Sanitary and Phytosanitary Measures (WTO SPS Agreement) to trade in agriculture products raises the barrier for SME exports to developed markets. WTO agreements not only cover the traditional goods sector, but also new sectors like services. Lack of knowledge about the current status and essential components of WTO Agreements hampers trade and business. The need for product standardization and compliance with health and hygiene requirements is an unavoidable part of international trade in farm and non-farm products catered by SMEs. Long-run economic prosperity will critically hinge upon turning the challenges of globalization into opportunities.

Enabling environment for trade and business: Although trade and business activities are carried out by the private sector independent of government control, existence of enabling environment like supportive regulatory framework, congenial tax regime, developed transport and communications infrastructure is vital for SME development. Bangladesh has made some progress in this direction but it still falls short of present day needs.

Other constraints of a general nature are inefficient infrastructure support especially power, widespread tariff anomalies, low productivity of labor, low level of technology, lack of research and development and low level of education of SME entrepreneurs.

Additional insights on what constraints the SMEs can be obtained from the results of enterprise survey conducted in 2003 by the international Consultancy Group (ICG) of the UK and Micro Industries Development Assistance and Services (MIDAS). A summary of the major obstacles identified by the survey is presented in the table below (Table 2.27).

Table 2.27: Policy Suggestions by Survey Respondents (percentage of firms in an industry)

Suggestions	Leather & Footwear	Electrical & electronics	Light engineering	Designer goods	Plastic	Agro & food processing
The VAT rate to be decreased		27.4				37.8
Import duties on inputs to fall	24.46	11.3	19.01	15.5	33.1	23.6
Power outage to be reduced	20.1	10.5	52.82	9.7	53.8	22
Interest rate to be decreased	12.51			20.4	16.9	20.4
Bank loan to be easily available	11.2	18.5	30.28	7.8	10.8	15.8
Decrease direct taxes			5.63		11.5	9.4
Increase production						7.8
Greater transparency in rules		6.2	4.23	12.6	16.2	7.8
Political Stability				3.9		6.2
Greater emphasis on training	0.71				10.0	6.2
Refrigerated space on cargo plane						3.2
Increasing buyers/ orders				8.7		
Arrangement of international fair				2.9		
Separate clusters	3.9	11.3	16.20		10.0	
Easy shipment	1.26				13.1	
Land for job worker	5.71					
Bigger protection from imports	10.5					
Upgrade technology	5.9	3				
Common facility center			5.63			
Others	3.75	25				

Source: SMEF survey of six sectors, 2006/07

The most important policy recommendations as suggested by the survey respondents are

- i) Reduction of import duties on inputs.
- ii) More symmetrical VAT administration
- iii) Reduction of power outage

SME Objectives, Strategies and Policies in the Sixth Plan

In order to achieve double digit growth, the contribution of small and micro enterprises to GDP should also be increased to double digit. This can be achieved through 3 major ways:

- i. By increasing the number of micro and small enterprises through proper monetary and non monetary incentives so that people with entrepreneurial capabilities are more willing to start small businesses.
- ii. By scaling up the size of the existing micro and small enterprises.
- iii. By enhancing the productivity of the existing micro and small enterprises.

Therefore, all the strategies and policies should aim at increasing the number, size and productivity of the SMEs. While governments in the past have sought to emphasize the role of SMEs, a coherent strategy and underlying policy framework for supporting SMEs has been lacking. This shortcoming will be addressed in the Sixth Plan. The broad objectives of the SME strategy and policy framework will be to:

1. Accept SMEs as an indispensable player in growth acceleration and poverty reduction, worthy of its great potential and commitment in the requisite overall policy formulation and execution.
2. Identify the key constraints to SME and address them specifically through appropriate policy and institutional changes.
3. Re-orient the existing fiscal and regulatory framework and government support institutions towards facilitating the achievement of the goals of SME Policy;
4. Nurture and partner SME focused civil-society institution(s) having credible management teams in terms of the delivery of needed services, leadership, initiation, counseling, mentoring and tutoring, etc.
5. Create innovative arrangements so that deserving and small enterprises with desired entrepreneurial track record and/or promise can be offered financial incentives for development.
6. Help implement dispute settlement procedures that proactively shield small enterprises especially from high legal costs and insidious harassments.
7. Take measures to create avenues of mobilizing debt without collaterals to match (either using debt-guarantee schemes or mapping intellectual-property capital into pseudo-venture capital) in order to assist small enterprises to have better access to finance.
8. Systematically accord precedence to small enterprises in the allocation of budgetary funds and, within the limitations of government's resources.
9. Harness information & communications technologies, Internet Protocol (IP)-based infrastructure, and electronic-governance in an effort to make regulatory and other support services accessible to SMEs through the internet.

Credit Policies

Availability of credit is the most important factor for SME development. The Bangladesh Bank has already developed a comprehensive credit policy for SMEs. These loans will be disbursed to the small, medium and women entrepreneurs. In future, the banks and the financial institutions will have to set sector, zone and branch-wise credit disbursement targets and such reports will have to be sent to the corresponding branch offices of the Bangladesh Bank. The details of the credit disbursement targets set by the banks and the financial institutions for 2010 are shown in Table 2.28.

Table 2.28: SME Loan Disbursement Target set by Bangladesh Bank

Sl. No.	Types of Bank & Financial Institutions	Target (Crore Taka)
1	Nationalized Commercial Banks	3897
2	Specialized Banks	600
3	Private Commercial Banks	17478
4	Foreign Banks	707
5	Non-Bank Financial Institutions	1313
	Total	23995

Source: Bangladesh Bank SME Credit Policy, 2010

This important policy initiative will be made more effective by focusing attention on a number of issues. These are:

Targeting: Targeting is the most important part of the credit policy for SME development. Bangladesh Bank has adopted area and cluster approaches to target small and micro enterprises. In line with these approaches, targeting will be strengthened through:

- i. A census of small and micro enterprises containing detail information of inputs, outputs, technology and management.
- ii. Issuing of identification card (SME ID) for small enterprises with registration number.
- iii. Creating a database of SME ID and update it periodically (e.g., in every two years)
- iv. Detail Upazila level map of small and micro enterprises to identify cluster

Development of new and customized products: ‘One size fits all’ credit policy will not work for small and micro enterprises. One major criticism of microcredit disbursed by microfinance institutions is that it fails to tailor their products according to demand. Terms and conditions for credit (repayment period, interest rate, grace period, installment, insurance, etc.) taken for cow-fattening should be different from a credit taken for retail business. Therefore, attention will be given to developing loan products that relate better to specific type of credit needed.

Interest rates: In order to encourage people with entrepreneurial skill to start new business and also the existing entrepreneur to scale up the production, subsidy on bank interest rate can

be considered actively through both private and public banks. However, this may result in rechanneling or misuse of credit to non SME sectors. Therefore, monitoring the use of credit both at bank and borrower levels is also a critical part of the implementation of credit policy. Possible options include:

- i. 10-15 percent interest rate subsidy based on the priority sectors upon identification through SME ID.
- ii. Since clusters create externalities, greater subsidy (e.g., 15 percent) can be offered to small and micro enterprises which belong to a cluster.
- iii. Greater subsidy for backward regions, disaster prone areas (e.g., Monga prone area, coastal area, etc.).
- iv. Agro-based collateral free credit facility can be offered to the poor specially women at a low interest rate.

Capacity building of banking sectors: Credit for SMEs differ from other conventional credit banks are use to lend. Banks are required to build and expand capacity to develop new products, to identify the potential borrowers, to disburse and collect loan in time, and to monitor the use of credit. Some banks have already created SME cell. Specific actions to strengthen capacity include:

- i. Bangladesh Institute of Bank Management and Bangladesh Bank Training Academy in collaboration with SME Foundation can offer courses on SME credit to the bankers
- ii. Bangladesh Bank can persuade and also prepare regulations to ensure that all banks have a specialized cell for SMEs.

Credit through PKSF

NGO sector of Bangladesh has a long history in disbursing credit for small and micro enterprises. PKSF (Palli Karma Sahayak Foundation) is the wholesale credit seller who lends credit to its partner NGO-MFIs. In 2009, PKSF disbursed micro enterprise loan worth of Taka 1.95 billion to 0.14 million borrowers. PKSF will continue to be an important source of credit to SMEs

Tax Policy and Other Fiscal Incentives

A large part of small and micro enterprises belong to the informal economy of Bangladesh. These enterprises do not have any legal identity and therefore do not pay any tax even if their income is taxable. Cost of being legal (registration fees, tax, harassment, etc) can be much higher than being in the shadow economy. Therefore, in order to target the small and micro enterprises effectively, to bring them in the formal sector, adequate incentives should be offered so that smaller enterprises are encouraged to have a legal identity. Therefore, SFYP recommends that

- i. A definition based on annual turnover, not only on the number of employees, is required to classify the enterprises for tax purposes. One can define as many as ten groups based on annual turnover so that tax rates can increase linearly and smoothly with size without abrupt jump.
- ii. Based on the distribution of enterprises in terms of annual turnover, the lowest group (e.g., micro enterprises) should be completely exempted from VAT. The difference of tax rates between two adjacent size-groups should not exceed 1 percent. The fiscal cost of exemption and lower tax rates is likely to be outweighed by the benefit of larger number and greater size of the enterprises.
- iii. Greater tax incentives for export oriented small and micro enterprises are recommended. For example, handicraft has higher export orientation than other SMEs. So, based on export share of total production, tax subsidy can be offered.
- iv. 2-5 years of tax holiday can be considered for larger SMEs, especially manufacturing, which take time to take off and make profit.
- v. Generally the legal form of small industries is the sole proprietorship and these enterprises are subject to wealth tax on their business capital. Exemption of wealth tax for smaller manufacturing can be considered.

Skills Development

Skill development of the entrepreneur and the workers of the small and micro enterprises is a precondition for the development of this sector. Following steps will be taken in the Sixth Plan to strengthen availability of skills for SMEs:

- i. Education policy and national skill development policy would reflect the demand for skilled labor in SMEs and how this demand can be met with current stock of training and educational institutes.
- ii. SME Foundation with the help of The National Council for Skill Development and Training (NCSDT), Bangladesh Technical Education Board (BTEB) and Directorate of Technical Education (DTE) will offer specialized vocational training/courses at the Upazila level based on the local demand.
- iii. Upon identifying the clusters of enterprises, SME Foundation will collaborate with local vocational training institutes and NGOs to offer on job training to the workers.

Gender Policy for SMEs

Women can play a major role in the expansion of the SME sector, especially in rural areas. The Entrepreneurship skills of women are already well established from the experience of the micro-credit revolution. The Sixth Plan will build on this positive experience by encouraging women entrepreneurs through preferential access to credit and training programs.

The Industrial sector has created employment opportunities for women who mostly come from rural areas, for creating a positive and enabling working environment a Gender Policy for all the industries in the Industrial Sector will be formulated.

Institutional Capacity Building

In order to put SME on the forefront of national policy domain and to implement the policies, institutional capacity of the relevant ministries, Bangladesh Small and Cottage Industries Corporation (BSCIC)/Small and Cottage Industries Training Institute (SCITI), Bangladesh Institute of Management (BIM), Bangladesh Industrial Technical Assistance Center (BITAC) and National Productivity Organization (NPO) SME Foundation, etc. will be upgraded.

DEVELOPMENT RESOURCE ALLOCATIONS IN THE SIXTH PLAN

Much of the manufacturing activities are in the private sector. The main role of the Government is funding of support services in areas of trade policy, industrial policy, and small and micro enterprises. For manufacturing SOEs, the investment program will be mainly financed from own resources. The allocation of resources in the sixth plan is basically intended to finance these support services for the manufacturing sector. Indicative allocations of development resources to support the manufacturing sector in current and constant (FY2011) prices are shown in Tables 2.29 and 2.30 respectively.

Table 2.29: Allocation of Development Resources Manufacturing in the Sixth Plan
(crore taka; current price)

Ministry/Activities	FY2011	FY2012	FY2013	FY2014	FY2015
Ministry of Commerce	123	126	114	133	152
Ministry of Industry	475	555	630	741	843
Ministry of Textiles and Jute	103	131	149	175	199
Total manufacturing	702	812	893	1049	1193

Table 2.30: Allocation of Development Resources for Manufacturing in the Sixth Plan
(crore taka; FY2011 price)

Ministry/Activities	FY2011	FY2012	FY2013	FY2014	FY2015
Ministry of Commerce	123	117	100	109	117
Ministry of Industry	475	516	547	605	649
Ministry of Textiles and Jute	103	122	129	143	153
Total manufacturing	702	755	776	857	919

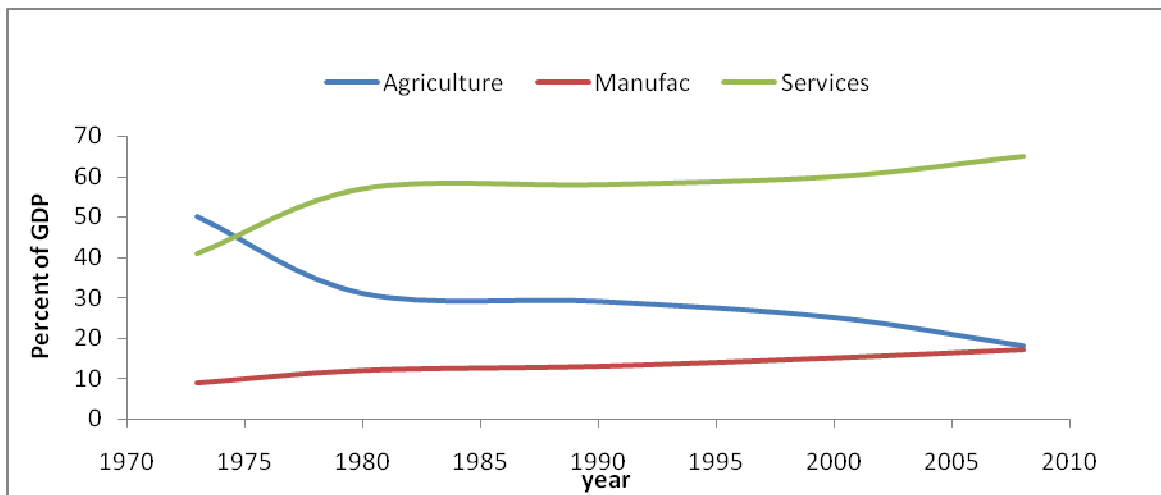
Annex Tables and Figures

Annex Table 2.1: Cross-Country Comparison of Manufacturing Performance

	1980	1990	2000	2008
	Manufacturing Share as % of GDP			
Malaysia	21.5	24.2	30.9	28.0
Thailand	21	27	34	35
Vietnam	10.5	12.3	18.6	21.1
S. Korea	25	27	28	28
China	30.2	32.7	32.1	32.9
Bangladesh	10.8	12.7	14.7	17.2

Source: World Development Indicators, World Bank

Annex Figure 2.1: Structure of the Bangladeshi Economy, 1973-2008



Source: Bangladesh Bureau of Statistics

CHAPTER 3: ENERGY DEVELOPMENT PLAN TO SUPPORT HIGHER GROWTH AND EMPLOYMENT

BACKGROUND AND STRATEGIC CONTEXT

The frequency of power and gas outages is threatening citizen welfare and development prospects. The annual loss to production and income from power outages could well exceed 0.5% of GDP per year. The availability of domestic primary fuel supply is getting so scarce that it is forcing severe measures like shutting down fertilizer factories, rationing gas supplies for household and transport uses, and keeping idle installed power units.

Every 1% of GDP growth is estimated to lead to a growth of 1.4% in electricity demand in a typical developing country. For a 5-6% typical annual economic growth rate, this would imply a need for close to 7-8% growth in electricity supply. Rural electrification ratio expanded rapidly since the early 1990s, growing from 10 percent in 1994 to 37% in 2008. Yet, this is still amongst the lowest in developing world. In the rural economy, low power connectivity is a serious constraint to non-farm sector growth. Against this demand pattern, unfortunately no substantial low-cost and reliable power generation capacity has been added since 2002.

Due to the severity of the power crisis, the Government has been forced to enter into contractual agreements for high-cost, temporary solutions, such as rental power and small IPPs, on an emergency basis, much of it diesel or liquid-fuel based. This has imposed tremendous fiscal pressure, as budgetary transfers are routinely made to the power sector in order to enable it to stay current on payments to power suppliers. The Government is aware that precious resources are being diverted to cover operating losses of the utility that arise from purchasing short-term high cost power which is not sustainable for the financial health of the sector in the long run. Therefore, the longer term strategy embedded in the Sixth Five Year Plan power sector plan is to use budgetary allocations to promote low-cost, sustainable expansion of power generation, transmission, and distribution capacity.

Also, there has been no new capacity addition to fuel sources for power generation. With a power sector that is almost totally dependent on natural-gas fired generation (89.22% of power comes from gas-fired generators), the country is confronting a simultaneous shortage of natural gas and electricity. Other fuels for generating low-cost, base-load energy, such as coal, liquid fuel, or a renewable resource like hydropower, are not readily available, and any policies put in place to access them are likely to have a 3-5 year lead time. Gas supply is dwindling, and the absence of obvious choices for alternative fuels implies that there are no readily identifiable and immediately available options for alternative, new generation sources to meet its base-load power requirements.

ENERGY STRATEGY IN THE SIXTH PLAN

Per capita consumption of energy in Bangladesh is on an average 160 kgoe (kilogram oil equivalent) while it is 530 kgoe in India, 510 kgoe in Pakistan, 340 kgoe in Nepal and 470 kgoe in Sri Lanka. The average consumption in Asia is 640 kgoe. It is evident that per capita average consumption of energy in Bangladesh is significantly lower than the average of Asia. Even it is lower than those of South Asian countries. On top of this low level of consumption, there is already a serious energy crisis.

Clearly, the situation calls for an urgent but well-crafted sustainable strategy to address the energy crisis and increase the energy supply to support Bangladesh's development. Accordingly, the Government has adopted a comprehensive energy development strategy³. The strategy provides a balanced approach that looks at both supply increases and demand management aspects of the energy market. Energy options from domestic sources needs to be complemented with possible options for energy trade. Specifically, the strategy will address what the government can do about gas and power, and will look at options for diversification of fuels for generation. The strategy will also explore alternative solutions such as increased electricity imports from neighboring countries and LNG trade. Furthermore exploration of domestically available resources, such as coal and oil and gas from offshore drilling will be intensified. The supply side options will be balanced with policies for demand management that conserve energy and discourage inefficient use of electricity.

When the present Government assumed office, the power generation was 3525 MW which has now been increased to 4699 MW (as of June 2011). The production capacity will be enhanced to 11457 MW by 2015 and it requires USD 15 billion investment out of which USD 10 billion is expected to be provided by private sector. Development and investment in the power and energy sector is different from other sectors due to the sector specific characteristics. Huge primary asset accumulation and procurement are required for investment in the power and energy sector. Strategies have been made to meet this need by involving private sector with Government. Keeping this in view, the importance of external investment is substantial. On the other hand, consumer's economic consideration is given priority over commercial interests in price setting of electricity, gas and other fuel oil. However, estimation and reevaluation of power and other energy prices is required in order to involve the private sector.

A part of the reason for the past lack of investment in power is poor pricing policies that kept the publicly owned electricity industry in constant deficit and kept away private investment. It also caused poor maintenance practices, resulting in power losses and frequent breakdowns. Other constraints that have contributed to power crisis include difficult sector governance and inefficient management.

³ Power Sector Future Rolling Plan (draft), Power Division, MOEMR; Sixth Five Year Plan 2011-2015, Energy and Mineral Resources Division, MOEMR.

The international evidence including from Bangladesh is clear that electricity should be treated as a private good and its price must reflect its cost of production and a fair return on investment. This will both ensure that there is efficient use of electricity and the industry generates enough surpluses for re-investment. Social objectives like reaching out to the poor and rural community could be achieved through cross-subsidization as well as explicit budget subsidies. As a result of past reforms, private sector participation in electricity generation has increased; the sector governance has also improved in a number of areas including bill collection and corporatization. However progress on proper pricing of electricity is still inadequate. A key policy reform for the Sixth Plan is to ensure proper pricing of power based on a review of good international practices. The possibility of establishing private electricity distribution companies will also be explored.

Energy trade including electricity trade with neighbors has tremendous potential for unlocking Bangladesh’s long-term energy constraints in a cost-effective manner. South Asia’s North East Sub-region has tremendous untapped hydro-power potential (See Table 3.1). Through proper grid connectivity and transmission lines, the scope for power trade to relieve Bangladesh energy constraint is tremendous. It is very encouraging that a head start has already been made to initiate power trade with India. In the short-to medium term 250 MW of power flow through Bheramara-Bahrampur grid connectivity is envisaged. Over the longer-term, this could move up to 1000MW of power imports. Importantly, grid connectivity with India opens up possibility for power trade with Nepal and Bhutan. Additionally, opening up of power trade will facilitate new investments from India’s private sector into Bangladesh for power as well as primary fuel.

Table 3.1: Hydro-Power Potential in Northeast South Asian Countries

Country	Hydropower potential (MW)	Installed Capacity (MW)	Utilization (%)
Bangladesh	1897	230	12.1
Bhutan	30,000	432	1.4
India	148,701	25,587	17.2
Nepal	42,130	527	1.2
Total	209,008	26,776	12.8

Source: SAREI, USAID

Given the acute shortage of primary energy, the Plan will put special emphasis on its development. In addition to trade with neighbors discussed above efforts will be made to exploit all possible sources of primary and renewable energy (hydro-power, gas, coal and solar energy). This will be pursued in some combination of public investment, PPP, and pure private investment. Proper pricing of primary energy will be critical to attract foreign private investment as well as to ensure efficient use of scarce primary fuel. Social needs for primary fuel will be balanced through cross-subsidies and budgetary transfers with a view to reconciling incentives for private investment and efficient use with social need for ensuring access for the poor.

Key Elements of the Energy Strategy in the Sixth Plan

Against the backdrop of the above broad strategy, the key specific issues, objectives, options and strategies of the energy sector that will be addressed in the Sixth Plan can be summarized as follows.

Issues

- Inadequacy of supply of electricity compared to demand.
- Outdated generation, transmission and distribution system of electricity.
- Need for rationalization of energy and power prices.
- Insufficient maintenance funds.
- Large dependence on single source of energy for electricity generation i.e. gas.
- Minimum participation of private sector in electricity generation.
- Inefficient transmission and distribution lines
- Inefficient management in electricity generation, transmission, distribution and sale.
- Insufficient exploration activities for oil and gas both onshore and offshore.
- Insufficient exploration activities for coal and other minerals in the country.
- Need for decision on coal extraction method.
- Insufficient refining as well as storage capacity of liquid fuel.
- Limited use of renewable energy.
- Inadequate public and private investment both in electricity generation as well as in oil and gas sector.
- Use of PPP model to plug or significantly reduce resource gap.
- Inadequate primary energy supply chain.
- Lack of public awareness.

Core Objectives

- To ensure energy security.
- To make the power sector financially viable.
- To increase generation capacity of electricity.
- To introduce a new corporate culture in the power sector entities.
- To improve the reliability and quality of electricity supply.
- To increase the efficiency of energy use as well as reducing system loss.
- To diversify fuel use in power generation i.e. coal, liquid fuel, etc.
- To make the power sector more efficient in terms of generation, transmission and distribution.
- To increase private sector participation in the form of public-private (national) – private (international)/private (national/international) to mobilize resources in electricity, gas and other energy supply.

- To reduce demand-supply gap both in primary (fossil fuel) and secondary (electricity) sector.
- To conserve both power and energy.
- To intensify exploration activities both in onshore and offshore area to find new oil and gas fields.
- To introduce 'Energy Manager' in energy consuming industries and 'energy auditing system' with a view to optimizing energy use.
- To introduce labeling system with a view to ensuring the use of energy efficient equipment.
- To appraise the producing gas fields.
- To raise price of gas, liquid fuel and electricity step by step compatible with international price.
- To encourage energy trade including energy cooperation with neighbors
- To develop facilities to enable import of LNG.
- To develop coal fields thereby reducing dependency on natural gas.
- To finalize the coal policy.
- To finalize the coal extraction plan.
- To intensify exploration activities for coal and other minerals especially in the north-western part of the country.
- To increase use of renewable energy by 5% of electricity demand by the Plan period.
- To consider gender dimension in policies, programs/projects in the energy sector.

Energy Options

- Establish Coal-based power plants using domestic and imported coal;
- Installation of Nuclear Power Plant at Rooppur;
- Finding new oil and gas fields in both offshore and onshore through extensive exploration;
- Huge investment in projects in electricity generation and transmission as well as in oil and gas exploration through Public-Private Partnership Projects;
- Participation of local investors in the power sector;
- Import of LNG;
- Engage in energy trade including grid connectivity for power with neighbors
- Development of coal fields;
- Increase refining as well as storage capacity of liquid fuel;
- Develop renewable energy sources.

Specific Strategies

- Increase of power generation to reduce demand-supply gap through public-private partnerships and through power imports from neighbors.

- Energy savings through demand side management i.e. shop closing times, staggering holiday in industries and shopping complex, replacing ‘incandescent lamp’ by CFL and reducing ‘air conditioning’ load;
- Diversification of fuel use in electricity generation i.e. coal, liquid fuel, etc as well as utilization of natural gas to produce fertilizer;
- Provision for dual fuel in electricity generation wherever possible;
- Mobilization of funds for electricity generation projects through private sector participation in the form of public-private/private (national)– private (international)/private (national/international);
- Provision for cheap imports of machineries for power plants as per the Industrial Policy 2010
- Provision for fiscal incentives for setting up new power plants as per the Industrial Policy 2010
- Provision for incentives for FDI into the power sector as per the Industrial Policy 2010
- Reform energy sector to reduce cost and improve service delivery;
- Adjust prices of electricity, gas and liquid fuel step by step to make them compatible with international prices;
- Reducing system loss.
- Intensification of exploration activities for finding new oil, gas and coal fields;
- Import of LNG to supplement the own natural gas resources;
- Development of coal mines;
- Finalize coal policy;
- Finalize coal extraction plan;
- Installation of Nuclear fuel based Power Plant;
- Install solar panel in public and private buildings where applicable in view of harnessing solar energy;
- Increase use of renewable energy by 5% of electricity demand by the Plan period.
- Building public awareness through publicity in electronic and print media and introduce this issue in the Curriculum.
- Encourage women participation in the energy sector

POWER SECTOR

Shortage of Electricity

The issue of shortage of electricity is manifested in two ways. Firstly, reviewing per capita electricity consumption and percentage of population having access to electricity in Bangladesh, compared to other countries and secondly, determining the gap between demand and supply of electricity in the context of the current economic situation and GDP growth.

Per Capita Electricity Consumption

Bangladesh's per capita electricity consumption is only 170 Kwh in FY10. Per capita electricity consumption of electricity in Bangladesh is much lower than the BRICS countries (Brazil, Russia, India, China, and South Africa) as well as that in Pakistan and Sri Lanka (Table 3.2).

Table 3.2: Per Capita Electricity Consumption 2009 (Kwh)

Country	Per Capita Electricity Consumption (Kwh)
Bangladesh	170*
Brazil	2023.76
India	443.54
Nepal	79.68
Pakistan	388.10
Sri Lanka	388.09
Vietnam	552.85
Indonesia	504.43
China	2443.57

Source: CIA World Factbook, 2009

*Bangladesh's consumption data is of FY2010

Access to Electricity

Only 47 percent of the total population has access to electricity. At present, (FY10), the mileage of transmission and distribution lines are 8,500 circuit kilometer and 2,70,000 route kilometers respectively. Besides the urban areas, some 53,837 villages have been brought under electricity coverage.

Demand-Supply Gap for Electricity

One of the aspects to the demand for electricity in Bangladesh is the rise in the intensity of electricity use with the pace of economic development. In 1980, electricity demand was 30 Gigawatt (GW) per 1000 crore taka of GDP, which increased into 80 GW in 2002. Based on current income elasticity, with an average economic growth of 6 percent the capacity for electricity generation would need to double every six years.

In view of the low base, it is hardly surprising that the demand for electricity is increasing rapidly with the improvement of living standard, increase of agricultural production, development of industries as well as overall development of the country. Due to the failure in the last few years to increase electricity generation capacity proportionately to the demand, a serious supply shortage has emerged. Presently, the shortage is estimated between 1500-1800 Megawatts (Table 3.3). Especially, a huge shortage exists during the evening peak demand. Additionally, due to the crisis of gas supply and lack of necessary maintenance and

Table 3.3: Present Power Generation Capacity in Bangladesh (FY10)

Installed Capacity	5823 MW
Generation Capacity	5271 MW
Available Generation	4000-4600 MW
Highest Generation	4606 MW
Electricity Demand (Peak Demand)	6000 MW
Access to Electricity	47%
Per capita electricity Generation	220 KWh
Per capita electricity Consumption	170 KWh

Source: Power Development Board

rehabilitation of old power plants, it is not possible to utilize the total installed capacity. Consequently, the shortage of electricity reaches 1800 Megawatts during the peak demand (5800 MW) of summer causing huge load-shedding.

Sources of Electricity Supply

Electricity supply in Bangladesh comes from both public and private sources. The Bangladesh Power Development Board (BPDB), Ashuganj Power Station Company Limited (APSCL) and Electricity Generation Company of Bangladesh (EGCB) are producing electricity in the public sector. On the other hand, through IPP (Independent Power Producer) and through Rental Power, electricity is produced in the private sector which is purchased by the Government at a fixed rate. Besides that big industries produce 1200 MW electricity for their own use from which additional 88 MW is supplied to the national grid. Data on electricity generation from public and private sector is given in the following Table 3.4. At present nearly 61 percent of total electricity is produced from public entities. BPDB alone accounts for 46 percent of total electricity production.

Table 3.4: Electricity Generation Capacity by Public and Private Sectors (FY2010)

Sectors	Public			Private			
	BPDB	APSCL	EGCB	SIPP	SIPP (BPDB)	SIPP (REB)	Rental
Generation Capacity (MW)	2470	606	150	1271	99	226	449
Total (MW)	3226			2045			

Source: Bangladesh Power Development Board

Use of Different Types of Energy

Natural Gas is used as primary energy in most of the existing power plants (Table 3.5). Some 89 percent of total electricity is produced from gas-based power plants. Besides gas, a small amount of electricity is produced using diesel, furnace oil and coal. In addition, almost 2.5 percent of total electricity is produced from Karnaphuli Hydro Power Plant. Due to the increase in the use of gas in fertilizer, industries, factories and other sectors it is not possible to supply adequate quantity of gas for electricity generation. The shortage of gas is therefore a

serious constraint on the supply of electricity. The diversification of primary energy sources away from gas to other alternatives including hydro, coal, oil, solar and nuclear energies is essential for Bangladesh’s power and energy security.

Table 3.5: Primary Energy Use in Power Generation

Primary Energy Type	Percentage of Use
Furnace Oil	3.00
Diesel	1.77
Hydro	2.49
Coal	3.52
Gas	89.22

Source: Bangladesh Power Development Board

Electricity Generation Program in the Sixth Plan Period

The power generation targets for the SFYP emerge from the targets of the Perspective Plan. The Perspective Plan of Bangladesh (2010-2021) calls for “Power for All” by 2021. The associated power generation targets for the SFYP are given below:

- Total Electricity Generation in the country by 2011: 7,349 MW
- Total Electricity Generation in the country by 2013: 11,959 MW
- Total Electricity Generation in the country by 2015: 15,457 MW

Strategy for Power Generation

The power and basic energy needs of Bangladesh are huge. They will require huge investments that will well exceed the ability of the public sector. On the other hand there are plenty of untapped resources in the domestic and foreign private sector for financing power investments in Bangladesh. Accordingly, the main driving force for the power sector would be the Public Private Partnership (PPP) initiative. Power sector is characterized by time consuming nature of raising fund and requirement of large scale initial investments. To address these concerns, the Independent Power Producer (IPP) policy was formulated in 1996. Private sector has been drawn in to the power generation through IPP, SIPP, Rental, Quick Rental and Joint Venture policies under the PPP framework.

Under the yearly power generation plan, Government has taken initiatives to produce 2166 MW by FY11, 1178 MW by FY12, 3176 MW by FY13, 2333 MW by FY14 and 2410 MW by FY15.

Time Bound Power Generation Program

The time bound work plans for power generation are as follows:

Immediate

Under the immediate plan, Quick Rental Power Plants will be installed using liquid fuels/gas and capable to produce electricity within 4-12 months. Total 1753 MW is planned to be generated from rental and quick rental power plants out of which 410 MW has already been commissioned. Another 1343 MW power plants is expected to be commissioned by June, 2011 (Table 3.6).

Table 3.6: List of Projects that will be implemented by 2011

Sl. No	Name of the Power Plant	Capacity (MW)	Ownership	Type of Fuel	Completion Date
	PUBLIC SECTOR				
1	Shikalbaha 150 MW	150	BPDB	Gas	18.08.10
2	Siddhirganj 2X120 MW Peaking Power Plant (2 nd unit)	105	EGCB	Gas	14.10.10
3	Fenchuganj 90 MW CCPP	105	BPDB	Gas	June, 2011
4	Ashuganj 50 MW Power Plant	53	APSCCL	Gas	April, 2011
	Sub-Total (Public)	413			
	PRIVATE SECTOR (Rental & Quick Rental)				
1	Thakurgaon 50 MW Rental	50	Rental (BPDB)	HSD	02.08.10
2	Ghorasal 3 Years Quick Rental	45	Rental (BPDB)	HSD	10.08.10
3	Ghorasal 3 Years Quick Rental	100	Rental (BPDB)	HSD	23.08.10
4	Khulna 3 Years Quick Rental	55	Rental (BPDB)	HSD	10.08.10
5	Pagla 3 Years Quick Rental	50	Rental (BPDB)	HSD	24.11.10
6	Bheramara 110 MW Rental	110	Rental (BPDB)	HSD	31.12.10
7	Siddhirganj Sponsor: Desh Energy	100	Rental (BPDB)	Diesel	-
8	Meghnagat, Sponsor: HPGL	100	Rental (BPDB)	FO	March, 2011
9	Noapara, Jessore, 5 Years Rental	105	Rental (BPDB)	FO	March, 2011
10	Ghorasal Sponsor: Max Power	78	Rental (BPDB)	Gas	March, 2011
11	B.Barua Sponsor: Aggreko	70	Rental (BPDB)	Gas	-
	Ashuganj Sponsor: Aggreko	80	Rental (BPDB)	Gas	April, 2011
12	Modanganj Sponsor: Summit Power	102	Rental (BPDB)	FO	April, 2011

Sl. No	Name of the Power Plant	Capacity (MW)	Ownership	Type of Fuel	Completion Date
13	Meghnagat Sponsor: IEL	100	Rental (BPDB)	FO	April, 2011
14	Khulna Sponsor: KPCL	115	Rental (BPDB)	FO	April, 2011
15	Keranigonj Sponsor: Power Pack	100	Rental (BPDB)	FO	April, 2011
16	Ashugonj Sponsor: United Ashugonj Power Ltd.	53	Rental (BPDB)	Gas	April, 2011
17	Nowapara Sponsor:KhanJahan Ali	40	Rental (BPDB)	FO	May, 2011
18	Amnura, Chapainawabgonj Sponsor: Sinha Power	50	Rental (BPDB)	FO	May, 2011
19	Julda, Chittagong Sponsor: Acorn Infra. Service Ltd	100	Rental (BPDB)	FO	May, 2011
20	Siddirganj Sponsor: Dutch Bangla Power	100	Rental (BPDB)	FO	May, 2011
21	Katakhali,Rajshahi Sponsor: NPSL	50	Rental (BPDB)	FO	May, 2011
	Sub-Total (Private)	1753			
	Total (2011)	2166			

Source: Bangladesh Power Development Board

Short-Term

Under the short term plan, power stations that are liquid fuel based and implementable within 12 to 24 months will be installed. Works for setting up power stations with a generation capacity of 1106 under public sector has been started (Table 3.7).

Table 3.7: List of Projects that will be implemented by 2012

Sl. No	Name of the Power Plant	Capacity (MW)	Ownership	Type of Fuel	Completion Date
	PUBLIC SECTOR				
1	Siddhirganj 2X120 MW Peaking Power Plant(1 st unit) EPC: BHEL	105	EGCB	Gas	July, 2011
2	Faridpur 50 MW Peaking Power Plant (U/C)	54	BPDB	FO	October, 2011
3	Gopalganj 100 MW Peaking Power Plant (U/C)	109	BPDB	FO	October, 2011
4	Dohazari 100 MW Peaking Power Plant (U/C)	102	BPDB	Gas/ FO	November, 2011
5	Hathazari 100 MW Peaking Power Plant(U/C)	98	BPDB	Gas/ FO	November, 2011

Sl. No	Name of the Power Plant	Capacity (MW)	Ownership	Type of Fuel	Completion Date
6	Bera 70 MW Peaking Power Plant (U/C)	71	BPDB	FO	November, 2011
7	Doudkandi 50 MW Peaking Power Plant (U/C)	52	BPDB	Gas/ FO	November, 2011
8	Baghabari 50 MW Peaking Power Plant (U/C)	52	BPDB	FO	November, 2011
9	Gazipur 50MW Power Plant (U/C)	50	RPCL	Gas/ FO	December, 2011
10	Sylhet 150 MW CCPP (U/C)	150	BPDB	Gas	February, 2012
11	Katakhali 50 MW Peaking Power Plant	50	BPDB	FO/ Gas	April, 2012
12	Santahar 50 MW Peaking Power Plant	50	BPDB	FO/ Gas	March, 2012
13	Chandpur 150 MW CC (U/C)	163	BPDB	Gas	March, 2012
	Sub-Total(Public)	1106			
	PRIVATE SECTOR				
1	Solar	7	IPP (BPDB)	Solar	June, 2012
2	Tangail 20 MW	20	IPP (REB)	Gas/ FO	June, 2012
3	Chandpur 15 MW	15	IPP (REB)	FO	June, 2012
4	Narayangonj 30 MW	30	IPP (REB)	FO	June, 2012
	Sub-Total (Private)	72			
	Total (2012)	1178			

Source: Bangladesh Power Development Board

Medium-Term

Under the medium term plan, initiatives have been taken to set up power plants with a total generation capacity of 7919 MW that are implementable within 3 to 5 years time of which 2450 MW will be coal based (Tables 3.8-3.10).

Table 3.8: List of Projects that will be implemented by 2013

Sl. No	Name of the Power Plant	Capacity (MW)	Ownership	Type of Fuel	Completion Date
	PUBLIC SECTOR				
1	Raujan	20	RPCL	Gas/ FO	September, 2012
2	Sirajganj 150 MW GT	150	NWPGC	Gas/Oil	November, 2012
3	Chapai Nababganj	100	BPDB	FO	November, 2012

Sl. No	Name of the Power Plant	Capacity (MW)	Ownership	Type of Fuel	Completion Date
4	Kaptai Solar	5	BPDB	Solar	December, 2012
5	Kodda, Gazipur 150 MW Power Plant	150	BPDB- RPCL Powergen Ltd.	FO	December, 2012
6	Ghorasal 200-300 MW Peaking	290	BPDB	Gas/Diesel	March, 2013
7	Khulna 150 MW GT	150	NWPGC	Gas/Oil	March, 2013
	Sub-Total (Public)	865			
	PRIVATE SECTOR				
1	Shantahar Peaking Plant	50	IPP (BPDB)	FO	July, 2012
2	Syedpur Peaking Plant	100	IPP (BPDB)	FO	July, 2012
3	Jamalpur Peaking	100	IPP (BPDB)	Gas/ FO	September, 2012
4	Comilla Peaking	50	IPP (BPDB)	Gas/ FO	September, 2012
5	Khulna Peaking	100	IPP (BPDB)	FO	September, 2012
6	Dhaka 100 MW Power Plant	100	IPP (BPDB)	FO	September, 2012
7	Dhaka 50 MW Power Plant	50	IPP (BPDB)	FO	September, 2012
8	Chittagong 100 MW Power Plant	100	IPP (BPDB)	FO	September, 2012
9	Chittagong 50 MW Power Plant	50	IPP (BPDB)	FO	September, 2012
10	Rajshahi 100 MW Power Plant	100	IPP (BPDB)	FO	September, 2012
11	Rajshahi 50 MW Power Plant	50	IPP (BPDB)	FO	September, 2012
12	Khulna 100 MW Power Plant	100	IPP (BPDB)	FO	September, 2012
13	Barisal 50 MW Power Plant	50	IPP (BPDB)	FO	September, 2012
14	Bhola 150-225 MW CCPP (2 nd unit):SC GT Unit	147	IPP	Gas	October, 2012
15	Kaliakair Peaking Plant, Gazipur	100	IPP	Gas/ FO	November, 2012
16	Wind	100	IPP (BPDB)	Wind	January, 2013
17	Savar Peaking Plant, Dhaka	100	IPP	Gas/ FO	March, 2013
18	Bibiana 300-450 MW CCPP (1 st Unit): SC GT Unit	222	IPP	Gas	March, 2013
19	Bibiana 300-450 MW CCPP (2 nd Unit): SC GT Unit	222	IPP	Gas	April, 2013
20	Meghnaghat 300-450 MW CCPP (2 nd Unit) Dual Fuel: SC GT Unit	220	IPP	Gas/ FO	April, 2013
21	Keraniganj 150-225 MW CCPP :SC GT Unit	100	IPP	Gas/ FO	June, 2013

Sl. No	Name of the Power Plant	Capacity (MW)	Ownership	Type of Fuel	Completion Date
22	Madanganj 150-225 MW CCPP :SC GT Unit	100	IPP	Gas/FO	June, 2013
	Sub-Total (Private)	2311			
	Total (2013)	3176			

Source: *Bangladesh Power Development Board*

Table 3.9: List of Projects that will be implemented by 2014

Sl. No	Name of the Power Plant	Capacity (MW)	Ownership	Type of Fuel	Completion Date
	PUBLIC SECTOR				
1	Siddirganj 450 MW CCPP	450	EGCB	Gas	December 2013
2	Bhola 150 MW CCPP	150	BPDB	Gas	December 2013
3	Haripur 360 MW CCPP	360	EGCB	Gas	June 2014
4	Barapukuria 250-300 MW (3 rd Unit)	250	BPDB	Coal	June 2014
5	Ashugonj 150 CCPP	150	APSCL	Gas	June 2014
6	Shikalbaha 150-225 MW CCPP	150	BPDB	Gas/FO	June 2014
	Sub-Total (Public)	1510			
	PRIVATE SECTOR				
1	Bhola 150-225 MW CCPP (2 nd unit): ST Unit	70	IPP	Gas	August 2013
2	Bibiana 300-450 MW CCPP (1 st Unit): ST Unit	119	IPP	Gas	March 2014
3	Bibiana 300-450 MW CCPP (2 nd Unit): ST Unit	119	IPP	Gas	April 2014
4	Meghnaghat 300-450 MW CCPP (2 nd Unit) : ST Unit	115	IPP	Gas/FO	April 2014
5	Keraniganj 150-225 MW CCPP : ST Unit	50	IPP	Gas/FO	June 2014
6	Madanganj 150-225 MW CCPP :ST Unit	50	IPP	Gas/FO	June 2014
7	Sirajganj 300-450 MW CCPP	300	IPP	Gas	June 2014
	Sub-Total (Private)	823			
	Total (2014)	2333			

Source: *Bangladesh Power Development Board*

Table 3.10: List of Projects that will be implemented by 2015

Sl. No	Name of the Power Plant	Capacity (MW)	Ownership	Type of Fuel	Completion Date
	PUBLIC SECTOR				
1	Bheramara 360 MW CCPP	360	NWPGC	Gas	December, 2014
2	Ashuganj 450 MW CCPP	450	APSCL	Gas	March, 2015
	Sub-Total (Public)	810			
	PRIVATE SECTOR				
1	Chittagong 150-300 MW Coal Fired Power Project	150	IPP	Imp. Coal	Sept. 2014
2	Khulna 150-300 MW Coal Fired Power Project	150	IPP	Imp. Coal	Sept. 2014
3	Khulna South 1300 MW Coal Fired Power Project	1300	PPP (Joint Vent.) / IPP	Coal	March, 2015
	Sub-Total (Private)	1600			
	Total (2015)	2410			

Source: Bangladesh Power Development Board

Diversification of Energy Sources

According to the plan, high dependency on gas based power generation will be reduced in the short and medium terms and the new built plants will be designed to be dual-fuel based. In addition, emphasis will be given to various power saving efforts so that the saved power can be transmitted to the other thrust areas. ‘CCF (Compact Fluorescent Lamp) Distribution Program’ is expected to save 200-350 MW electricity per month. There is also a continued effort to produce and buy captive power from renewable and non renewable sources. So far, contracts have been signed to purchase 88 MW of electricity from captive generation sources. Initiatives have been taken to import electricity from the neighboring countries and export (in future) through the sub-regional cooperation. According to a decision at the Prime Minister level with India, works have already been started to build 400 KV transmission line and HVDC (High Voltage Double Circuit) sub stations through Regional Grid Interconnection. India has made the commitment to supply 500 MW by FY 2013.

The use of renewable energy has risen considerably in recent times in developed and developing countries. In Asia, India and China have achieved considerable success in innovating and using the technology of renewable energy. Although the initial installation cost of renewable energy is high, it will gradually decline and will come down within the purchasing capacity of the people. As the global reserve of fossil fuel is gradually decreasing,

the Government has taken steps to extend and develop the use of renewable energy to ensure the future energy security. Under this plan, targets have been set to produce electricity from renewable sources as 5 percent of total production by the year 2015. Renewable Energy Policy has also been adopted to attract and encourage the private sector. In addition, the Government is going to set up Sustainable Energy Development Authority (SEDA) to expand and develop renewable energy, to promote energy saving and energy efficiency and to create awareness among the users of electricity.

Power Tariff

Proper pricing of primary fuel and electricity is important to conserve energy as well as to generate resources for future investments. Proper energy pricing is also critical to attract foreign and domestic private investment in the energy sector. Accordingly, setting of proper prices is a key element of the Sixth Plan energy strategy. The per unit production cost of electricity is expected to rise (50 percent-60 percent) in the upcoming 2-3 years due to the installation of high cost liquid fuel based peaking plants. Accordingly, the Energy Regulatory Commission may increase the tariff of power step by step. However, power tariff will likely come down after 2014 as the implementation of gas and coal based power plants will be completed that is expected to reduce generation costs.

Transmission and Distribution

In addition to power generation, it is very important to develop a dependable and quality power transmission and distribution network to ensure quality and uninterrupted power supply to the consumers. To transmit the newly produced power to the doorsteps of the consumer, it is urgently needed to build new transmission and distribution infrastructure in addition to renovation and preservation of old distribution networks.

For resolving the electricity crisis, government has some plans for increasing electricity generation and at the same time has undertaken massive development plans for efficient and uninterrupted transmission and distribution system. At present total length of 230 KV electric line has been upgraded at 2647 circuit kilometers and for 132 KV electric lines, the length is 5818 circuit kilometer. For strengthening the electricity transmission system and for meeting up the gradual increasing future demand for electricity, the Government has set a target of "Providing Electricity in every house by 2021". As part of achieving this target, the Government has already undertaken a priority based investment plan for the year 2007-09 under which massive work plan has been chalked out for building an additional 3000 kilometer of transmission lines by 2015. In this regard, PGCB has undertaken activities for building concerned transmission lines for supplying electricity through regional cooperation.

Up to October, 2010 about 119 lac customers have been provided with electricity connections through 2,69,635 kilometer distribution lines and other necessary infrastructure. New projects are being undertaken for expanding the electrification program as well as for the development and capacity enhancement of the existing transmission and distribution system. Through these

programs, steps have been made for building an additional 60,000 kilometer distribution lines by 2015.

Providing electricity in rural areas is an integral feature of the distribution system. The progress with rural electrification is shown in Table 3.11. About half of the total power is provided by the Rural Electrification Board (REB) in the country. The REB mostly obtains its supply from the Power Development Board as its own capacity for production is very little. Compared to the demand, own capacity for transmission and distribution is also very limited. While REB has been a relatively better managed power entity, further efforts are needed to improve efficiency.

Table 3.11: Progress with Rural Electrification Up to June 2010

Indicators	Progress
Total number of connections	81,02,549
Of which: households	69,85,344
Irrigation	1,77,669
Industrial	1,30,965
Commercial	7,94,896
Others	13,675
Number of villages	48,682
Distribution lines (kms)	2,22,780

Source: Rural Electrification Board

To match the time bound increases in generation capacity, the Government has also adopted a time bound plan for constructing transmission lines and sub stations in order to supply the generated electricity in the load centers at different voltage level. Description of major transmission projects is provided Table 3.12.

Table 3.12: Planned Important Transmission Projects

Sl No.	Transmission Line	Voltage Level	Length KM	Expected Date of Completion
01.	Bibiyana-Kaliakoir 400 kV and Fenchuganj-Bibiyana 230 kV Transmission Line (NG2)	400 KV	168	2011-2012
		230 KV	57	
		132 KV	10	
02.	400 kV Interconnection between Bangladesh (Bheramara) and India (Baharampur)	400 KV	30	2012-2013
03.	Bibiyana-Comilla(N) 230 kV transmission line.	230 KV	160	2011-2012
04.	Eight new 132/33 kV S/Ss with Interconnecting 132 kV line.	132 KV	100	2012-2013
05.	Barisal-Bhola-Burhanuddin 230 kV Transmission Line	230 KV	60	2012-2013
06.	Aminbazar-Maowa –Mongla 400 kV & Mongla –Khulna(S) 230 kV Transmission line (NG3)	400 KV	192	2014-2015
		230 KV	40	

SI No.	Transmission Line	Voltage Level	Length KM	Expected Date of Completion
07.	Anowara – Meghnaghat 400 kV Transmission line (NG4)	400 KV	260	2014-2015
08.	Raozan-Sikalbaha- Anowara & Hathazari-Khulshi 230 kV Transmission Line	230 KV	60	2012-2013
09.	Construction of 230/132 kV Substations at Shyampur, Jhenaidah (Or Jessore) , Bheramara and Sripur	132 KV	32	2012-2013
10.	Enhancement of Capacity of Grid Substations and Transmission Line (Phase-I)	132 KV	-	2012-2013
11.	Ishurdi-Rajshahi 230 kV Transmission Line.	230 KV	70	2012-2013
12.	RPCL Mymensingh-Tangail via Bhaluka 132 kV double circuit Transmission Line	132 KV	100	2012-2013
13.	Brahmanbaria-Nabinagar-Narsingdi 132 kV Double Circuit Pole Line	132 KV	55	2011-2012
14.	Goalpara-Bagerhat 132 kV 2 nd Single Circuit Transmission line	132 KV	45	2011-2012
15.	Electricity interconnection between Tripura and Eastern Region of Bangladesh.	230 KV	13	2012-2013
16.	Chandraghona-Rangamati-Khagrachari 132 kV Transmission Line	132 KV	80	2012-2013
17.	Three new 132/33 kV S/Ss with Interconnecting 132 kV line	132 KV	-	2012-2013

Source: Bangladesh Power Development Board

Year-wise Power Generation considering Planned Implementation

Year-wise power generation data is shown in Table 3.13. According to the plan around 11457 MW extra powers will be added to the national grid by FY 15.

Table 3.13: Year wise Power Generation during the Sixth Plan

FY	Public sector (MW)	Private Sector (MW)	Total (MW)
2010	-	194	194
2011	413	1753	2166
2012	1106	72	1178
2013	865	2311	3176
2014	1510	823	2333
2015	810	1600	2410
	Total Extra Generation		11457

Source: Bangladesh Power Development Board

Adequacy of the Planned Power Expansion Program

The Government has formulated plans regarding production as well as supply considering the increased growth in power demand resulting from economic development along with the ongoing rising demand in electricity. Following the plan, although around 11457 MW extra power will be added to the national grid by 2015, and the total power supply capacity will reach to 15,357 MW due to the retirement of some existing old power plants. On average, the demand for electricity is assumed to increase by 10% each year during 2010 and 2015. The overall scenario of estimated gaps in power demand and supply are shown in Table 3.14.

Table 3.14: Power Supply-Demand Balance in the Sixth Plan

Fiscal Year		2011	2012	2013	2014	2015
Max. Demand with DSM (MW)		6765	7518	8349	9268	10283
Gen addition – Public Sector(MW)		413	1106	865	1510	810
Gen. addition – Private Sector(MW)		1753	72	2311	823	1600
Cross Border (MW)		-	-	500	-	-
Capacity Retired(MW)		88	83	161	897	448
Generation Capacity(MW)		7349	8444	11959	13395	15357
Net Capacity(MW)		7055	8106	11481	12859	14743
Dependable Capacity (MW)		5432	6323	9070	10287	11794

Source: Bangladesh Power Development Board

Institutional Reforms in the Power Sector

Implementation of the power sector programs will require continued and sustained reforms. There have been several reforms so far in Bangladesh in the power sector. During 1996–2000, several changes were made to the institutional arrangements in the power sector. The Power Grid Company of Bangladesh (PGCB) was established to gradually take over the operation of the high-voltage power transmission network (230 kilovolts [kV] and 132 kV) from BPDB. The Dhaka Electric Supply Company (DESCO) was established to take over power distribution in parts of Dhaka from DESA. PGCB and DESCO were established on a commercial basis as Government-owned companies under the Companies Act. Several privately owned power generation projects were also established during this period as independent power producers (IPPs) selling electricity to BPDB. Some distribution areas were transferred from BPDB and DESA to PBSs.

Further institutional reforms were undertaken during 2001–2008. More distribution zones in Dhaka were transferred to DESCO from DESA, the West Zone Power Distribution Company (WZPDC) was established in 2001 to take over power distribution from BPDB in the western part of the country, and the Dhaka Power Distribution Company (DPDC) was established in

2006 to take over the remaining operations of DESA. WZPDC and DPDC were also established under the Companies Act as Government-owned companies. In the generation sector, the Ashuganj Power Company Limited was created to take over the power station at Ashuganj, and the Electricity Generation Company of Bangladesh (EGCB) and North West Power Generation Company (NWPGC) were established to implement several power generation plants financed by ADB and World Bank, JICA and other development partners.

Despite these reforms the power sector still faces a number of main development challenges that will require continued further efforts. These challenges include the need for resource mobilization, planning and implementation of least cost power expansion programs, efficiency of billing and collection processes, and sector corporate governance. To address these concerns the Government will undertake further actions during the Sixth Plan with the following objectives:

- establishing transparent corporate governance and a regulatory regime to provide performance-based incentives to sector entities;
- improving the commercial performance of the sector to improve its cost recovery and financial viability. This requires fundamental corporate and institutional reforms;
- attracting investments from the private sector to increase the generation capacity of the country and maintain an adequate and reliable power supply;
- encouraging development partners to provide concessionary financing for investments in urgently needed power transmission and distribution projects;
- changing the prevailing culture of electricity pilferage and nonpayment of electricity bills in collusion with utility employees;
- establishing the performance-driven and accountable corporate culture in the newly established companies. This requires a drastic change from the existing practices and culture of the power sector;
- maintaining the reform momentum with further unbundling of power generation and distribution operations of BPDB and the restructuring of the operations of DESA;
- addressing the power shortages as a matter of urgency through a combination of investments from the private sector and the public sector;
- commercializing the generation operations of BPDB, which have not been restructured. BPDB continues to operate in a suboptimal manner, with low plant factors and thermal efficiencies. The existing generation assets need to be rehabilitated to improve their efficiency and availability. The generation companies created out of BPDB need to be made fully operational with the transfer of assets and the signing of PPAs with BPDB;
- further improving the power distribution operations of WZPDC, BPDB, and DPDC.
- addressing the financial insolvency of BPDB and the former DESA, which have large unpaid Government debts and irrecoverable accounts receivable. To set the power sector's financials on a sound basis, a major financial restructuring is required including the write-off of BPDB's liabilities to the Government; and

- addressing overall financial non-viability of the sector despite improvements in control over losses and bill collection. Significant increases in retail power tariffs are needed to ensure that all sector entities achieve financial viability.

PRIMARY ENERGY SECTOR

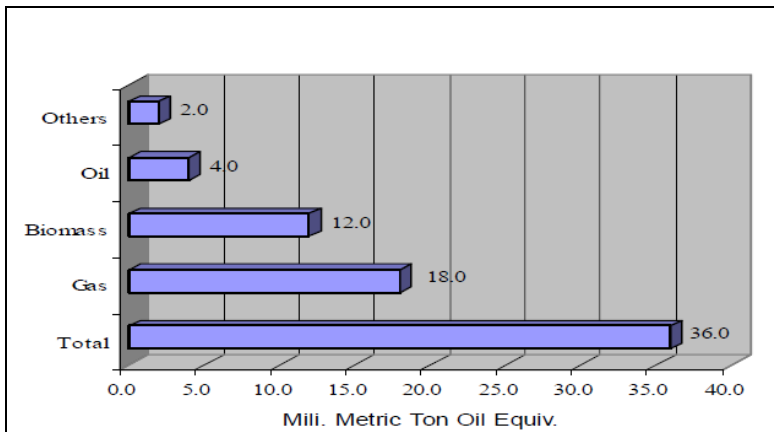
Shortage of power is a reflection of an even bigger challenge in terms of limited supply of primary energy. Bangladesh showed early promise in terms of having adequate sources of primary energy from natural gas and coal and to a limited extent from hydro-power. The optimism on gas extended to an extent that there was even a talk of exporting gas. Lack of adequate planning and investment in primary energy for a large number of years has caused a serious shortage of primary energy in Bangladesh. As a result, energy shortage has emerged as a binding constraint on growth in Bangladesh.

In recognition of this energy crisis, in addition to emphasis on power, the Government is also developing a comprehensive primary sector strategy and associated programs and policies. Achieving energy security is a key development objective of Vision 2021 and specific actions will be taken to move towards this objective during the Sixth Plan.

Sources of Energy Supply

At present, Bangladesh has energy supply from both renewable and nonrenewable sources, 38 percent of which comes from biomass (Figure 3.1). However, 75 percent of commercial energy is provided from natural gas. Currently, gas production per day is 2000 MMCF. Imported oil accounts for the major share of the rest of the energy requirement. Bangladesh’s annual requirement of energy is approximately 36 million metric ton. Apart from natural gas and crude oil, coal is mainly used as fuel in the brick-fields and at the Barapukuria Thermal Power Plant. Moreover, power is also being generated by using solar home system in off grid areas. In addition there are some poultry and dairy farms in which bio-gas plants are being set up and with this energy, power can be generated and is also used for cooking. Steps have been taken to generate electricity by Bio-Mass Gasification Method in the country. We also have a bright potential to produce electricity from wind and mini-hydro or wave-energy. Recently, solar power based irrigation pump has been used in a number of areas of the country.

Figure 3.1: Sources of Energy Annual Energy Supply 2009



Source: Energy and Mineral Resources Division

Non-renewable energy

The principal sources of commercially used non-renewable energy include:

- Natural gas
- Oil from minerals and other sources
- Coal and coal like substance
- Compressed natural gas (CNG)
- Liquefied Natural Gas (LNG)

Natural Gas

The major source of our primary energy is natural gas. As many as 23 gas fields have been discovered since 1955 when the first gas field was found in Sylhet. Gas has served Bangladesh well, but galloping growth in demand combined with inadequate investment in gas exploration has led to a serious shortage of gas supply.

Reserve and Production Levels of Natural Gas

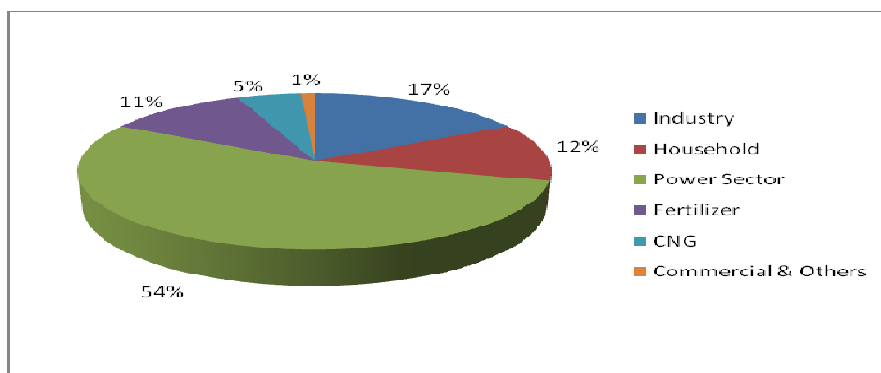
The existing natural gas is mainly used in electricity, fertilizer, industry, transport and housing sectors. The reserve and production situation of gas up to 2010 are as follows:

- Total number of gas fields- 23
- Number of gas fields which are in production- 17 (number of wells-79)
- Total reserve of extractable gas (proven and probable)- 20.605 TCF (Trillion Cubic Feet)
- Total consumption of gas up to June 2010- 9.077 TCF
- Total reserve remaining(2P) UPTO June 2010- 11 .528TCF
- Daily gas exploration- about 2000 MMCF (Million Cubic Feet)
- Production by Petrobangla- 960 MMCF
- Production by International Oil Companies- 1040 MMCF
- Daily demand of gas- 2500+ MMCF
- Daily shortage of gas supply- 500+ MMCF
- Gas production increased from January 2009 to December 2010- 284 MMCFD

Consumption of Natural Gas

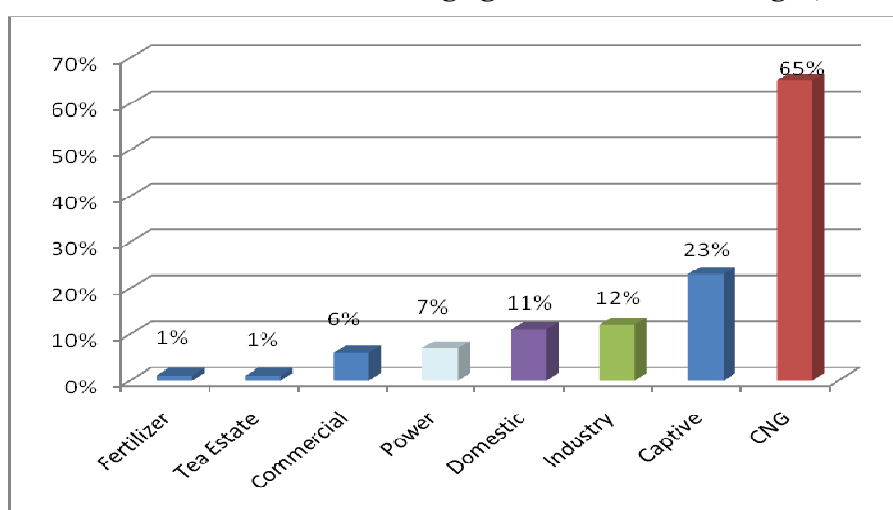
The existing natural gas is mainly used in electricity, fertilizer, industry, transport and housing sectors (Figure 3.2). From Figure 3.2 it is evident that more than half of the gas is used for electricity generation, yet the demand for gas has grown much faster from industries and households (Figure 3.3)

Figure 3.2: Current Sectoral use of Gas in percent (2009)



Source: Energy and Mineral Resources Division

Figure 3.3: Sector wise annual average growth rate of use of gas, 1991-2010



Source: Energy and Mineral Resources Division

Demand and Supply of Natural Gas during the Sixth Plan

The demand for natural gas during the Sixth Plan is shown in Table 3.15. This is based on the projected expansion in power generation during the Plan period and the average rate of consumption in the past 17 years for other sectors. Under these projections, the demand for

Table 3.15: Sector-specific Projected Demand for Gas during the Sixth Plan

Sector	2010-11	2011-12	2012-13	2013-14	20014-15
Power	300.5	324.5	350.5	378.5	415.8
Captive Power	142.6	164	188.6	216.9	238.6
Fertilizer	94	94	94	94	94
Industry	160.7	184.8	214.4	246.5	271.1
Household	99.5	111.4	124.8	139.8	153.8
CNG	44.7	51.4	56.5	113	124.3
Others	30.8	31.9	32.7	33.7	37.4
Total	872.8	962	1061.5	1222.4	1335

Source: Energy and Mineral Resources Division

gas will expand from 783 billion cubic feet (cft) in FY2009/10 to 1335 billion cft by the end of the plan period. Regarding supply, at present only 730 BCF (Billion Cubic Feet) gas is being supplied. As a result, there is already a shortage of gas. Unless steps are taken to extract more gas through more intense use of existing fields as well as new fields, a serious shortage of gas will emerge in the coming years.

Challenges Faced by the Gas Sector

The main challenges facing the natural gas sector are as follows:

- maintaining the production level of existing fields operated by national gas companies;
- undertaking exploration in new areas to expand gas reserves;
- attracting investments and technical expertise from IOCs under PSAs for exploration and development of new gas fields;
- establishing a national gas transmission network by connecting the main gas fields with the main demand centers in the greater Dhaka and Chittagong area;
- improving the technical and commercial performance of gas distribution companies to reduce distribution losses;
- diversifying the primary energy supply from natural gas to other forms of energy, given the high dependence of the economy on natural gas and limited proven gas reserves in the country and difficulties in increasing production capacity in the short and medium terms;
- arresting the declining production in gas fields operated by Petrobangla subsidiaries through timely maintenance of existing fields, drilling of additional wells, and appraisal of existing gas fields to ascertain the possibilities for additional gas production;
- adjusting end user gas prices since the prevailing gas pricing structure and high level of Government taxes do not provide adequate margins for the national gas companies to undertake the requisite investments in developing new fields;
- attracting new investments from IOCs for exploring new areas, especially the offshore blocks where the national oil companies do not have any prior experience.
- improving energy efficiency, including the efficiency of using scarce gas resource. The prevailing practice of setting gas prices below international prices is encouraging inefficient use of gas and its use for applications for which more economical alternatives are available;
- discouraging the use of gas for captive power generation by industries using suboptimum and inefficient technologies. However, this can be done only after ensuring a reliable (in terms of both continuity and quality) supply of grid-based power.

Sixth Five Year Action Plan for the Development of Natural Gas Sector

Based on the identification of major challenges, the salient features of the planned policy strategy for the gas sector include the following.

Strategy and Policies

- Adoption of time based action plan for discovering new gas fields
- Make BAPEX more effective in exploring oil and gas
- Speedy processing of tenders and signing agreements for offshore blocks

- Approval for importing liquefied natural gas by private sector as an alternative to natural gas and building necessary infrastructure
- Reduce the supply of natural gas to those sectors where alternative energy can be used and encourage them for using alternative energy
- Finalizing National Energy Policy and Coal policy to create opportunity for using energy from multiple sources
- Increasing financial capacity of BAPLEX by forming Gas Development Fund
- Ensuring proper pricing of gas to conserve energy and improve the financial operations of the gas sector
- Maximizing domestic production of diesel, kerosene, motor spirit (MS) and HOBC through fractionation of condensate in the country.

Action Plan for Exploration and Increased Generation of Natural Gas

The Government has already taken a number of time-bound steps to explore, discover and improve new gas field and also for gas extraction and supply. The salient features of implementable and ongoing programs under short, medium and long-term plans are as follows:

Program-completed by 2010

In order to increase gas, exploration actions have been taken that will bring about an additional 158 million cubic feet daily (MMCFD) gas for the national grid by December 2010. Under the short-term programme, gas production has already increased by 114 million cubic feet daily (MMCFD). The gas field wise detailed description is given in Table 3.16. In summary, actions have been taken to increase 78 MMCFD by rehabilitation (work over) of five wells; 35 MMCFD by digging two evaluation/development wells at Shalda River and Fenchuganj gas fields; 15 MMCFD from one exploration well at Sundalpur in Noakhali District; and 30 MMCFD from exploration/ development well in southern part of Sangu gas field.

Table 3.16: Short Term Plan completed by December 2010

Under Implementation by National Gas Companies						
Sl. No.	Program	Time Schedule		Increase in Production (MMCFD)	Agency	Activity
		Start	Completion			
Under Implementation by National Gas Companies						
1	Sylhet 7	December 09	January 10	8	SGFL	Workover
2	Meghna 1	April 10	June 10	15	BGFL	Workover
3	Habiganj 11	April 10	June 10	20		Workover
4	Titas 12	May 10	June 10	20		Workover
Sub Total				63		
5. Other Sources				51	BAPLEX	Workover Exploration Appraisal Well Appraisal Well
Total				114		

Source: Energy and Mineral Resources Division

Program to be completed by June 2013

The June 2013 program consists of additional exploration as well as LNG imports. The details are shown in Table 3.17. These actions will generate additional 1920 MMCFD to the national grid by 2013.

Table 3.17: Medium Term Plan to be completed by June 2013

Sl. No.	Program	Completion	Planned increase in Production(MMCFD)	Agency	Activity	Remarks	
A) Under Implementation by National Gas Companies (by 2011)							
1.	Kapashia 1	June11	20	BAPEX	Exploration		
2.	Shrikail 2	Dec 11	20		Exploration		
3.	Mobarakpur 1	Dec 11	15		Exploration		
4.	Shalda 4	June 12	15		Development		
5.	Fenchuganj 4	June 12	20		Development		
6.	Titas 17	Oct 11	25	BGFCL	Development		
7.	Titas 18	March 12	25		Development		
8.	Semutang 1, 5	June 12	20	BAPEX	Workover		
9.	Sundalpur	June 12	15		Exploration		
10.	Salda 3	June 12	15				Development
11.	Sunetra 1	Jan 12	25				
12.	Shabazpur 3, 4	March 12	50		Development		
13.	Bakhrabad 9	Aug 2012	20	BGFCL	Development		
14.	Titas 19, 20, 21, 22	June 12	100	BGFCL	Excavation		
15.	Rashidpur 8	June 12	20	SGFCL	Excavation		
16.	Rashidpur 5	June 12	15		Workover		
Total (A)			420				
B) LNG Import							
1	LNG	Dec 2012	500				
Total (B)			500				
C) Under Implementation by International Gas Companies							
1	Moulavibazar	Dec 13	540	Chevron	9 Well Development Wells	Subject to Evaluation	
2	Jalalabad	Dec 13	100	Chevron	3 Well Dev	Excavation of Exploration Well	
3	Bibiyana	Dec 13	360	Chevron	Development 6 well		
Total (C)			1000				
Grand Total (A+B+C)			1920				

Source: Energy and Mineral Resources Division

National Gas Company

Actions have been taken to supply 285 MMCF gas daily to the national grid by exploration/development of the following gas fields: Kapashia 1 (20 MMCFD); Shrikial 2 (20 MMCFD); Mobarakpur 1 (15 MMCFD); Shalda 4 (15MMCFD); Fenchuganj 4 (20 MMCFD); Titas 17 (25 MMCFD) and Titas 18 (25 MMCFD), Semutang 1, 5 (20 MMCFD); Sundalpur (15 MMCFD); Salda 3 (15MMCFD); Sunetra 1 (25MMCFD); Shahbazpur 3, 4 (50MMCFD). Moreover, BAPEX has taken a programme to identify the site for digging new development wells by data collection, processing and analysis by 2-D seismic survey of 3100 line kilometer.

International Oil Company

Target has been set to supply 1000 MMCFD of gas daily to the national grid by Chevron gas field under PSC.

Program to be completed by 2015

During this period by drilling and development of exploratory wells an additional gas production of 180 MMCFD by local companies and 500 MMCFD by international oil companies (total 680 MMCFD) will be added to the national grid by 2015 (Table 3.18).

National Gas Company

Steps have been taken to supply 180 MMCFD gas to the national grid through drilling of 9 development wells of which 5 are in Sylhet, Koilashtila and Rashidpur gas fields, and 4 in Titas gas field.

International Oil Company

Target has been set to supply 500 MMCF gas to the national grid by IOCs under Product Sharing Contracts (PSC).

Table 3.18: Program to be completed by 2015

Sl. No.	Program	Completion	Increase in Production (MMCFD)	Agency	Activity	Remarks
A) Under Implementation by National Gas Companies						
1	Titas Well 23, 24, 25 and 26	To be completed by 2015	100	BGFCL	Appraisal well	
2	Excavation of 5 Wells in Sylhet, Koilashtila and Rashidpur	To be completed by 2015	80	SGFL	Appraisal well	
Total (A)			180			
B) Under Implementation by International Gas Companies						
1	Moulavibazar	To be completed by 2015	500	Chevron Bangladesh Ltd.		
2	Bibiana	To be completed by 2015				

3	Jalalabad	To be completed by 2015			
4	Offshore Building 2008	Round To be completed by 2015			
Total (B)			500		
Grand Total (A+B)			680		

Source: Energy and Mineral Resources Division

Steps to be taken for Increasing the Supply of Natural Gas

In order to realize the above supply initiatives for natural gas, a number of policy actions will be implemented. These include:

- Ensure adequate provision of funds.
- Make arrangements for speedy bidding procedures for off-shore blocks.
- Purchase higher quality machineries using advanced technology and build up efficient manpower to strengthen BAPEX.
- Ensure the drilling and development of wells as per plan through streamline work procedures and effective monitoring of the international oil companies.
- Secure speedy resolution of the demarcation of maritime boundary issues with India and Myanmar for the blocks located at the deep sea areas.

Liquefied Natural Gas

The shortage of gas supply can be mitigated through importing LNG. Following actions will be taken:

- Providing opportunities to the private sector to import LNG.
- Along with other necessary facilities, at least the infrastructure of two terminals of 500 MMCFD will be built to receive the imported liquid gas from the ship.
- Involve the private sector in the planning of import LNG and establishment of the terminals.

Coal

The diversification of sources of energy i.e reliance on coal will benefit tremendously from reliance on coal. High quality bituminous coal mines have been discovered at Khalashpur of Rangpur, at Barapukuria, Fhulbaria, Dighipara of Dinajpur and at Jamalganj of Bogra in the north-western zone of the country. The total reserve of these 5 coal mines is around 2355 million MT (Table 3.19) and the heat generation capacity is equivalent to 37 trillion cft of gas approximately. With further exploration initiatives, more coal mines may be discovered on other parts of Bangladesh. Among the 5 coal mines, Barapukuria coal mine in Dinajpur has started commercial production from September, 2005 with the annual production of 10 lac tonnes of coal.

Table 3.19: Coal Reserves of Five Coal Mines

Sl. No.	Exploration location	Year and	Depth (Meter)	Magnitude of mine area (Sq. km.)	Reserve (Million Ton)
1	Barapukuria, Dinajpur	(1985-87)	118-509	6.88	390
2	Khalashpur , Rangpur	(1989-90)	257-483	12	685
3	Fhulbaria, Dinajpur	(1997)	150-240	30	572
4	Jamalganj, Bogra	(1962)	640-1158	16	1053
5	Dighipara, Dinajpur	(1994-95)	328-407	Not Available	600
Total					3300

Source: Energy and Mineral Resources Division

Actions for Strengthening Coal Production

Although there are enough reserves of coal in the country, exploitation is constrained by concerns over extraction methods, the technological security and the possible adverse social consequences. The Government is taking steps to resolve the problems in the coal sector with a view to making it a major source of primary energy supply in the future. The steps being taken include:

- Finalization of coal policy.
- Formation of coal extraction plan consistent with social and environmental safeguards.
- Building up mass awareness regarding the extraction procedure of coal especially for the open extraction method.

Nuclear Energy

Bangladesh government in principle agreed in the construction of a nuclear power plant (NPP) consisting of two reactor power units with a capacity 1000 MW each (total 2000 MW) at Rooppur Nuclear Power Project (RNPP) Site in order to curb the existing energy crisis. For implementation of the RNPP, the government of Bangladesh and the Russian Federation has signed a Framework Agreement. Under the provision of the Framework Agreement, both governments have agreed to sign an inter-government agreement (IGA) on Cooperation Concerning the Construction of a Nuclear Power Plant on the territory of the People's Republic of Bangladesh. According to the IGA, both countries shall cooperate in the construction of nuclear power Units 1 & 2 of "Rooppur" NPP in the agreed scope. Essential preparatory activities such as finalizing site safety report, preparation of project document, determining project execution model and financing plan, safety analysis of the reactor, strengthening of regulatory activities, etc have been started. It is desirable that the construction phase activities for the first reactor would be started from the year of 2012. It is considered that the construction of the first unit of 1000 MW(e) and the second unit of another 1000 MW(e) will be completed by 2017 and 2018, respectively.

Implementation of nuclear power technology will need to tackle a number of important challenges. These include:

- Necessary fund provision.
- Ensure safety of the population and environment.
- Develop trained and efficient manpower in order to administer and maintain the nuclear plant.
- Build awareness among general people regarding the associated risks and safeguards of nuclear energy production.

RENEWABLE ENERGY

In Bangladesh renewable energy such as biomass, solar power and wind power are being used. Especially in areas which do not have gas supply, household use of biomass for cooking and solar power and wind for drying of different grains as well as clothes are known to all. However, Bangladesh is lagging far behind in the scientific use of such energy. The use of renewable energy has become popular worldwide in view of depleting reserve of non-renewable fossil fuel. Furthermore, renewable energy is environment-friendly. At present, the different categories of renewable energy that are being used in limited ways in our country are as follows:

- Hydro-electricity
- Solar power generation using solar rays
- Wind-mill power generation using wind power
- Generation of electricity from municipal refuse
- Production of bio-gas using waste
- Electricity produced by Biomass Gasification Method using wood, rice husk, etc.

In order to reduce the reliance on natural gas and import-dependent oil the Government has taken a number of steps to spread and develop renewable energy. Benefits to use renewable energy are as follows:

- Supply of raw materials for power generation is potentially infinite
- Operational cost is low although initial investment is comparatively high
- Technology is easy and portable
- People living separately in places away from the main land can have access to power and energy facilities
- Future energy security is ensured

In recognition of the vast potential benefits of renewable energy, the Government has taken a number of actions on a priority basis. These include:

- Formation of Sustainable Energy Development Authority
- Preparation of Energy Conservation Act
- Expansion and development of renewable energy

- Implementation of cost effective energy procedure
- Ensuring of efficient use of energy
- Standardization of energy saving electronic machineries
- Setting up 14 thousand solar home system by REB
- Setting up a solar panel having capacity of 21.2 kilowatt for Prime Minister's Office
- Installation of around 5.30 lac solar home system in rural areas with the aid of IDCOL (Infrastructure Development Company Limited) through NGOs
- Power generation by setting up wind-mill run power plants in coastal region of Kutubdia and Feni
- Establishing of a wind-mill run power plant of 100 MW(off-shore) capacity in Anowara of Chittagong and 4 solar power plants of 10-15 MW capacity (connected to grid)
- Actions are underway to implement a pilot IPP project to produce power from waste
- Setting up several solar panel factories by IDCOL
- The use of solar panel in all large public buildings to be made mandatory within 3 years
- Solar panel imports made duty-free

DEVELOPMENT RESOURCE ALLOCATION IN POWER AND PRIMARY ENERGY SECTOR DURING THE SIXTH PLAN

The energy sector, especially power, faces substantial development challenges. In recognition of the fact that energy has become a binding constraint on the acceleration of GDP growth, the Government places highest priority to allocating resources to this sector. Nevertheless, the investment needs are just too large to be met through the Government's own resources. Accordingly, a key financing strategy is to mobilize as much financing through PPP arrangements as possible. The Government is also attracting direct foreign investment and domestic enterprises to invest in the energy sector. The policy framework for private participation is already in place. Further efforts will be made to strengthen this policy as needed in order to ensure adequate flow of private investment in energy sector.

Regarding public funding, in addition to budgetary allocations, emphasis will be given to improving efficiency and cost recovery of concerned public enterprises and autonomous bodies. The rising world prices of fuel and the increasing reliance on rental power plants will have an adverse effect on the financial health of energy sector entities. Efforts will be made to help them absorb these costs through price adjustments and efficiency improvements.

Against the backdrop of this financing strategy, the Sixth Plan allocation of development resources in power and primary energy sector during the Sixth Five Year Plan, both in current and constant prices, are reported in Table 3.20.

Table 3.20: Development Resource Allocation for Energy in the Sixth Plan

(Crore taka; current price)

Ministry	FY11	FY12	FY13	FY14	FY15
Power Division	4995	7069	8557	10898	13458
Energy and Mineral Resources Divn.	1080	1513	1717	2012	2289
Total	6075	8582	10274	12910	15747

Table 3.21: Development Resource Allocation for Energy in the Sixth Plan

(Crore taka; FY11 price)

Ministry	FY11	FY12	FY13	FY14	FY15
Power Division	4995	6576	7439	8896	10364
Energy and Mineral Resources Division	1080	1407	1493	1643	1763
Total	6075	7983	8932	10539	12127

Securing the higher economic growth targets of the Sixth Plan and Vision 2021 will critically depend upon the ability to address the energy constraint facing Bangladesh. The Government has embarked upon a comprehensive energy sector development strategy that seeks to substantially increase power and other energy supplies and improve sectoral efficiency during the Sixth Plan and beyond. The underlying strategy entails substantial new investments based on public-private partnerships, diversifying the sources of energy away from excessive reliance on gas to coal, hydro, solar and other renewable sources, engaging in energy trading activities with neighbors, especially India, developing primary energy sources including gas and coal, conserving energy, and better use of installed capacities. The associated policy and institutional framework involves proper pricing of energy, sound legal and regulatory framework for private participation, enabling environment for energy trade and reforms of energy institutions. Many of the required actions have already been initiated; the remaining actions will be taken during the Sixth Plan period.

CHAPTER 4: EFFICIENT TRANSPORT SERVICES TO REDUCE COST AND IMPROVE WELFARE

BACKGROUND AND DEVELOPMENT CONTEXT

An adequate and efficient transport system is a pre-requisite for initiating and sustaining economic development. Transport efficiency is the key to the expansion and integration of markets – sub-national, national and international. It also helps the generation of economies of scale, increased competition, reduced cost, systematic urbanization, export-led faster growth and a larger share of international trade. An efficient transport system is a key element of trade logistics cost and as such is a major determinant of export competitiveness. There is international evidence that often transport costs might even become a more important barrier to international trade than tariff barriers. Estimates of trade logistic costs for Bangladesh suggest that there is substantial room for improvement. Efficient transport is also critical to helping physical mobility of citizens. Efficient transport reduces the commuting time of citizens thereby contributing to their welfare. Securing improvement in transport system is therefore a major strategic objective to accelerate growth during the Sixth Plan.

The transport system of Bangladesh consists of roads, railways, inland waterways, sea ports, maritime shipping and civil aviation catering for both domestic and international traffic. Presently there are about 21,040 km of paved roads; 2,835.04 route-kilometers of railways (BG-659.33 km, MG -1,800.88 km and DG-374.83); 3,800 km of perennial waterways which increases to 6,000 km during the monsoon, 2 seaports and 2 international airports (i.e. Dhaka and Chittagong) and 8 domestic airports.

Development and maintenance of transport infrastructure in Bangladesh is essentially the responsibilities of the public sector as are the provision of railways transportation services and most air transport. The public sector is also involved in transport operations in road, inland water transport (IWT) and ocean shipping alongside the private sector. In the road transport and IWT sub-sectors, the private sector is dominant. In ocean shipping, however, public sector still predominates, although the private sector has considerably increased its role in recent years. Recently private sector has also been involved in domestic air transport and railway on a very limited scale.

The vision of the national transport authorities is to establish a safe, cheaper, modern and technologically dependable, environmental friendly inter-modal transport system with a view to reducing the financial cost and time for both commercial traffic and for citizens. Geo-strategically, Bangladesh's location is very significant and sensitive in terms of Pan-Asian continental surface connectivity. It has the potential to be the local connecting point between SAARC and BIMSTEC countries. The issues like intra- and inter-country connectivity, export

and growth center facilitating infrastructure, Asian Highway, Trans Asian Railway Network etc. are the important emerging issues of its surface transport strategy. Transport infrastructure development contributes to the expansion of markets, augmentation of regional balance, and creation of investment opportunities all of which are conducive to economic growth and poverty reduction.

Past Performance and Constraints in the Transport Sector

Bangladesh witnessed rapid growth of transport sector since independence. The overall annual growth rate was nearly 8.2 percent for freight transport and 8.4 percent for passenger transport. Even then the transport intensity of Bangladesh is considerably lower than that of many comparable developing countries. The relative roles of transport modes are evolving with road transport expanding at the expense of railways and inland water transport because of its inherent technical and cost advantages.

Despite the observed growth of transport sector, the overall performance of the transport sector has been generally weak and is now considered a major constraint to the expansion of exports and economic growth. Estimates of trade logistic performance show that Bangladesh performs at the lower end as compared with most of its competitors. One important factor underlying this weaker performance is high transport costs. Urban transport system, especially in the capital city Dhaka, has become outdated and inefficient owing to both a lack of adequate infrastructure but also due to weak management.

The development of surface transport system in Bangladesh is constrained by three distinct sets of factors. These are:

- (i) physical (e.g., difficult terrain, periodic flooding, poor soil condition, siltation and erosion of rivers, inherited management weaknesses of BR etc.);
- (ii) low investments and maintenance, and
- (iii) inadequate institutional framework (involving four ministries, nine transport sector SOEs and lack of co-ordination and autonomy of transport SOEs).

Public sector involvement in the transport system of Bangladesh consists of ownership and operation of nine state-owned enterprises (SOEs). Except for the two sea ports, the SOEs have poor financial performance. The poor financial performance of the SOEs and their weak capital structure created a huge financial liability on the government, estimated at around Tk. 200 crore annually. However, the situation has been improving in recent years. To address the problem, the government has been pursuing the two-pronged policy of privatization and restructuring of public sector transport SOEs for achieving improved administrative, management and operational performances.

The government recognizes the importance of substantially upgrading the transport infrastructure while also improving transport services. In recognition of this, it has been giving priority to transport in budget allocations, improving the performance of public transport entities through

policy and institutional reforms, and encouraging the private sector in both building infrastructure through PPP and in providing transport services. The Sixth Plan will continue this trend.

TRANSPORT SECTOR OBJECTIVES, STRATEGIES, AND POLICIES IN THE SIXTH PLAN

Objectives

To achieve an average GDP growth rate of 7 percent per annum the transport sector growth rate is projected to increase by 7.5 percent per annum. Keeping in view the increased volume of domestic traffic as well as the future traffic from the Asian Highway and Trans-Asian Railway, the main objective of the Sixth Five Year Plan will be to develop a balanced and integrated transport network through adoption of strategies/programs.

Strategies

For transport network development strategy, an optimal mix of “market integration approach” and “poles of development approach” will be adopted. Operational significance of this mixed strategy is that development efforts will be concentrated on five main corridors: Dhaka-Chittagong, Dhaka-Northwest, Dhaka-Khulna, Dhaka-Sylhet and Khulna-Northwest with special emphasis on Dhaka-Chittagong, Dhaka-Northwest and Khulna-Northwest arterial corridors. Besides these, the road linkages passing through Khulna, Barisal, Bhola, Lakshmipur and Chittagong will be improved. The development strategy is to be reinforced by the rural transport development strategy. Rural transport system will be developed by integrating inland water transport sub-sector with the existing road transport system and within the road transport sub-sector by adding off-road internal access dimension. Urban transport sector dimension will be added to this network development strategy. Additionally, Bangladesh will actively pursue an open-door policy to international traffic by taking advantage of its strategic location in terms of large access to sea and being the gateway between Eastern and Southern parts of Asia.

The main elements of the overall transport strategy for the Sixth Plan are as follows:

- i. The two sea ports will be further developed and linked to Dhaka.
- ii. Railway linkages will be established between the east and south west zones of the country. Expansion of line capacity by double tracking of major rail corridors, rehabilitate/upgrade & replace old aged railway track, bridges, signalling and other assets, acquiring modern rolling stocks to provide speedy, environment friendly and cost effective transport facilities to the national, regional and international traffic will be made.
- iii. The development strategy for the rural transport will be reoriented for efficient external access through optimal integration of road and inland water transport and off-road internal accesses.
- iv. Efforts will be made to develop some of the critical inter-modal transport network that allows connectivity of neighboring countries to the two sea ports of Bangladesh.

- v. Efforts will also be made to fully participate in global and regional transport connectivity initiatives that help develop the land route links between South Asia and East Asia through Bangladesh.
- vi. Improvement in resource mobilization will be made through introduction of user charges and fees by the agencies in all areas of transport and for all use of transport network.
- vii. Provision of required incentive packages for the private sector for greater participation will be ensured, not only in transport services, but also for infrastructure building.
- viii. Identification and implementation of preventive, emergency and post-disaster mitigation measures will be made.
- ix. Transport development strategy framework will be broadened by incorporating the vital urban transport dimension starting with improvement in transport services of greater Dhaka city.
- x. Assurance of deficit-free operation of Bangladesh Railway as envisaged in Railway Recovery Program will be fulfilled.
- xi. Improvement of sub-standard ferry operation on major road networks will be made. Introduction of necessary institutional reforms to address the operational constraints of the port transit system with special reference to containers and privatization measures for port transit system will be made.
- xii. Adequate care will be taken while developing transport network and service so that these do not cause environmental pollution and affect ecological balance.
- xiii. Attention will be given to improve transport safety standards including specific attention to women safety in all means of transportation with a view to substantially reducing the incidence of accidents; and
- xiv. Provision of duty-free or import of engines and spares at low duty for mechanization of country boat will be made.

ROADS AND HIGHWAYS DEPARTMENT

Review of Past Developments

The Roads and Highways Department (RHD) is a major public sector agency directly responsible for planning, design, construction, improvement and maintenance of primary and secondary road network in the country, which include National and Regional Highways and Zila Roads. RHD is also responsible for the operation, and maintenance of an extensive ferry system in the country. Gradual replacement of ferry system with bridges is another broad dimension of RHD's regular activities.

Growth of Traffic

In recent years, there has been a considerable growth of traffic on roads in Bangladesh. Bangladesh Road Master Plan 2007 estimated that the growth of both freight and passenger transport would be around 6.4% per year for the period of 2010-15 and 6% over the Master Plan period i.e. 2005-25. Bangladesh Road Master Plan Study carried out in 1990-91 estimated that the overall growth of both freight and passenger transport would be 5-6% a

year. After examination of national economic parameters and historical traffic growth, Bangladesh Road Materials and Standards Study (BRMSS) carried out in 1990-92 estimated that annual average growth rates of traffic on roads would be 7.7% for freight traffic and 8.3% for passenger traffic for the period 1992-2000.

Role of Road Transport

Road transport network is the most important means of communication in Bangladesh as elsewhere in the world. In fact, road transport in our country has emerged as the most dominant mode in surface transportation carrying in recent years over 70% of passenger and over 60% of freight traffic respectively. It transpires from the following table that the role of road transport in carriage of both passenger and freight traffic over the years from 1974-75 to 1996-97 had been increasing almost consistently.

Table 4.1: Mechanized Surface Transport Output and the Share of Road Transport in Carriage of passenger and Freight Traffic in Selected Years

Year	Passenger Transport		Freight Transport	
	Total Output in Billion km	Share of Road Transport in Per cent	Total Output in Billion Ton-km	Share of Road Transport in Per cent
1974-75	17	54	2.6	35
1984-85	35	64	4.8	48
1988-89	57	68	6.3	59
1992-93	66	75	9.0	61
1996-97	72	73	10.0	63
2004-05	110	73	18.6	72

Source: Bangladesh Transport Sector Study (BTSS) 1996-97

Development of the Road Network

The history of road network development in Bangladesh is of recent past. While the paved road network was only 600 km in 1947, it had grown to about 4300 km in 1981. The real development of road network in Bangladesh, both in quantitative and qualitative terms, started in the early nineteen eighties and the pace of this development gradually accelerated in later periods (Table 4.2). The Government has been following the strategy of road network development activities giving priority to 5 important corridors as mentioned above. The major share of funds allocated to the transport sector including foreign assistances in the various plans has been invested to develop the strategic road corridors. A large portion of the important highways is reconstructed through removal of earlier structures, undertaking required compaction of original sub-grade, application of higher design standard, widening of

Table 4.2: Progress with Paved Road Development under RHD, 1947-2009

Year	Paved Road under RHD (km)	Annual Rate of Growth (%)	Total Road under RHD (km)	Annual Rate of Growth (%)
1947	600		-	
1971	3600	7.75	-	
1981	4300	1.79	-	
1990	7914	7.01	13629	4.55
2000	16273	7.47	20799	4.31
2005	16500	0.28	21571	0.73
2009	18209	2.5	21040	-0.62

Source: Ministry of Communications

pavement and shoulder widths, straightening of detour alignment and use of relatively better quality materials. A considerable portion of the arterial road network is upgraded through implementation of various road improvement and overlay programs, thereby increasing the pavement strength significantly and reducing surface roughness substantially (Table 4.3). Many Zila roads are also constructed. All major river gaps are being bridged and important ferries are modernized in recent years. Increasingly higher emphasis is being accorded to the major maintenance activities like reconstruction, overlay and other improvement works on the existing network.

Table 4.3: Road Network under RHD by Category and Status of Construction (Kilometers)

Sl. No.	Category of Road	Paved Road	Partly paved or unpaved road	Total
1.	National Highways	3445	47	3492
2.	Regional Highways	4105	163	4268
3.	Zila Road	10659	2621	13280
	Total :	18209	2831	21040

Source: Maintenance and Rehabilitation Needs Report of 2010-11 for RHD Paved Roads

Moreover, RHD has about 4507 number of bridges with a total length of about 130 kilometers and 13751 culverts with a length of about 54 kilometers under its management.

Road Development Investment under RHD

The Government is fully aware about the importance and role of road and road transport. As such, it has been making substantial investments in building physical infrastructure including road network because of its paramount need as a pre-requisite for socio-economic development

of the country. Table 4.4 provides information on allocation and Expenditure of Fund under RHD in different plan periods.

Road Planning

The road network has been developed mainly on the basis of short term need instead of long term planning due to the lack of appropriate road sector policy guideline until recently. It is observed that there is large scale deterioration of the network due to lack of proper maintenance, large sections of the network have inadequate structural strength, many of them severely damaged by vehicle overloading. Lack of adequate road safety has already reached an alarming level; faster and smooth movement along the highways is not possible due to the presence of large number of hats and bazaars right on the edge of roads.

**Table 4.4: Allocation and Expenditure of Fund under RHD in Different Plan Periods
(Crore Taka current prices)**

SL. No.	Plan Period	Allocation	Expenditure	Utilization as % of Allocation
1.	First Five Year Plan (FY 1973-74 to 1977-78)	207.61 (PA 08.64)	221.57 (PA 07.95)	106.72 (92.01)
2.	Two Year Plan (FY 1978-79 to 1979-80)	180.03 (PA 26.57)	178.09 (PA 18.53)	98.92 (69.74)
3.	Second Five Year Plan (FY 1980-81 to 1984-85)	826.90 (PA 88.21)	847.19 (PA 70.39)	102.45 (79.80)
4.	Third Five Year Plan (FY 1985-86 to 1989-90)	1996.15 (PA 751.79)	2274.86 (PA 748.88)	113.96 (99.61)
5.	Fourth Five Year Plan (FY 1990-91 to 1994-95)	5209.23 (PA 2079.19)	5124.32 (PA 2019.90)	98.37 (97.14)
6.	Two Year Plan (FY 1995-96 to 1996-97)	1900.16 (PA 722.91)	1804.46 (PA 625.19)	94.96 (86.48)
7.	Fifth Five Year Plan (FY 1997-98 to 2001-2002)	9108.75 (PA 4150.77)	8457.09 (PA 3270.87)	92.85 (78.80)
8.	Interim PRS (2002-03 to 2003-04)	4857.63 (PA 2187.44)	4334.87 (PA 1739.25)	89.24 (79.51)
9.	IPRS (2004-05 to 2006-07)	6596.62 (PA 1875.36)	5752.68 (PA 1522.65)	87.21 (81.19)
10.	PRSP II (2007-08 to 2009-10)*	4965.72 (PA 1631.49)	2879.42 (PA 709.23)	57.99 (43.47)

(*) Allocation & expenditure for FY 2009-10 is up to September/09. PA refers to project assistance

RHD has developed the vast majority of the 21,040 km road network since independence in 1971. According to a recent estimate, the money value of the total assets under RHD is estimated to be Taka 42,400 crore (US \$7.4 billion). This huge national asset is managed and maintained by RHD. A huge backlog in the area of road maintenance works has been created over the years due to persistent inadequacy in the level of fund allocated annually for this purpose. Sufficient fund arrangement on regular basis must be ensured in order to keep the road surface in an acceptably good condition.

Implementation of RHD projects did not suffer from major shortfall in achievement of financial as well as physical targets in previous plan periods. However, cumbersome procedure of procurement rule and land acquisition, delay in disbursement of matching fund, price hike of construction material in international market create delay in implementation as well as cost overrun in case of a number of foreign aided projects.

In case of government projects, selection of too many projects every year for implementation and allocation of a given amount of fund for each of them leads to delay in implementation of projects. Such mechanism of thin distribution of fund for each of too many projects creates undue cost over-run. RHD has improved the situation through application of Medium Term Budgetary Framework.

Past Transport Policies in Bangladesh

The National Land Transport Policy (NLTP) 2004, Integrated Multi-Modal Transport Study (Draft IMMTP) 2004 and Bangladesh Road Master Plan Study 2007 (for 20 years) are the three main policy documents, which will act as the guiding policy for RHD in selecting road development and improvement projects to achieve the target of lower transportation costs, uninterrupted and safer road communications. These documents also focused due attention on the integrity with regional and global harmony in transport sector. On the other hand, SAARC Regional Multi Modal Transport Study (SRMT) is the only approved guideline by the GoB to resolve any regional issue related to transport sector.

Besides, the Government is implementing the Poverty Reduction Strategy Paper (PRSP) in all development sectors. RHD has since been making its investment program commensurate with the PRSP. In this process, Zila roads and government declared roads of public importance, which contribute more to the growth of rural economy and rural employment including women, are getting higher priorities.

National Land Transport Policy (NLTP) 2004

Government will introduce a long-term network planning as is stated in NLTP. The road sector policies contained in the NLTP are designed to:

- Develop a long-term (20 year) Road Master Plan
- Clarify government responsibilities for Roads and Highways
- Maintain the road network at a level that protects the value of investment
- Rehabilitate those roads no longer capable of being maintained
- Secure a sustainable means of funding for road expenditure
- Improve management of traffic on the network to make the best use of assets
- Manage road side activities in a way that maximizes use of road assets
- Develop an integrated planning approach

- Involve the private sector more in infrastructure, services and maintenance
- Develop rational bridge policies
- Improve the quality of the contracting industry
- Foster inter-regional links
- Improve management and operations of the Roads and Highways Department

Integrated Multi Modal Transport Policy (IMMTP) 2004

The IMMTP reinforces the NLTP commitment to sustainable road maintenance. It provides guidance for construction of National Highways to attempt to protect them from flooding. The key policies in the IMMTP are:

- Creation of a Road Maintenance Fund
- Road and drainage system design, construction and maintenance should be fully integrated to avoid future flooding.
- Protect the investment in the strategic road network from the adverse effects of flooding by construction of the National Highways at least 1 meter above the highest flood level of 50 years. The freeboard will be determined by the concerned agencies for other roads.

Road Master Plan (RMP) 2009

The Road Master Plan provides a physical plan for new road construction, rehabilitation and maintenance over the next 20 years. The overall cost investment required for the RHD road & bridge network is Taka 68,611 Crore around US\$ 10 billion. This represents an annual average requirement of Taka 3430 crore per year. The objectives of the RMP are to set out a comprehensive investment program in order to:

- Protect the value of RHD's road and bridge assets
- Improve the connectivity of the road network
- Enhance and develop the strategic road network to meet economic and traffic growth targets
- Improve the Zila Road network to enhance the connectivity to the growth centers
- Improve road safety and reduce road accidents
- Provide environmental and social protection
- Outline the institutional improvements required for RHD

Poverty Reduction Strategy (PRS)

The key policies related to the road sector in the PRSP–II revised are as follows:

The PRSP highlighted the need to establish an autonomous road maintenance fund to ensure adequate and stable recurrent financing of roads. The PRSP emphasized a multi-modal transport system link that will be expanded to include, among other areas, the EPZ, and coal,

hard rock, mining, fertilizer, cement and tea production areas for speedy and efficient movement of cargo and passengers. The policy also identified the need for monitoring indicators to be set to assess progress in key areas, such as increased allocations for maintenance, increased level of cost recovery, and more effective road traffic management such as road safety, traffic control and overloading enforcement.

RHD Planning, Monitoring and Management System

RHD select projects of socio-economic and technical merits and then implement through Annual Development Program (ADP). RHD is also pursuing Medium Term Budgetary Framework (MTBF) based on a three year rolling investment plan as a tool of its long term investment plan. RHD developed and implemented several modern management tools like RHD Road & Bridge Asset Management System (RAMS) and Central Monitoring and Management System (CMS) to manage and monitor projects. RAMS is based on GIS map which is available in digital computerized form. The main management systems are based on a set of databases called MIS which are all accessible through the RHD website.

A professional work force of around 650 numbers of civil and mechanical engineers who have working experience in big foreign aided projects are engaged in delivering their services following the modern RHD management manual in the department. Apart from that, computer professionals, transport economists, environmental experts and other professionals trained in transport planning and project management are working in RHD. RHD can deliver the proposed spending program contained in the Sixth Five Year Plan with enhanced authority, increased capacity and better accountability. Necessary intuitional arrangement and continued training of officers and engineers are required.

RHD Vision, Goal and Objectives for the SFYP

An efficient and modern road transport system has a unique role to play to achieve the government target set for SFYP and Vision 2021 as well. The contribution of road sector to the national income is around 8 per cent at current market prices at present. The prime target of RHD is to make the growth sustainable. The National Land Transport Policy document expressed a vision for the road network as: “The development and maintenance of a road network that serves the economic and social needs of the country, and which can be used safely by all vehicle types.” Thus RHD wants to achieve a well-maintained, cost effective and safe road network in the country. RHD objectives necessary to achieve the road sector vision are:

- To develop and manage strategic road corridors to underpin the economic development of all regions of the country and contribute to the Government’s poverty reduction objectives
- To link all rural areas with the national road network to provide basic social access and promote pro-poor growth

The first is primarily concerned with the National and Regional Highways and the second is very much concerned with the Zila road network. With a view to increase the sectoral contribution RHD is going to take up several new projects under the following programs to meet the present demand of network and address the vision of present government as well in SFYP period:

- i. General Road Network Development
- ii. Construction of Bridges
- iii. Congestion Reduction in Greater Dhaka and other big cities
- iv. Development of Asian Highway Network
- v. Regional Connectivity
- vi. Construction of Padma Bridge Access Roads/ Bridges
- vii. Construction of Bypass Roads
- viii. Technical Assistance (TA) Projects
- ix. Construction of Zila Roads (new project)

RHD has set the following physical targets for the SFYP (Table 4.5)

Table 4.5: RHD Physical Targets for the SFYP

	Physical Activities	SFYP Targets(2011-15)
i.	Construction of new roads	4,672 km
ii.	Improvement/ Rehabilitation of roads	8,433 km
iii.	Construction of new bridges/culverts /overpass	23,777 meter
iv.	Reconstruction of bridges/culverts	10,362 meter
v.	Construction of Tunnel	5,400 meter

Source: Roads and Highways Division

RHD Priorities for the SFYP

The following activities will receive priority during the Sixth Five Year Plan period:

- i. Completion of ongoing projects
- ii. Proper maintenance of existing road network to reduce huge road user costs
- iii. Construction of Dhaka-Chittagong highway with six lanes and other national highways and corridor roads with four/six lanes in phases (2025km)
- iv. Gradual replacement of all ferries by new bridges on RHD network
- v. Construction of 2nd bridges/tunnels (5400 meter) on big and important river gaps to commensurate with higher traffic demand
- vi. Measures and projects to reduce traffic congestion in Dhaka city (overpass & flyover

- 24,450 meter/tunnel 3400 meter/2 nos.grade separator 8475 meter)
- vii. Address road safety issues to reduce road accidents at 25 percent by 2015 as apart of UN decade of Action for Road Safety.
 - viii. Control overloading to reduce road deterioration and road accident
 - ix. Upgrading of all National Highways to international standards with provision of sign signal, grade separated inyterchange on intersections and service lanes for slow moving vehicles
 - x. Construction of railway overpasses on all railway level crossings on all National Highways
 - xi. Improve regional road connectivity including implementation of Asian Highway Network to boost up trade and commerce
 - xii. Construction of access roads with linkage to Padma bridge
 - xiii. Construction of roads to bypass those cities and towns which are congested with traffic-mix (new 77km & improvement 56km)
 - xiv. Connection of those Upazila headquarters with the arterial road network which have not yet been connected
 - xv. Construction of Road network in AILA affected and other disaster prone areas
 - xvi. Higher priority accorded to projects in the least advanced area
 - xvii. Construction of missing links on RHD network
 - xviii. Improve connectivity between air, sea and land ports and the capital city
 - ixx. Construct roads to boost up tourism industry in the country
 - xx. Improve road access to the places of historical interest
 - xxi. Develop road network in resourceful coastal area
 - xxii. Implementation of E-governance
 - xxiii. Implementation of E-Procurement and E-Tendering
 - xxiv. Improve institutional capabilities of RHD

Key Issues and Constraints Related to the Road Sector Development

The approach to the development of the SFYP is based on addressing the existing problems faced by the road network, along with the future challenges. The key issues are:

- i. The underlying strength of the National and Regional Highway network largely deteriorated due to the lack of maintenance.
- ii. Vehicle overloading has contributed significantly to the road deterioration.
- iii. The operation of the highway network is severely hampered by congestion caused by poor traffic management, encroachment and traffic mix.
- iv. Zila road network is not fulfilling its full role in rural connectivity because it is partly incomplete and has suffered from a lack of maintenance.
- v. A large number of bridges already need replacement or major repair due to a lack of proper maintenance.
- vi. Road safety is critical and not adequately addressed in road design and traffic

enforcement.

- vii. Traffic is forecast to grow by a factor of at least three over the next twenty years leading to a need to increase capacity significantly on the major corridors like 4 lanes on important national highways and construction of second bridge over big rivers
- viii. Maintenance needs a higher priority, more resources, improved management and better quality standard

Regional and International Connectivity Issue

The Government is pursuing the policy of corridor based road development with a view to accommodating regional as well as international traffic in Bangladesh. The Government has been making efforts to improve the road connectivity with neighboring countries through various regional cooperation forums such as SAARC, SASEC, BIMSTEC and BCIM. Substantial progress has been achieved in this regard by this time. A Joint Communiqué has been signed in New Delhi, 12 January 2010 by the Honorable Prime Ministers of Bangladesh and India to facilitate regional cooperation in the issue. It was agreed in the Joint Communiqué that Indian Over Dimensional Cargo (ODCs) will be carried through road from Ashuganj to Akhaura for Palatana Power Plant Project in Tripura. Moreover, Bangladesh will allow use of Mongla and Chittagong sea ports for movement of goods to and from India/Nepal/Bhutan.

Asian Highway Network

Bangladesh has acceded to the Asian Highway Network on 8 November 2009. The physical alignment of Asian Highway Route in Bangladesh is more or less completed so far as the road connectivity is concerned. GoB has plan to upgrade almost the whole part of the AH Network in Bangladesh into 4 lane width by phases in order to bring the same in harmony with such network outside Bangladesh. It may be mentioned here that construction of two additional lanes on Dhaka-Chittagong Highway and construction of Dhaka-Chittagong Expressway got the highest priority in this regard. 3 routes which are the part of the Asian Highway Network in Bangladesh are as follows:

International Routes

- (i) Route AH-1: Benapole-Jessore-Narail-Bhatiapara-Mawa-Dhaka-Katchpur-Sarail-Sylhet-Tamabil (length 495 km)
- (ii) Route AH-2: Banglabandh-Panchagarh-Rangpur-Bogra- Hatikamrul-Jamuna Bridge-Tangail-Dhaka-Katchpur-Sarail-Sylhet-Tamabil (length 805 km including 283 km of overlapping part)

Sub-Regional Routes

- (i) Route AH-41: Mongla Port –Jessore- Bonpara- Hatikamrul-Katchpur-Comilla-Chittagong-Cox’s Bazar-Teknaf –Myanmar Border (length 752 km)

Road Safety

A vision for road safety in Bangladesh is achieving 50 per cent reduction in RTA fatalities by 2020 in line with the UN Decade of Action for Road Safety. The vision translates to set a goal towards achieving of a 25 percent reduction in the annual number of RTA fatalities by 2015. The National Highways are recommended to be the principal target of road safety initiatives of GoB as 45% of all fatal accidents occurring on National Highways. RHD Road Safety Division is working actively to implement the recommendations of Road Safety Council with the view to improve the road safety condition on RHD network. An accident database on the basis of field report is kept by the RHD Road Safety Division regularly.

A vast program for safety on road through overload control is under implementation for quite a long time. A number of overload control stations/weigh bridges are operational at different strategic points of RHD National Highways e.g. Sitakunda N1, Auhkandi N2, Meghna Bridge & Meghna-Gumti Bridge N1, Utholi N5 and Mawa. Construction of a number of overload control stations/ weigh bridges is under implementation at Benapole N706, Mohashangarh N5, Goalanda (Rajbari) N7 and Arial Kha Bridge N8. To ensure safety at level crossings RHD is going to construct several bridges (ROB) over rail crossing levels on national and regional highways. Road safety issues like education and public awareness, specific measures to address women safety with a particular attention to remote areas, community participation, enforcement, management of transport sector are being addressed at the policy preparation level keeping reduction of accidents as the goal of all road safety measures. In order to ensure safety on road, GOB has also introduced police patrolling system on highways. The impacts of the road safety initiatives of GoB over the SFY plan period are also expected to be very significant

SFYP Strategies and Policies

The following strategies and policy changes will be followed during the Sixth Five Year plan period:

- i. Inclusion of a limited number of projects on priority basis into Annual Development Program (ADP)
- ii. Allocation of adequate fund for implementation of project within stipulated time frame particularly relevant in respect of domestically funded projects
- iii. Implementation of RHD Road Master Plan
- iv. Selection of locally funded projects on socio-economic merits
- v. Establishment of Road Maintenance Fund
- vi. Involvement of private sector by taking up projects on BOT/PPP basis
- vii. Involvement of women in RHD Activity
- viii. Assessment of environmental impact

- ix. Improvement of institutional capabilities
- x. Implementation of E-Governance
- xi. Implementation of E-Procurement system

Strengthening Implementation Capacity

The stated aim of Roads and Highways Department is to become a modern highways agency of international standard in order to meet the challenges of Government's Vision 2021 and MDG targets. An interim re-organization for RHD has been largely implemented over the past few years. The objective of this institutional strengthening program is to modernize RHD with an emphasis on contracting out most of its services, focusing on effective collection, management and analysis of data, thereby permitting the fulfillment of its strategic planning role. RHD has several completed initiatives the outputs of which are in danger of becoming vestigial with the external support removed. The Road Safety and Environmental Circles are not working as they should. The RHD Training Centre lacks funding and has serious shortage of staff. At this stage a further re-organization is required to complete this process.

Traffic growth is expected to be very high at 3-4 times over the next twenty years according to the Road Master Plan estimates. The road network will need to respond to these challenges. Such capacity expansion will rise to the need for mobilization of sizeable resources. Assistance will be required to reform the institutional set-up of RHD to make it more efficient so that it can fully utilize the resources allocated to it.

RHD as an organization is not fully geared as yet to involve private sector in the development and maintenance of roads and highways. Much greater use can be made of the private sector in financing the capital costs of road development.

Lastly, it is important to activate the existing computer based modern tools of monitoring and supervision such as CMS, RMMS, MIS, GIS and to use modern planning tools like HDM, PAF etc in order to capture the full advantage of those systems.

Monitoring Implementation Progress

Monthly review meeting on the progress of RHD projects takes place under the chairmanship of Minister of Communications or Secretary, Roads and Railway Division. Besides, Senior Management Committee meets every month under the chairmanship of RHD Chief Engineer. Regular meeting of Budget Committee takes place under the chairmanship of Additional Chief Engineer, Planning and Development. Moreover, site inspections by Zonal Additional Chief Engineer and other high officials of RHD, MoC, Planning Commission and IMED are done frequently to supervise and monitor the field progress.

The Central Management System (CMS) is an advanced management information system being used at RHD headquarters and all field divisions at present. CMS is operating online

through FTP server. CMS can ensure better transparency and accountability as well as discipline in financial practices and monitoring of RHD projects.

In order to achieve the SFYP targets and the vision of government, it is important to monitor basic indicators in order to assess progress in key areas, such as increased allocations for maintenance, increased level of cost recovery, and more effective road traffic management like road safety, traffic control and overloading enforcement.

BANGLADESH ROAD TRANSPORT AUTHORITY (BRTA)

Bangladesh Road Transport Authority (BRTA), the only regulatory body in road transport sector under the Ministry of Communication, Government of the People's Republic of Bangladesh is mandated to perform the following activities a) formulation of rules and regulations for control of motor transport as and when required; b) registration of motor vehicles and ownership transfer; c) issuance of motor vehicle driving licenses; d) issuance of fitness certificates for motor vehicles; e) issuance of route permits for transport vehicles; f) inspection of vehicles involved in road accidents; g) ensuring road safety and enforcement; h) registration of driver training schools; i) maintaining accident records and statistics; j) collection of motor vehicles tax and fees; and others.

BRTA plans to launch certain reforms in its activities to enhance transparency and accountability. It looks forward to delivering better services to its clients by updating motor vehicles Act, rules and regulations; ensuring vehicular safety through proper inspection; tracking vehicles and monitoring its speed; conducting driving competency tests through modern test procedures; collecting motor vehicles tax and fee through on line system as well as developing public awareness about road safety.

BRTA intends to outsource fitness activities which will generate job opportunities and enable better delivery of services. It also intends to monitor motor driving training schools which will improve road safety as well as open avenues in the job market. It will also arrange road safety awareness program e.g. seminars, workshops etc. for the stake holders and training for drivers to change the mind set of drivers and make roads safer for the users. It is going to introduce online system for collection of motor vehicle tax/fees which will enhance e-governance and improve the job market.

Operation and Maintenance of Vehicle Inspection Center (VIC)

Bangladesh Road Transport Authority (BRTA) planned to setup 5 (five) Vehicle Inspection Centers (VICs) in 1999, with semi-automatic test lanes, in 4 (four) metropolitan cities- two in Dhaka and one each in Chittagong, Khulna and Rajshahi. Establishment of VICS was a component project of Road Overlay and Improvement Project (ROIP), funded by the Asian Development Bank.

On completion of physical works and installation of equipment Bangladesh Road Transport Authority tried to put five Vehicles Inspection Centers into commercial operation. But it could not be done due to scarcity of the spare parts needed to maintain the Vehicle Inspection Centers. Bangladesh Road Transport Authority had difficulties in managing the five Vehicle Inspection Centers due to fund constraint and trained manpower. This led Government to change its strategy. A review mission of Asian Development Bank (ADB) recommended that the Operation and Maintenance of the five Vehicle Inspection Centers be leased out in private sector under Public Private Partnership (PPP).

These Five Vehicles Inspection Centers (VICs) were constructed by the government for technical inspection of vehicles by computerized method instead of visual inspection. Visual inspection system is very old and the results of the vehicle inspections are always faulty and debatable. But computerized method of inspection is more acceptable. The objective of the Project is to help the government improve transport efficiency and strengthen integrated vehicle inspection through balanced, quiet and mechanized system of checking. More specifically, the project will (i) improve safety measures both for cargo and passenger on the road; (ii) provide better access to markets, social services and open employment opportunities; (iii) secure government resources for periodic inspection and maintenance of vehicles; (iv) promote private sector participation in road transport system; and improve road safety and axle-load control.

BRTA is also looking forward to outsourcing of vehicle inspection and issuance of fitness certificates of motor vehicles under Public Private Partnership (PPP). It intends to enlist efficient and capable private workshops for doing the job on behalf of BRTA to avoid congestion in existing BRTA field offices and making it easier for the vehicle owners to get their vehicle inspected at workshops near their places of residence or of convenience. A draft of the rule required for this has already been prepared. BRTA is also looking forward to establishing Vehicle Inspection Centers (VICS)/Workshops at greater district headquarters under Private Sector Investment Guideline (PSIG) through Public Private Partnership (PPP) to maintain a standard vehicle inspection system throughout the country.

Establishment of Motor Drivers Standard Training Institutes

The project proposes to establish 6(six) Motor Drivers Standard Training Institutes cum Driving Competency Test Centers in 5(five) divisional headquarters in Bangladesh. The objective of the project is to develop awareness and professional skill of motor drivers to reduce road accident and to conduct Driving Competency Test for applicants of motor driving license. Road accidents in Bangladesh are costing the nation about Tk. 5000 crore (US \$ 850 million) annually which is nearly 2 percent of GDP. This loss of the nation can be reduced by reducing road accident by training the motor drivers. BRTA is expecting project assistance from Korea International cooperation Agency (KOICA) to implement the project.

Collection of Motor Vehicle Taxes and Fees through On-Line Banking System

BRTA plans to collect of MV taxes & fees through On-Line Banking System by engaging service provider (SP) and the government has allocated public funds for the services of the SP. The service provider (SP) will provide important services including establishment and maintenance of sufficient infrastructure required to collect motor vehicle taxes and fees from different locations covering all 64 district Head Quarters through On-Line Banking System. The customized software (application) shall be a web-based application with international standard security system.

Up-gradation of BRTA Activities through Information Technology

The main objectives are:

- i. An extensive System Requirement study and analysis to implement appropriate and feasible IT system in BRTA;
- ii. Preparation of Roadmap for Digital BRTA so that BRTA can be a model of government organizations in the vision attainment process of “Digital Bangladesh” in the coming days.
- iii. Development of the best possible and most feasible IT based solution for Digital BRTA on the basis of standard methodologies and modern approaches in analyzing system requirement study;
- iv. Study of existing applications and traditional manual business processes thoroughly to determine the limitations, obligations, risks, HR, time, effort and cost involvement for each and every task precisely;
- v. Preparation of the scope and detail planning for business process reengineering;
- vi. Recommendation of IT system as per planning and roadmap of Digital BRTA, relevant
- vii. infrastructure and other requirements taking into account present capacity, capability as well
- viii. as future growth of BRTA;
- ix. Development and maintenance of an automatic vehicle tracking & speed monitoring system to keep watch over traffic rule violations and prevent vehicles theft;

Strengthening of BRTA to improve customer services

This will be achieved through:

- (a) rationalizing BRTA organogram to address new issues in road transport sector;
- (b) ensuring transparency in customer services in different field offices of BRTA;

- (c) prevention of fake motor driving license;
- (d) improvement of customer service in the process of vehicle registration, motor driving licensing, issuing Route Permits etc.

Framing of Demand-Responsive Legislation on Road Traffic

The Motor Vehicle Ordinance (MVO) was promulgated in 1983 by updating the Motor Vehicle Act of 1939. Bangladesh Road Transport Authority (BRTA) is the regulating body for Motor Vehicles and Drivers. Revision of the MVO is essential to facilitate the current growth of the transport sector. Moreover, revision of the 1983 ordinance is of critical importance for the introduction of measures to modernize vehicular safety and environmental standards and to overhaul public transport licensing provisions. Necessary modification of MVO will be done accordingly and will be structured around two components (i) Environment, which relates to brick kiln emissions, and (ii) Transport, which encompasses traffic management, institutional capacity building, and safety issues. The transport component will be executed by DTCC and DCC. To address this issue, DTCC has taken initiative to engage a national consultant under Clean Air and Sustainable Environment (CASE) project financed by World Bank

BANGLADESH ROAD TRANSPORT CORPORATION

Bangladesh Road Transport Corporation (BRTC), the only government organization in road transport sector under the Ministry of Communication is mandated to provide fast, efficient, economic, reliable, comfortable, modern and safe road transport services in the country. The objectives of BRTC are –

- a) to play strategic intervention role in road transport sector and to render emergency services during the times of natural calamity;
- b) to play intervention role in controlling road transport fare and freight charges;
- c) to train unemployed youth on motor vehicle driving and as automobile mechanic; and
- d) to help in creating opportunities for development of efficient and effective manpower for the road transport sector.

BRTC buses and trucks are largely used to meet up emergency needs arising out of natural calamities, hartals, strikes, political restlessness, for carrying passengers during Eid, Bishwa Istama, for carrying government relief, food, prescribed books, election materials and so on. BRTC's share in the transport sector is only 1.2%. The share should be increased by allowing BRTC to have more buses and trucks in its fleet as the popularity for utilizing BRTC services among the people is on the increase. With the passage of time and considering the growing demand for BRTC services BRTC has undertaken several projects for procuring buses and trucks.

It is undeniable that with the increase of carbon emission the environmental condition of Dhaka city is deteriorating continuously and this should not be allowed further. To meet this challenge BRTC has come forward with its limited capacity and has decided to procure CNG buses. BRTC aims at providing high quality service and it believes that profit will come up as a logical sequence. BRTC has introduced buses for females and working ladies as well as for school students. BRTC extends its services for the employees of Bangladesh Secretariat, Bangladesh Supreme Court, Election Commission and for the students of Dhaka University, Jagannath University, Jahangirnagar University. BRTC wishes to establish itself as a model service provider in the transport sector.

At present BRTC has 6 (six) training institutes and through these it imparts training to general people. It also encourages training to womenfolk and gives rebate of training fees for the female trainees. They are also encouraged to do job in BRTC. At present the percentage of female workers in BRTC is very negligible. However, through various types of activities as mentioned above BRTC would be able to make contribution in the employment of more females in the job market as well as encourage and recruit more female drivers in public transport as is envisaged by the government in its vision 2021. It is mentionable here that BRTC has undertaken a scheme to set up another six training institutes.

BRTC has introduced e-ticketing system through its six ticket counters in the city. It will help to mitigate pilferage and botheration faced by the passengers. BRTC is thinking to expand the system gradually throughout the country to establish e-governance, an election manifesto of the present government. It has also strengthened its inspection network, which has generated positive impact on misuse of property.

LOCAL GOVERNMENT ENGINEERING DEPARTMENT

Local Government Engineering Department is major public sector agency directly responsible for design, construction, improvement and maintenance of rural roads. The LGED made significant contribution towards rapid expansion of the rural transport network resulting in rapid growth of transportation services. The commendable achievement in building an extensive rural network of roads demonstrated significant impact on ensuring affordable transport services in the transport sector and improving the living conditions of the rural poor. Several study results revealed that a good rural transport network is critical for higher economic growth, poverty reduction and social development. It plays a pivotal role, *inter alia*, in product diversification, trade expansion, provisioning of basic services, increasing productivity, decreasing production cost, and thereby, enhancement of quality of life and welfare of people.

Objectives

The main goal of providing public support in the rural transport sector is to ensure a cost effective, affordable and efficient transportation system for all.

Strategies

The basic principle of the strategy will be to improve and maintain the Upazila, Union and prioritized village roads network integrating rural river and rail transport so that cost-effective, demand responsive and flexible systems could be provided for all. The elements of this strategy to be pursued during the Sixth Five Year Plan will be as follows:

- Improve /upgrade remaining Upazila, Union and prioritized village roads including appurtenant structures which have strategic importance to connect railways and waterways.
- Maintain all Upazila, Union and village roads which have so far been constructed including appurtenant structures and upgrade growth centers having connection with railway and waterway in order to promote and integrate multimodal transport system. For sustainability, adequate maintenance system and a viable funding mechanism should have to be put in place. Since maintenance needs are increasing, the Government and the local bodies will make special efforts to fully fund these needs and LGED will make continuous efforts to improve maintenance efficiency and ensure local participation.
- The labor-based construction techniques for road improvement will be adopted to enhance employment opportunity, sustainability and affordability.
- Improve and maintain prioritized rural waterways in order to promote riverine transportation systems.
- Develop design of selective Intermittent Modes of Transport (IMTs) including Karimon/Lossimon etc., non-motorized transport and country boats; disseminate the improved version through involving the community.
- Upgrade the road inventory to fully utilize HDM & DSS software for better Road Asset Management (RAM).
- Enhance procurement functions and processes, and quality control activities.
- Incorporate environmental, social and climate change dimensions into the engineering design after assessing their impact and undertake adequate mitigation and enhancement measures.
- Carry out road safety activities relating to engineering and information campaign including awareness, advocacy and education.

The Rural Roads under LGED

Rural Road Network, though extensive, include mainly poor quality earth roads, requiring improved surfacing and pavements, and interspersed with many gaps to be filled with drainage structures for allowing uninterrupted traffic. Most of these are seasonal roads, generally not usable in the rainy season, creating considerable hardship for transportation during the monsoon period. An important feature of rural road transport is the dominant share of non-motorized transport (manually pedaled cycle-rickshaws, passenger rickshaws and rickshaw

vans, and to some extent animal-drawn carts) which provides reasonably efficient rural transport suited to the small-parcel loads needed by most farmers.

Presently LGED has a Rural Road stock of 2,89,334 km of which 37,691 km is Upazila road, 44,686 km is Union road and 2,06,957 km is Village road. LGED is involved in construction, development, maintenance of these roads. The categorical break-down is shown below:

Table 4.6: Status of Rural Roads

Road Type	Number of Road	Total Length (Km)	Length of BC & Rigid Pavement Road (Km)	Remaining Length of BC & Rigid Pavement Road (Km)	Existing Structure		Existing Gap	
					Number	Span	Number	Span
Upazila Road	4481	37691	27888	9803	56232	355706	4749	106187
Union Road	7953	44686	19163	25523	57515	299201	8649	122955
Village Road-A	36218	106622	18244	88378	68702	315320	28852	243046
Village Road-B	53169	100335	6206	94129	39045	146793	33627	206675
Total	101821	289334	71501	217833	221494	1117020	75877	678863

Source: Ministry of Local Government

The Rural Road Master Plan

In view of efficient and effective investment prioritization, LGED prepared a Rural Road Master Plan to (a) identify/prioritize a most useful and effective rural road network throughout the country to ease the rural life as a whole, (b) provide all weather access to all growth centers, all Union Parishads/Complexes, most of the rural markets and other service delivery centers of the rural areas, (c) improve rural accessibility for facilitating agricultural production and marketing of different products, (d) reduce poverty through employment generation and accelerating economic activities in rural areas and (e) strengthen the Local Government Institutions. It is estimated that approximately 821,000.00 million taka will be needed to improve all categories of roads. Fulfillment of the targets of the Sixth Five Year Plan will involve an expenditure over 210,000.00 million taka.

Rural Waterways

This is an important component of the Bangladesh transport system in view of the extensive waterway network available and the floods, which regularly inundate the country and disrupt the other two surface transport modes. There are about 24,000 kilometers of waterways of which about 6000 kilometers of this network are classified as arterial, secondary or feeder routes. This 6,000 km is being taken care of by BIWTA and they have prepared a Master Plan. With the passage of time, as floods each year deposit their fertile silt on the farmlands, the

freeboard for boats to ply though these waters gets gradually reduced and limits the loads that boats can carry. This problem is accentuated by the fact that no one has, or accepts, responsibility for maintenance of the remaining 18,000 kilometers of smaller rural waterways. This issue has been identified in the Master Plan of BIWTA which recommended that the tasks should be carried out by LGED with active participation of LGI's.

More than half the country's total land area is within 10 kilometers of a navigable waterway. There are significant numbers of motorized and non-motorized country boats that ply on these waterways. Most of these boats are operating in what is referred to as the unorganized part of the water transport system, carrying lion's share of freight traffic. However, in view of the huge size of the waterway network, over 1,000,000 country boats and the huge volume of traffic they serve, it is obvious that the ancillary facilities are completely inadequate for the task. It should be kept in mind that integration of rural road network with the waterways will make the rural transport system cheaper, flexible and demand responsive. However, this would necessitate appropriate actions for a) revival of prioritized rural waterways; b) embankment protection; c) construction of landing stations/river Jetties; d) provision for loading/unloading spaces with toilets; e) design development of country boats; and f) Navigation safety

BANGLADESH BRIDGE AUTHORITY

Review of Past Development Projects

An integrated transportation is the *sine qua non* for socio-economic development of a country. In view of this, Bangabandhu Bridge has been constructed to establish direct road and rail link between the north-west and eastern zone of the country, which was separated by the mighty river Jamuna. The construction work of the bridge was commenced in October, 1994 and completed in June, 1998 at a cost of Tk. 37456.00 million with foreign funding of Tk.25456.00 million. For implementation of the project, an organization named Jamuna Multipurpose Bridge Authority (JMBA) was created. Subsequently, a separate Division, titled Jamuna Bridge Division (JBD), was created under the Ministry of Communication for monitoring, supervision and quickening the decision-making process in respect of different activities and problems related to this giant project. This Project was included in the Fourth and Fifth Five Year Plans.

The bridge is now acting as a fixed major link in the national transportation system. With the facilities of communication both by road and rail from north-west to east, movement of traffic has become easier. This, in turn, has resulted in reducing transport cost and travel time. The farmers of the north-west region are now getting fair prices of their crops, which has encouraged commercial farming of various agricultural products. Besides, a good environment has been created to establish new industries in the northern region. Apart from playing a vital role in the transportation system, the bridge is contributing to the economy by facilitating accelerated growth, poverty alleviation and revenue generation.

Objectives and Targets for the Sixth Plan

The main objectives of the SFYP are to develop an integrated transportation network by constructing Padma Bridge at Mawa-Janira for socio economic development of the country. The government has given the highest priority to construct the Padma Bridge, the largest infrastructure project in Bangladesh. The proposed Padma Bridge will connect 19 Districts of South-Western part with the eastern part including the capital. This bridge will bring significant socio-economic improvement of the people of the south-western region and an estimated 1.2% increase of GDP growth rate of the country. The proposed Padma Bridge lies on the Asian Highway route AH-1 and if implemented this bridge will bring revolutionary changes in the South Asian countries including internal transportation system of Bangladesh.

The Government has plans to construct about 6.10 km long 2nd Padma Multipurpose bridge at Paturia- Goalundo point to establish through communication from capital city, Dhaka to west and south-west part of Bangladesh as well as with the main land port Benapole, Darshona and the sea port with Mongla. To establish a direct road communication between Barisal and Khulna Divisions, government has planned to construct about 1550 meter long Bekutia Bridge over the river Kocha on Perojpur-Jhalakathi road.

BBA has taken initiative to implement infrastructure project through Public Private Partnership (PPP). For the construction of about 26 km. long Dhaka Elevated Expressway from Shahjalal International Airport to Kutubkhali at Dhaka Chittagong Highway on PPP basis with cost of US\$ 1.24 billion. After implementation, traffic congestion in Dhaka city will be reduced substantially. The target in SFYP is also to implement Dhaka-Ashulia Elevated Expressway and Gulistan Golapshah Mazar-2nd Burigonga Bridge Flyover on PPP basis.

BBA has also taken initiative to construct tunnels, the first of its kind in Bangladesh. As part of implementation of about 1.50 km. long tunnel from Zahangir gate to Rokeya Sharani at Dhaka and about 2 km. long tunnel under the river Karnaphuli at Chittagong city. The feasibility studies are in progress. The construction works are expected to commence in due time after conducting feasibility studies and arrangement of necessary foreign funding. The target in SFYP is to achieve major progresses.

In connection with Padma Bridge, BBA has taken initiative to improve road network in South-west region, especially in Barisal Division. The target in SFYP is to start constructions of some new bridges in that region.

Strategies/Policies

The strategies and policies to be pursued in the Sixth Five Year Plan are as follows:

- a) Completion of most priority ongoing Padma Bridge project at Mawa-Janjira in time by providing adequate allocation to derive maximum benefit, instead of spreading the limited resources thinly over a large number of projects.
- b) Improvement of the capacity of Bangladesh Bridge Authority by doing study.

- c) Greater emphasis for repair of cracks and appointment of private operator for operation & maintenance of Bangabandhu Bridge.
- d) Improvement of existing toll collection system of Bangabandhu Bridge.
- e) Generation of funds by issuing bond/share against Padma Bridge Project and issuing securitized bond against Bangabandhu Bridge.
- f) Formulation of appropriate legal and policy framework to attract private investment in infrastructure development projects, particularly the construction of Dhaka Circular Elevated Expressway.
- g) Addressing the environmental issues and resettlement of Project Affected Persons in an appropriate and sustainable manner.

Improving Implementation Capacity

- a) For large infrastructure projects, a qualified and experienced officer needs to be appointed as Project Director for the whole project period. But through deputation it is not possible to appoint an experienced Project Director for the whole project period. So provision for appointment of Project Director through direct recruitment may be included in the Development Project Proposal.
- b) Institutional capacity of BBA should be significantly enhanced in view of renewed mandate and significant increases in volume of work.

DHAKA CITY TRANSPORT

Dhaka, the capital of Bangladesh (1528 sq. kms.) is the largest and most industrialized city of a nation of 150 million people. Its present population is about 13 million which is alarmingly increasing at 4.2% annually creating additional demand for services including transport services. Unfortunately, it is an unplanned city. It is perhaps the only city of its size without a well organized, properly scheduled bus system or any type of mass rapid transit system. Both motorized and non-motorized transport plies in the same route where traffic management is very weak. There is no parking policy for the city; coordination among the agencies is also very weak. This situation compromises the ability of the transport sector to serve and sustain economic growth and provide an acceptable quality of life. At the prevailing condition it is extremely difficult to meet the current transport demand alone not to say of future demand.

To meet the present and future transport demand Government of Bangladesh initiated some policies. Government has been trying to involve donors in city transport improvement and increase its budget every year for transport development. On the basis of the past transport studies including one by the World Bank government implemented Dhaka Urban Transport Project (DUTP) from 1999 to 2006. Because of the unplanned growth of the city and its transportation DUTP could not achieve much to solve deep-rooted transport problems of the city with assistance of only one donor. However, some flyovers, foot over bridges, underground road crossings, pedestrian facilities, intersection and median developments could

be done. A 20 year study has also been done under DUTP with World Bank assistance. Despite these activities traffic situation could not be improved significantly.

City transport development was neglected in the past. Budget was inadequate, technical manpower was not developed to face the challenge of increasing demand created mainly by increase of population of the city. Private sector was never encouraged as a policy matter in city transport development activities. Related public sector agencies were also not strengthened with trained technical manpower. Budget was always inadequate for transport development.

A Strategic Transport Plan (STP) has been prepared recently for planning the transport system of Dhaka City (The Louis Berger Group and Ltd. December 2005). The STP has proposed a number of short, medium and long-term measures to cope with the traffic problems in Dhaka. A number of measures have already been taken, such as construction of new links. Construction of elevated expressway has already started while introduction of metro rail is under consideration. Overall, the target is to introduce a multi-modal and integrated urban transport system comprising of the following:

- Overhead metro/mono rail system
- Elevated express way
- Circular railways and water ways around Dhaka city
- Improved road safety and reduced traffic congestion
- Introduction of modern DEMU (Diesel Electric Multiple Unit) train services in and around Dhaka city
- Construction of double line in Dhaka-Narayanganj and Tongi-Joydevpur, construction of 3th & 4th line and introduction of intermediate block signalling in Dhaka-Tongi section to increase line capacity
- Construction of overpasses/flyovers over important level crossing gates to provide grade separation

Without these drastic measures, the burgeoning congestion on the city roads could not be mitigated. An effective interfacing is required for integrating the various transport modes, so that riders can transfer from one mode to another without much trouble and loss of time. It is possible to have a balanced and integrated transport system for Dhaka through proper planning and development of appropriate institutional framework.

Development Visions, Goals Objectives and Targets for SFYP

The SFYP goal and vision for Dhaka transport is to take short, medium and long term measures to develop a multi-modal integrated and safe transportation system for the city. The strategy during SFYP is to start with short term cost saving measures and then to implement medium and long term measures gradually with adequate budget. Traffic management, circular water way development, connecting rail with neighboring districts and construction of

one/two east-west connecting road during SFYP will be emphasized. Technical manpower will be improved through advanced overseas training. Appropriate technology will be applied in city for achieving accelerated transport development. Private sector must be involved in this matter. Key elements of the Dhaka transport strategy include the following:

- i. In the short term, attention would be given to traffic management measures in order to optimize the use of available road capacity. The traffic management measures may include one-way operation, restriction on a particular mode on a street or in an area, and parking restrictions.
- ii. To have a balanced and integrated transport system, rickshaws should not be totally banned, but their use should be limited. They should be registered by Dhaka City Corporation, and license can be issued to them to operate in a particular area.
- iii. It is thought that increasing the roadway capacity, for example, by constructing expressways is not going to bring any long term solution. This is because the improved roads will push up the demand and ultimately the excess capacity will be exhausted. Therefore, travel demand management measures are proposed in the short and medium terms. Examples of travel demand management include introducing a school bus system and encouraging car-pooling.
- iv. The behavior of the road users is unlikely to change if not enforced. Therefore, adequate number of traffic personnel should be recruited and trained. So far, expenditure on improving the signaling system has not brought enough benefits.
- v. The increase in the number of buses on the streets of Dhaka is a good sign, as they are an efficient mode in terms of space requirement per passenger. Attractive Bus Rapid Transit (BRT) system should be introduced in the medium term.
- vi. A mega-city like Dhaka could possibly explore the possibilities of a metro-rail system to move a large number of people in a quick time through the main transport corridors. Examples include Kolkata and New Delhi
- vii. Ensure proper cost recovery policies to help financial sustainability of urban transport and improve use efficiency

In addition to improvement of traffic management involving proper traffic monitoring, enforcement of traffic laws including parking laws and fees, establishment of time of day road crossings and pedestrian crossings, massive investment will be needed over the medium to long term to modernize and expand the Dhaka transport infrastructure.

BANGLADESH RAILWAY

Bangladesh Railway (BR) is state owned and government managed transportation organization. It provides safe and less expensive mass transport facility. BR also provides critical transport services during natural calamities such as flood and cyclones on an emergency basis. After liberation, like other agencies, BR had to emphasize on rehabilitation and reconstruction of damaged railway system. Till then the bulk of the investment was for replacement, renewal and rehabilitation of track, rolling stock and signaling system. Until recently government resource allocations have had heavy road bias, but there are some important policy signals that things are beginning to change. This particular sub-sector has been losing ground in competition with both water and road transportation.

Review of Railway Subsector

After liberation, BR had 2858.23 km rail line, 270 stations, 486 locomotives, 1643 coaches and 16823 wagons. At present BR have 2835.04 km rail line, 440 stations, 286 locomotives, 1509 coaches and 9970 nos. of wagons. The allocation to the railway sub-sector in respect to the total allocation of transport sector was 23.9% in the First Five Year Plan, 32.13% in the Second Five Year Plan, 27.84% in the Third Five Year Plan, 13.1% in the Fourth Five Year Plan and 13% in the Fifth Five Year Plan. Those allocations could barely meet the need of rehabilitation/replacement costs. As a result no improvement or up-gradation took place and some railway sections and stations had to be closed down. On the other hand, huge investment in road sub-sector resulted in high road density of 69.2 km per 100 sq. km. of total land in Bangladesh.

In a land scarce country like Bangladesh, railways can perform a useful and effective role in transporting bulk freight and passengers more cost effectively and with lower adverse environmental impacts than road transport. Its contribution to pollution is very little, consumption of fuel is only 10% of the other modes of transport and rate of casualties in accident is negligible in comparison to other modes of transport. Travelling costs on railway is cheaper than any other mode of land transportation. Although railway has great potential, it carries only 4% of all traffic. Due to lack of proper investment, BR faces a number of constraints which limit its ability to provide service and minimize its losses.

During the past three decades, the only remarkable investment is the establishment of railway network over the Bangabandhu Multipurpose Bridge which provides seamless railway connectivity between East and West zone of BR. But its utility to BR is limited by significant load restriction placed on BG freight trains to cross over the bridge. Due to inadequate investment, the railway track is in poor condition in a number of areas, including the vital Dhaka-Chittagong corridors which need immediate rehabilitation and upgrading. Almost 78% of the locomotives and 28% of passenger coaches are beyond their economic life and need immediate replacement. 70% of the signaling system has become old aged and obsolete and

needs modernization including human resource development. All these result in serious deterioration of the performance of BR.

Current and Future Challenges

Improve and expand railway network: Government has decided to expand/construct railway network connecting all the districts of Bangladesh. For this purpose, new projects have been taken in hand for expansion of 454.60 km railway network such as Dohazari-Cox's Bazar-Gundum (128 km), Kalukhali-Bhatiapara-Gopalganj-Tungipara (135.50 km), Pachuria-Faridpur-Bhanga (60.10 km) Ishurdi-Pabna-Dhalar char (78 km) and Khulna-Mongla (53 km). Bangladesh Railway (BR) needs to undertake massive development works to overcome the operational bottlenecks such as single lines, missing links and deplorable condition of track, rolling stocks & signaling systems. BR has planned to undertake projects to re-orient the railway network towards the capital, re-open of closed branch lines and connect Cox's Bazar, Mongla Port, Tungipara, Barisal, Chittagong Hill Tracts, important power plants, fertilizer factories, cement factories, tourist points and other areas where rail network does not exist. Moreover, BR has also plan to connect important land ports. For improvement of passenger amenities BR has plan to renovate/reconstruct old aged station buildings, yards, platform, platform sheds, foot over bridge and other structures. Feasibility study for construction of elevated high-speed dedicated rail track will be carried out on Dhaka-Chittagong corridor.

BR has taken projects for doubling of Dhaka-Chittagong railway corridor such as doubling of Tongi-Bhairab bazar section under ADB finance, doubling of Chinki Astana-Laksam section under JICA finance, and construction of 2nd Bhairab & 2nd Titas Bridge along with railway approaches under Indian Dollar Credit Line. BR has taken initiative for track doubling of Akhaura-Laksam, Khulna-Parbatipur, Dhaka-Mymensingh, Dhaka-Bangabandhu East and Dhaka-Sylhet sections.

Due to deplorable conditions of tracks and bridges speed restrictions have to be imposed to ensure safety of running trains resulting excess running time and excess operation expenses. Projects such as rehabilitation of Dhaka-Narayanganj, Saidpur-Chilahati, Mymensingh-Jamalpur-Dewanganj, Pachuria-Faridpur-Bhanga, Laksam-Chandpur, Fateyabad-Nazirhat, Sholoshahar-Dohazari etc. have been undertaken for rehabilitation of existing railway lines to improve the performance of BR and to restore the image of railway as a safe, speedy and reliable means of transport. Rehabilitation of some old bridges has also been under taken.

BR has taken initiative to construct Rail-cum-road bridge over river Padma connecting Dhalarchar and Rajbari, dedicated railway bridge through Bahadurabad – Phulchari ghat over river Jamuna, 2nd Karnaphuli Rail-cum-road bridge, 2nd Bhairab and 2nd Titas railway bridge, dedicated railway bridge over the river Jamuna. BR has also planned to rehabilitate/upgrade all bridges to carry national, regional and Trans-Asian railway Traffic.

Digitalization of railway: Bangladesh Railway has introduced Computerized Seat Reservation and ticketing system, selling ticket through mobile phone, giving information through mobile

network. In addition BR has undertaken digitization of (i) Financial Accounting System, (ii) Fixed Asset Management System including Land and Real Estate Management, (iii) Human Resource Management System (HRMS), (iv) Payroll Management System, (v) Procurement and Inventory/Material Management System, (vi) Project Management System and (vii) Workshop Maintenance Management System.

Acquisition of new rolling stocks: At present BR is facing crucial operational problems due to shortage of adequate rolling stock. It is expected that 9 MG DE locomotives will be arrived from May to September, 2011. Procurement of 11 MG DE locomotives is in process. Projects have been taken in hand for procurement of 40 BG locomotives, 125 BG and 414 MG coaches, 2 BG inspection cars, 180 BG and 100MG tank wagons, 220 MG flat wagons and 10 sets of DEMUs under Indian Dollar Credit Line. BR has taken initiative to procure 70 MG DE locomotives.

Transportation of fuel to the power plants:

The government of Bangladesh is going to establish a number of Power plants on rental basis. BR has to transport fuel to those power plants which is difficult due to various constraints of BR such as scarcity of rolling stock and O&M staff, single railway track most of which are in deplorable condition. BR needs to take projects for double tracking of railway tracks, procurement of rolling stocks and various improvement works.

Reform of BR:

A reform programme is going to transform BR into Lines of Businesses (LOBs) and other improvement of BR's management. LOB heads are assigned in their posts. Key Performance Indicators (KPIs) would be used to monitor performance of LOBs. BR also has to implement 5-year business plan and land use plan. Land Assets has been proposed as a separate LOB of BR, which will be looking after the Land Assets of BR and its proper usage, marketing strategy and custody. It will be a separate Business unit and will generate its own revenue. This new LOB would also be responsible for identifying and developing other opportunities such as hotels, markets, parks and tourism.

Padma Bridge connected rail links: Government of Bangladesh is going to construct a Rail-cum-road Bridge over Padma River at Maowa Point. It provides an opportunity for linking Capital City Dhaka through shortest route connection with South-West part of Bangladesh and Cross border connectivity with India under greater perspective of SAARC. Moreover, the proposed route will provide an opportunity to connect Barisal, the divisional town with Tungipara. And Mongla, the 2nd Sea Port of Bangladesh with eastern railway network. GOB has already approved projects for rehabilitation/construction of Pachuria-Faridpur-Bhanga rail line and Kalukhali-Bhatiapara-Gopalganj-Tungipara in this regard. If rail line from at least Mawa to Bhanga can be established, train can be operated over Padma Bridge from Day-1 from Mawa to Western part of railway network. To facilitate regional trade railway network will be constructed connecting Mongla, Bhomra and Benapole.

Trans Asian railway: The Government has embarked to establish regional railway connectivity and Trans Asian Railway (TAR) connectivity. Bangladesh has signed the “Intergovernmental Agreement on the Trans-Asian Railway (TAR) Network” as 20th signatory on 09-11-2007 and issued ratification on 11-08-2011. TAR routes enter Bangladesh from three directions from the Indian state of West Bengal and exits through two directions. The TAR routes in Bangladesh are as follows-

TAR ROUTE-1:

Gede (West Bengal, India) – Darsana- Ishurdi- Jamtoil- Joydebpur- Tongi- Akhaura- Chittagong- Dohazari- Gundum- (Mynmar border station)

Sub-route- I: Tongi- Dhaka.

Sub-route- II: Akhaura- Kulaura- Shahbazpur- Mahيسان (India)

TAR ROUTE- 2:

Singabad (West Bengal, India) – Rohanpur- Rajshahi- Abdulpur- Ishurdi and thereafter following the rest of the route/sub-routes of Route- I.

TAR ROUTE- 3:

Radhikapur (West Bengal, India)- Birol- Dinajpur- Parbatipur- Abdulpur- Ishurdi and thereafter following the rest of the route/sub-routes of Route- I.

A project has been approved for the construction of Dohazari-Ramu-Cox’s Bazar and Ramu-Gundum new rail line to overcome the missing link of TAR. Another project is going on for conversion of Parbatipur-Birol section into dual gauge to re-open the Radikapur-Birol interchange point for establishing TAR in Route-3. Another project has been proposed to be implemented under GOB financing for rehabilitation of Kulaura-Shahbazpur section to establish TAR in Bangladesh. Moreover, several projects are going on and some have been proposed for improvement of the TAR routes in Bangladesh.

Regional Connectivity

At present there are three operating interchange points for bi-lateral railway traffic. They are Benapole (BR) – Petrapole (IR), Darsana (BR) – Gede (IR) and Rohanpur (BR) – Singhabad (IR). Mostly freight are carried through those interchange points. Train movement in the interchange point Birol (BR) – Radhikapur (IR) and Shahbazpur (BR) – Karimganj (IR) was suspended a long ago and actions have been taken to restore the communication. The Government is taking initiative to overcome the operational bottlenecks and missing links of Railway network within the country to facilitate an efficient railway transport linkage among SAARC countries. The regional routes through Bangladesh identified by SAARC Regional Multimodal Transport Study (SRMTS) and BIMSTEC Transport Infrastructure and Logistics Study (BTILS) are as follows:

BRCI and SRCI: Lahore/Delhi/Kolkata/Dhaka/Mahishasan/Imphal

BRC3 and SRC4: Birgunj (Nepal)/Raxaul/Katihar (India)/Rohanpur-Chittagong with links of Joghani (Nepal) and Agortala (India)

SRC6: Birgunj (Nepal)/Raxaul/Singhabad (India)/Rohanpur-Rajshah- Khulna-Mongla Port with links of Biratnagar (Nepal).

Targets and Objectives of SFYP

BR targets and objectives encompasses the government's vision to expand and improve the railway system to provide safer, better, environment friendly and less expensive transport facilities to the national and international traffic.

BR's objectives of SFYP are to:

- i. Rehabilitate, upgrade/improve and replace old-aged infrastructures and rolling stocks to reduce journey time, improve the service quality and to build the image of railway as a safe and reliable means of transport.
- ii. Connect the Capital City with Cox's Bazar, Mongla Port, Tungipara, Barisal, Chittagong Hill Tracts and other areas where rail network does not exists.
- iii. Establishment of Padma rail links, Trans Asian Railway network and regional railway connectivity.
- iv. For running more trains, augmentation of line capacity along selected corridors including procurement of additional rolling stocks to meet the future challenge.
- v. Increase its market share up to an acceptable level.
- vi. Reduce the operating ratio remarkably at the end of the year 2015.
- vii. Undertake implementation of Land Use Plan, enhance Public-Private Partnership (PPP) in railway sector and create other business opportunity.
- viii. Improve Commuter Train Services to provide better urban transport facilities to the daily passengers around Dhaka, Chittagong, Rangpur, Dinajpur, Parbatipur, Nilphamari, Sylhet etc.
- ix. Reduce the rate of casualties in accidents, fuel consumption and carbon emission in transport system.
- x. Assist in pro-poor growth and poverty reduction.
- xi. Improve financial performance through efficiency measures as well as by instituting proper user charges.

BR targets for SFYP are as follows:

1. Undertake construction of 1210.42 km new rail line or re-opening of closed rail lines, double tracking of 506.20 km track and 6 new important bridges along with all necessary infrastructure, rehabilitation/upgrading of 1535.73 km existing rail line along with all necessary infrastructures; remodeling/construction of 7 stations in existing section,

improvement of 831 level crossing gates, construction of one ICD at Dhirasram and improvement of other infrastructures to increase carrying capacity.

2. Undertake procurement of 234 DE locomotives, 50 DEMU/DHMU, 771 passenger coaches and 1430 wagons to introduce new trains and improve the service quality & passenger amenities and increase carrying capacity of containers, fuel oil, aviation fuel, bulk freight, parcels etc.
3. Undertake rehabilitation of 143 DE locomotives, 560 passenger coaches and 377 wagons to enhance availability & performance of rolling stocks and to ensure reliability & punctuality of running trains. Various projects for improvement of service quality of rolling stock including improvement of workshops.
4. Undertake procurement of DEMUs and investment projects to increase line capacity for introducing more commuter trains around Dhaka, Chittagong, Rangpur, Dinajpur, Parbatipur, Nilphamari, Sylhet etc.
5. Undertake modernization of signaling system of 113 stations to ensure safety.
6. Undertake various PPP projects to create other business opportunity.
7. Organizational reform and human resource development to enhance the efficiency and improve the performance of BR
8. Undertake various types of study and consultancy services.

Strategies and Policies of SFYP

Government, underscoring the need of railway communication, put priority to railway amongst all the surface mode of transports under National Land Transport Policy (NLTP) and Draft Integrated Multi Modal Transport Policy (Draft IMMTP). In order to overcome the constraints and to achieve the visions of BR, a 20 year development plan is being prepared by the planning commission. To become self sustainable, BR has to improve service quality and operational efficiency as well as develop its own infrastructure facilities to carry more traffic efficiently.

It has been found that BR shall have to focus on intercity passengers, long haul freight traffic along selected corridors, container traffic and take initiative of other businesses. Hence the development plan focuses on overcoming the shortcoming, missing links and operational bottlenecks of BR.

Historically the railway enjoyed a monopoly as a carrier and used to carry most of the principal commodities in the country such as cement, coal, fertilizer, raw jute, stone, food grain, sugar cane etc. With gradual emergence of road transport, railway started losing its modal share and overtime it declined from 30% in 1975 to a mere 4% in 2005. However, railway still dominates in carrying stone, iron, steel and food grains. In addition, railway also carrier about 10% of containers handled in Chittagong port. BR has taken initiative to increase

the modal share specially in container transportation. Some important KPIs of BR are as follows –

- Passenger transport share: 10%
- Freight transport share: 10%
- Container transport share: 20%
- Working Ratio improved to 0.96.
- Number of derailment reduced: 20%

It is found that the commodities carried by rail are mostly sea port and land port based. Thus the strategy for SFYP includes development of new inland container depots (ICD) and increase the carrying capacity.

In addition, BR has great potential in the regional traffic market, which depends on the expansion of railway network and the revival of historical railway links. Most of these are part of Trans Asian Railway network and Bangladesh has already signed the intergovernmental agreement.

Programs for achieving the targets for SFYP

Bangladesh Railway has planned to undertake about 149 projects within next five years. With the implementation of the on-going as well as new projects Bangladesh Railway will be able to regain its market share and be self-sustainable and create other business opportunities. Thus BR will be able to contribute in poverty reduction and sustainable economic development of the country. Out of the total 149 projects, 46 are on-going and 103 are new. It is very essential to get the required allocation in time to implement the projects efficiently. Lack of adequate fund will result time over run as well as cost over-run.

INLAND WATER TRANSPORT

The country possesses a navigable waterways network, which varies from 5968 km during the monsoon season to 3,865 km during the dry season. Owing to the vast river network in Bangladesh inland water transport (IWT) continues to be an important mode of transport, despite years of neglect and the emergence of expensive road transport system. The water transport network of the country not only caters to the inland movement of freight and passengers but also plays an important role in the transportation of import and export items through the ports of Chittagong and Mongla. During the monsoon season when roads become impassable, riverboats are the only mode of transport for an important part of the Bangladesh's rural population. The country boat plays significant role and provides for about 50% of the total employment in the transport sector as a whole. They are also the main mode of transport in the south coastal areas where the road network is little developed.

The length of rivers of Bangladesh is about 14,000 km, which spread over the country as a spider net, and through this network the remotest areas of the country are accessible whereas

roads and railways do not have such accessibilities. More than fifty percent of the economic activities in the country are located within a distance of 10 km for the nearest navigable waterways in all seasons. The high degree of penetration of the IWT network providing access to about 25% of the rural households in Bangladesh and the existence of a dynamic private sector leading the activities of the sector (such as cargo transport, port management and ship building) are the main strengths contributing to economic growth and poverty reduction. Moreover, the topographic, soil and climatic conditions in Bangladesh are such that cost of building and maintenance of roads and railways are very high compared to inland waterways. Besides, cultivable land is needed for the improvement of roads and railways while for inland waterways it is not necessary.

The infrastructure facilities and services in the IWT sub-sector are provided by the Bangladesh Inland Water Transport Authority (BIWTA) and the Bangladesh Inland Water Transport Corporation (BIWTC) respectively. About 77% of the total sea-borne export and import of the country are handled by the Chittagong port. On average, the Chittagong port handles about 82 percent of the imports and 74 percent of the exports, while Mongla port handles the rest of export and import freights. Both of the sea ports suffer from heavy siltation such that channel depths between the sea and the wharves can change considerably. It is sometimes beyond the control of the port authorities to maintain published channel depths.

In maritime shipping, the Bangladesh Shipping Corporation (BSC), a public sector organization, provides 55% of the services in respect of Dead Weight Tons (DWT), while the private sector provides 45%. Bangladesh handles only 14% of the overall import and export cargo, although, under the technical convention, it is entitled to handle up to 40 percent. This indicated that there is significant scope for both BSC and the private sector to expand their operation.

The performance of the IWT in term of passenger and cargo transportation is satisfactory. The sector served 8.9 billion passengers/km and 3 billion cargo ton/km in 2007. In term of productivity per kilometer of network, IWT has the same productivity for passenger and more than twice the productivity for cargo compared to road transport. Inland waterways have more accessibility compared to other surface network. Studies have also shown that 12.3% of the rural population or 50% of rural households have access to water transport. It is the cheapest mode of transportation, as the tariff per ton/km is Tk 1, whereas it is Tk 4.5 for road and Tk 2.5 for rail. Moreover, the use of IWT instead of road transport is estimated to save about 58.5 million liters of diesel and 155,000 tons of CO₂ per year.

In spite of having several advantageous fronts, IWT has persistently received comparatively less fund and less attention in allocation of resources out of development and non-development budgets. The provision has always been low and merely enough to covers only emergency maintenance works. Until now network maintenance has been given a low priority with share of resources allocated to network maintenance decreasing in recent years.

In surface transport systems, segmented development, rather than a coordinated one, has been in place after liberation. Such development neglecting IWT makes the transport sector unbalanced. In spite of having comparative advantages of IWT over other surface modes of transport, less importance was given to IWT compared to road and rail.

Targets and Objectives of SFYP

To develop a balanced and least cost transport system in Bangladesh, it is imperative to improve IWT both from infrastructure and technological points of views. In spite of the development of infrastructure facilities in IWT sub-sector during the past plan period, BIWTA still suffers from (i) siltation problems in inland water crafts, (ii) day and night navigational problems of waterways, (iii) shortage of passengers and cargo handling facilities including transit shed at river ports, (iv) manual loading/unloading of cargo at river ports, (v) underdeveloped rural launch landing stations, etc. Moreover, for transportation of containers by inland waterways to and from sea-ports, the container handling facilities have not yet been developed.

Targets

During the period of the Sixth Five Year Plan, activities relating to development of inland waterways would focus on dredging and resuscitation of dead and dying river routes, developments of inland river ports, providing navigable aids for smooth and safe movement of cargo and passenger vessels, improvement of waterways in and around Dhaka City for making surrounding rivers navigable and wider. All these activities will accelerate the infrastructure development, promote economic growth, which in turn will lead to poverty alleviation.

Objectives

The main objectives of the SFYP are as follows:

- a. To improve the channel of the existing waterways through dredging.
- b. To improve day and night navigation of water crafts by providing navigational aids.
- c. To develop inland container river ports for transportation of containers by waterways to and from sea ports.
- d. To develop river port handling facilities as well as storage facilities and introduce mechanical equipment for handling cargo in order to save waiting time for berthing of vessels.
- e. To develop rural launch landing stations by providing pontoon facilities for smooth embarkation/disembarkation of passengers and cargo.

Strategies and Policies of SFYP

In order to achieve the above plan objectives, the following strategies will be undertaken:

- i. Completion of spilled-over projects within the stipulated time.
- ii. Intensification of the dredging program including procurement of dredgers to develop existing channel conditions of inland waterways and provision of navigational aids for smooth navigation of water crafts.
- iii. Establishment of inland container river port on priority basis within the first two years of the plan.
- iv. Upgrading port facilities (both cargo and passenger) as well as storage facilities so that vessels can be loaded/unloaded without delay and
- v. Introduction of mechanical equipment for handling of cargo at river ports to avoid the head-load system.
- vi. Implementation of the development projects of rural launch landing stations.
- vii. Implementation of projects for improving the traditional country boat sector.
- viii. Undertaking feasibility studies for providing landing facilities in the coastal areas.

PORTS AND SHIPPING

The department of shipping, Maritime safety Administration of Bangladesh under the administrative control of the Ministry of Shipping, deals with among others ship registrations/flagging, crewing, maritime safety, security and pollutions prevention of international and domestic shipping. There have been substantial developments in international and domestic shipping activities through implementation of these instruments. The shipping department also advises the Government on shipping policy and related matters, keeping liaison with the IMO/ILO/UNCTAD and other international shipping related organizations and takes necessary measures for implementation of various international conventions adopted by these organizations. The department also conducts shipping casualty investigation and takes necessary measures in order to avoid recurrence of accidents.

Key Constraints

Acquisitions of ships is highly capital intensive. As such, investment of huge capital at high interest rate makes this sector unattractive. Present global trend of free market economy demands BSC to be run as a profitable commercial organization in a competitive manner. BSC has been improving its functional efficiency and efforts are being continued to materialize necessary expansion and development programs by raising its own sources. But it would not be practically possible for BSC to undertake a huge project in the above mentioned fields of investment on its own financial capabilities. Financial recession, which has been going on world-wide since October 2008, has tremendously affected international shipping trade and as such arrangement of fund from BSC's won source has further been aggravated. Besides, commercial banks and other financial institutions of both home and abroad are now reluctant to invest in this sector. During the 1970's and 1980's different donor countries and agencies

provided funds for BSC as grants or soft term loans for purchase of vessels through the government. However, currently it is difficult to obtain grants or soft term loan for this purpose.

Objective for SFYP

The main objectives of the Department of Shipping are:

- i) To regulate and promote the maritime shipping of Bangladesh by discharging flag, port and coastal state responsibilities and ensuring safe, secure and efficient shipping on clean ocean.
- ii) To provide navigational aids for safety of sea-going vessels, coastal vessels, fishing boats/trawlers, naval vessels, coast guard vessels within the Bangladesh waters.
- iii) To streamline the maritime and shipping rules and regulations in the line with national and international requirement in order to promote shipping and trade of the country and to develop institutional and infrastructural facilities including ensuring inland ferry safety in order to perform its duty effectively.
- iv) To conduct country survey and inspection of all types of vessels and prepare an inland shipping fleet profile in order to make appropriate plan to regulate them for the public interest. The profile would include the details of the vessel including design, equipment, inventory, classification, categorization etc.

Targets

- i) To achieve the target for digital Bangladesh, the department of shipping is introducing machine readable seafarer identity card, which will help Bangladeshi seamen's job opportunity on foreign flag vessel and to meet the obligation of the international requirements.
- ii) In order to provide aid to navigation, rehabilitation of the 3 lighthouses at Cox's Bazaar, Kutubdia and St. Martins are required. These lighthouses will be modernized and more new lighthouses will be established at Kuakata, Ruperchar, and Chardarshok etc.
- iii) Department of Shipping has an acute shortage of manpower and institutional capabilities. So, the shipping department needs to be strengthened with adequate manpower and institutional capabilities which include new organogram and recruitment policy, new office space and building, development of training facilities, updating of rules/regulations and shipping policy etc.
- iv) Installation of GMDSS in Bangladesh is a decade old requirement, which will not only enhance safety of life of all seafarers including fisherman in the coastal waters but will also fulfill IMO, which needs immediate attention.

Chittagong Port Authority (CPA)

Chittagong port is the principal maritime port of Bangladesh and therefore has a very special role in our development process. It handles about 95% of the country's sea borne export and import trade. It is a service organization committed to provide facilities for efficient handling of the maritime import and export of the country. It acts as the linkage between the inland and sea transportation of goods. In future the port may also provide international transit facilities to neighboring countries mainly Nepal, Bhutan and eastern states of India. Thus the port plays a vital role in the economic growth of the country. However, in the context of the global situation of trade and commerce, Bangladesh is seeking to explore opportunities to further expand international economic activities for sustainable development, which necessitates improved efficiency of maritime gate ways, particularly making Chittagong port more responsive to commercial needs of exporters, importers and carriers. With the increase in globalization of the world economy, the future growth of the Bangladesh economy largely depends on its competitiveness and relative efficiency compared to other economies. The efficiency in the utilization of principal port can contribute significantly to the efficiency and competitiveness of the economy as a whole. So it is imperative to upgrade the efficiency of the Chittagong port keeping in view of its vision to become competitive transport hub of the region in the near future.

Projected growth of container traffic in the Chittagong Port is shown in Table 4.7. From the above forecast it is observed that at the end of the terminal year of the SFYP, the Chittagong Port Authority (CPA) is likely to handle about 48 million tons of cargo including about 1.8 million TEUs of containers for which existing facilities are adequate. As the volume of cargo at the port is increasing manifold, major expansion facilities are to be required during the SFYP to meet the demand beyond the plan period. Nevertheless, the growth rate of cargo must be related to the targeted rate of growth of GDP of the economy.

Table 4.7: CPA Traffic Projection

Financial Year	Import (Mill. M.Ton)	Export (Mill. M.Ton)	Total (Mill. M.Ton)	Number of Containers (In TEUs)
2010-11	30.77	4.24	35.01	1,390,447
2011-12	33.14	4.62	37.76	1,497,335
2012-13	35.65	5.07	40.72	1,600,550
2013-14	38.26	5.53	43.79	1,710,533
2014-15	41.15	6.05	47.2	1,833,000

Source: Chittagong Port Authority

Objectives

In the back drop of the traffic forecast up to 2014-2015, the main objectives of SFYP related to Chittagong Port are:

- To maintain and improve the navigability of the channel through capital dredging and regular maintenance dredging.
- To develop efficient inland distribution of container traffic by three modes of transport viz; road, rail and IWT to relieve the congestion problems being experienced by Chittagong port as well as to reduce high dwell time of container in the port.
- To increase container handling capacity through expansion of terminal/yard facilities, acquisition of modern container handling equipment and procurement of harbor crafts and vessels to ensure improved operating system.
- To set up ICD/CFS by the public/private sector at all potential cargo distribution centers across the country to decongest the port.
- To involve private sector in port management and port development infrastructure on BOO/BOT/PPP model for which a clear, reliable and transparent policy guideline is to be approved by the Government.
- To improve institutional capability in training, planning, safety and environment management control in the port.

Strategies

In order to achieve these objectives of the SFYP, the following strategies will be adopted:

- Due to ever increasing throughput of cargo/container, Chittagong port is subjected to heavy pressure in respect of efficient handling of the country's sea borne traffic and it is already operating beyond its capacity. Particularly, the lack of hinterland facilities for the transportation of containers to and from Chittagong Port has added a serious problem resulting in stuffing and un-stuffing of 90% containers in the port premises and gives rise to container congestion at the port. Consequently, door to door delivery of containers, which is the prime objective of containerization, is being frustrated severely. This situation cannot be improved by CPA alone. Contribution from the Roads and Highways Department and Bangladesh Railway is also required. Hence to achieve objectives of SFYP, these problems need to be addressed on priority basis by establishing an integrated and effective multi-modal transport network for inland movement of the containers to and from the port.
- To provide facilities and services to the international shipping lines and other concerned agencies steps will be taken for creating adequate physical facilities (i.e. terminal, jetties, cargo/container handling equipment) and maintaining adequate water depth in the navigational channel. The facilities provided by the port are influenced by external factors. Due to change in shipping technology and technique in handling of cargo/container, the port facilities will have to geared up to keep pace with such changes.
- Tariff structure of the port will be revised periodically to meet the increases in operational cost and also to generate revenue surplus for financing its development projects to be implemented during the plan.

- Steps will be taken to delegate more authority to CPA, so that they may be able to use their own financing for investment in handling facilities and replacement investment which are regarded as essential to improve the productivity and generate adequate rate of return.
- In order to encourage private sector participation in the port development activities some regulatory framework should be initiated. Even in some areas policy guidelines is to be made by the Government to attract foreign investors on the projects like BOO/BOT/PPP model.

Mongla Port Authority

Mongla Port plays a vital role in the field of trade, commerce and economy of the country. The Port initially established as an anchorage port turned into land based port with commissioning of port jetty in Mongla in 1983. By river route and road, Mongla port is in a unique position to serve all parts of the country as well as Nepal, Bhutan and boarder areas of India.

The current situation that encompasses the operation at Mongla port includes:

- Less distance to hinterland and has the advantage of having free river ways throughout the year.
- Protected by Sundarbans which in turn is conducive towards safe operations and is sheltered from freshet, cyclone and flood
- Large channel available for anchorage and loading-unloading facilities on both sides of the ship.
- Good river transport connection throughout the year with all inland ports.
- Huge infrastructure facilities available for handling container and specialized cargo.

The port is also subject to comparative operational efficiency which includes:

- No congestion of ships, container and cargo.
- No constraint in berth and less “Turn Around Time”.
- The port is operational round the clock.
- Container dwell time is in the limit of 6 days.
- Private jetty facilities prevail for handling Clinker, Gypsum, Fly ash, Gas, etc.
- Huge land available for establishment of private jetties within and outside port arena.
- Huge spaces for storage of cargo are available.
- Easy cargo handling opportunity at anchorage and mooring buoy.
- Ships ETA and ETD are maintained strictly.
- Documentation system has been simplified to reduce time.
- Wide scope of handling and storage of motor vehicle.

Key Constraints

- Rapid siltation in the long channel is a serious navigable problem for this port. The depth of Pussur River at the left bank where the port facilities are located was adequate for berthing of 8.5 meter draught ships. Due to rapid siltation, safe passage through the

channel and berthing of ships in anchorage, mooring buoys and jetty have become difficult after commissioning of the Farakha barrage.

- For routine maintenance, dredgers owned by Port authority are essential for continuous maintenance of the channel which is needed for sufficient navigability. Thus procurement of dredgers has become a necessity for Mongla Port.
- The effect of depreciation of equipment over the years which were procured during the commissioning of the jetty in 1983, have resulted in the equipment becoming obsolete. As such, there is a shortage of cargo handling equipment and the present equipment is too old to provide adequate service.
- Interruption free access to different modes of transport infrastructure is essential for the optimal operation of Mongla Port. With the construction of the Rupsa Bridge and Pakshi Bridge road link has been established, but no initiative has yet been taken for rail connection.
- For smooth movement and efficient operation of ships in the channel, providing pilotage service, hydrographic survey, fire fighting and installation of buoys at various points of the Pussur Channel is essential. The existing crafts are too old to provide adequate service.

Improved Infrastructure Requirement for Better Business of Mongla Port

Substantial amount of food grain are imported and dispatched to the hinterland through this port every year. The export of frozen fish through this port is also increasing over time. Recently government has decided to import significant portion of food grain and fertilizer through this port. For smooth and efficient handling of food grains and systematic distribution of food, separate food jetties and silo are to be constructed at Mongla port with urgency.

Due to lack of railway link from Mongla to its hinterland, quick transportation of cargo could not be possible. For flourishing the operation of Mongla port it is essential to establish railway link from Mongla to Khulna and Mongla to Dhaka via Padma Bridge. Khanjahan Ali airport has been planned to be constructed at Failahat 21km ahead from Mongla towards Khulna. For fast movement of port users and business entrepreneurs construction work of this airport should be expedited.

Mongla port is in unique location to offer excellent transit for international trade of Nepal. The government of Nepal is interested to use Mongla for its connectivity trade. For attracting transit trade of Nepal, Bhutan and neighboring border areas of India connectivity trade arrangements are to be made among the countries. For expansion of port operation 460 acres of land have been earmarked for Mongla export processing zone and 190.76 acres has already been handed over on which 13 industries have been built and another 5 industries are under construction. Sunken ships create obstacle to normal flow of water in the Pussur channel and expedite rate of siltation. Mongla port authority has taken steps to remove wrecks from Pussur channel. But due to lack of appropriate technology and equipment, the wrecks could not be removed.

After inauguration of Rupsa and Pakshy bridge cargo transportation got free access through Mongla port. Establishment of road link of Mongla- Mawa-Dhaka has shortened distance and after construction of Padma bridge Dhaka traders will be interested to use Mongla port. Besides, opening of container terminal at Khanpur-Narayanganj and Pangaon Dhaka, great deal of opportunity will be opened up for carrying container cargo by barges and Mongla port will pave the way of international trade and business of home and the region as well.

Objectives and Strategies

The main objective and strategy of the sixth plan is to provide modern facilities and services to shipping and other concerned agencies with speed and efficiency through providing jetties, godowns, yards, and modern handling technologies. In order to enable the port to meet the challenge of modernization following strategies will be adopted :

- i. **Removal of wrecks from Pussur channel:** During the time of liberation war and afterwards around 15 local and foreign ships were sunk at different places in the Pussur channel which create obstacle in normal flow in the Pussur channel, increase rate of siltation in the channel and makes movement of ships risky. Steps will be taken to remove those wrecks from the channel for smooth operation of ships.
- ii. **Navigational aids to Mongla Port:** For assuring safe navigation during day and night the port authority needs a light tower which is to be constructed and located in the vicinity of channel Buoy B-12 a fifteen nautical miles up channel from the fairway buoy. The light tower would be fitted with RACON and the light is visible from a distance of 20 nautical miles. Such a light tower would assist vessels in their approach to the Pussur channel particularly at night.
- iii. **Procurement of harbor crafts for Mongla Port:** To maintain the daily in –coming / out –going schedule of foreign ships more reliable vessels are required for efficient operation and smooth functioning of the port. Steps would be taken to procure modern pilot launch, dispatch launch, survey launch, mooring boat and self water craft for sustaining efficient port operation.
- iv. **Computerization and introduction of Management Information System:** Almost all activities of the port are performed manually. In order to enhance the competitiveness of the port measures will be taken to introduce computerized Management Information System.
- v. **Replacement of cargo handling equipment:** There is a shortage of crane, straddle carrier; forklifts and other handling equipment at Mongla port and even the present equipment are too old to provide adequate service to the port users as per their need. So, modern handling equipment for handling general cargo and container will be procured for smooth operation in the jetty.

Bangladesh Land Port Authority

Bangladesh Land Port Authority (Bangladesh Sthala Bandar Kartripaksha) has been created

under Bangladesh Sthala Bandar Kartipaksha Act, 2001 (Act 20 of 2001) to make Import and Export between Bangladesh and neighboring countries easier and better. Since inception Bangladesh Land Port Authority started functioning under the control of Ministry of shipping. The following 16 land ports were placed under the direct administrative control of Bangladesh Sthala Bandar Kartipaksha (BSBK).

Benapole, Jessore	• Darshona, Chuadanga
Banglabandha, Panchagarh	• Birol, Dinajpur
Bhurimari, Lalmonirhat	• Bora, Satkhira
Hilli, Dinajpur	• Teknaf, Cox'sbazar
Sonamasjid, Chapai Nawabgonj	• Bibirbazar, Comilla
Tamabil, Sylhet	• Bilonia, Feni
Akhaura, Bhahmanbaria	• Gobraura and Karaitoli,
Nakugaon, Sherpur	Mymensingh
Haluaghat, Mymensingh	

It was decided by the Government that except Benapole and Bhomra remaining 14 Land Ports would be operated through Private Port Operators on BOT (Build, Operate & Transfer) basis.

Major activities of the Land Port Authority are as follows:

- (a) Formulating policy for development, management expansion, operation and maintenance of all land ports.
- (b) Engaging operators for receiving, maintaining and dispatching cargoes at land ports.
- (c) Preparing Schedule of tariffs, tolls, rates and fees chargeable to the port users having prior approval of the government.
- (d) Executing contracts with any person to fulfill the objectives of the Act.

Current Port Development Activities

A project titled 'Modernization of Benapole Land Port (1st phase)' project for infrastructural development and extension is being implemented at a cost of TK 24.43 crore. The infrastructural development work includes construction of four warehouses, open stack yards, export and passenger terminals and acquisition of 6 acres of land including development. After the completion of the project, the warehousing capacity of Benapole Land Port will increase from 27,000 mt to 28,600 mt. Besides, project for procurement of handling equipment at a cost of Tk. 80.21 crore is in the process for approval. Moreover steps have been taken to automate the Benapole Land Port for efficient and transparent port operation. Under the Public Private Partnership (PPP) initiative land ports have been leased out on BOT (Build, Operate and Transfer) basis which is an important step towards involving private investment for enhancing economic growth and employment generation.

Goals and Objectives of the Sixth Plan for Land Ports

Goals

- i. Facilitating export-import through land routes for increasing volume of trade, prevention of smuggling and reduction of evasion of customs duty.
- ii. Promote and expand the area of co-operation between government and private sector in different areas of development.

Objectives

- i. Infrastructure development such as passenger jetty, cargo jetty, transshipment yard, open yard, truck terminals, weighbridges etc.
- ii. Enhance efficiency in cargo handling using modern equipment.
- iii. Construction of warehouses for improvement of storage facilities.
- iv. Fostering public-private partnership for effective and better service deliver.
- v. Establishing road linkages for increasing the volume of trade

AIR TRANSPORT AND TOURISM

Civil Aviation Authority of Bangladesh (CAAB)

Civil Aviation Authority (CAAB) is a sub-sector under the transport sector. This authority is responsible to ensure safe, orderly and expeditious operation of international and domestic air traffic within the territorial airspace of Bangladesh. The authority is also responsible for construction, expansion, operation and maintenance of aviation infrastructure of the country up to the standard as prescribed by International Civil Aviation Organization (ICAO).

The geographical location of Bangladesh is favors the country to communicate with Eastern and Western countries of the world. In this situation, there is potentiality for Bangladesh to make Hazrat Shahjalal International Airport as a hub for Air Transportation. At present daily more than 100 flights operate at Hazrat Shahjalal International Airport. Besides, more than 200 over-flying flights are operating daily in the territorial air space of Bangladesh. By providing fuel to aircrafts and transit facilities to transit passengers at the International Airport Bangladesh can earn a lot of foreign currency.

Policies and Objectives of SFYP

The objective of SFYP is to open more airports for international flight and to expand the existing facilities for safe and secured operation of aircrafts. The major objectives of CAAB is to develop Hazrat Shahjalal International Airport for operation of wide-body aircraft of international flights, to modernize ATC and communication system, to implement CNS/ATM based navigational aid system and to accommodate/ create parking facilities for new aircraft of National and private airlines. Another important recent development is that Cox's Bazaar Airport will be improved for operation of wide-body aircraft.

To implement the above mentioned objectives, the following aspects have been given priority in the SFYP:

- Strengthening of existing runway, taxi-way and apron for safe and secured operation of modern aircraft.
- Construction of new-airports for better communication with remote area.
- Expansion of parking area to accommodate new aircrafts of National Airlines and Domestic Airlines of Bangladesh.
- Expansion of passenger terminal building as well as cargo building facilities.
- Replacement of existing primary and secondary radar.
- Enhancement of operational facilities at domestic airports.
- Outsourcing of operation, maintenance and management of ground handling services at international airports.
- Enhance the operational facilities of control tower at Hazrat Shahjalal International Airport.
- Installation modern navigational equipment.
- Replacement of instrumental landing system (ILS) for international airport.
- Ensuring adequate cost recovery policies
- Construction of a new international airport to cope with the increasing traffic and upcoming challenges.

Air Transport Services

The air transport services have gone through major challenges. The national carrier, Bangladesh Biman, has experienced serious performance problems owing to inefficiencies, corruption, overstaffing, weak management and inadequate investment. As a result, there has been a substantial loss of passengers that has added to the financial difficulties of Bangladesh Biman. In recognition of these difficulties, the Government has embarked on a major reform to improve the performance of Biman while also encouraging the entry of local carriers. Progress has been made on both counts. The operational efficiency of Biman has been improving while private local carriers are now in operation. The Sixth Plan will build on this progress by further improving the performance of Bangladesh Biman while continuing to encourage private local carriers. With an open sky policy and strong global competition for passenger traffic, better performance from Bangladesh air carriers will be imperative to retain and even improve market share.

Tourism

Tourism brings significant benefit to the balance of payments and general economy of the country by augmenting foreign exchange earnings and other economic activities. There are a large number of countries even in Southeast Asian region where tourism industry is a major contributor to GDP. In Bangladesh the situation is deplorable. Not much of tourism facilities have been developed, particularly for the foreign tourists. As a result, contribution of tourism industry to national income and GDP is negligible or insignificant. In recent years, the government of Bangladesh has started actively considering development of this industry to

attract foreign and domestic tourists. If tourist facilities and related infrastructure could be created the flow of tourist would be increased.

Bangladesh has much potential for development of tourism. It has many natural attraction and many social and cultural events of interest. If these are properly developed and marketed the tourism industry will be able to attract more international tourists and contribute to growth of tourism in the country. Bangladesh has two very beautiful sandy beaches, one is Cox's Bazar and the other one is Kuakata. The Sundarbans is another landmark for the country, the largest mangrove forest of the world, habitat of variety species of flora and fauna and a place of great interest to the nature/safari tourists.

Review of Past Development Policies, Strategies, Programs/Projects

Bangladesh has huge potential in tourism. Realizing the importance of tourism the Government of Bangladesh developed a National Tourism Policy (1992) for the development of tourism. Besides this, the Industrial Policy of 2010 has included tourism as a priority sector.

In order to encourage private and foreign investment, some special incentives have also been allowed by the government such as, tax exemption on royalties; tax exemption on the interest of foreign loans; tax exemption on capital gains from the transfer of shares by investing company; avoidance of double taxation in case of foreign investors on the basis of bilateral agreements; remittance of up to 50% of salary of the foreigners employed in Bangladesh and the facilities for repatriation of their savings and retirement benefits and personal assets at the time of their return; facilities for repatriation of invested capital etc. To encourage private sector to invest in tourism, some outlets of the Bangladesh Parjatan Corporation (BJC) have been leased out to private sector.

In the last Fifth Five Year Plan (1997-2002), emphasis was given on the development of integrated tourism facilities to attract both domestic and foreign tourists. Some tourism infrastructures were established in different places such as Kuakata, Dinajpur, Mongla, Teknaf, Benapole, Sagordari, Khagrachari, Banderban, and Bogra. Besides this, attempts were taken to establish tourism facilities in all district head quarters.

Recently Bangladesh Tourism Board (BTB) has been established under the ministry of Civil Aviation and Tourism to improve the tourism industry and services as well as manage and develop the sector.

Despite this progress and the intended emphasis on tourism, the growth of tourism activities and tourist inflows have been weak. While a number of factors including the socio-political environment affect tourism, a key factor has been the inadequacy of tourism infrastructure due to poor investments by both public and private sector.

Current and Future Challenges for the Sector/Sub-sector

Tourism industry of Bangladesh has been facing multiple problems. It mainly lacks proper planning, adequate fund and infrastructure facilities, law and order situation (corruption & terrorism) etc. However, following are the main barriers for tourism development of Bangladesh:

- Inadequate allocation of fund in National Budget;
- Inadequate infrastructure facilities;
- Lack of Modern and Adequate Recreation & Tourist Facilities;
- Negative image of the country abroad;
- Lack of human resources in the tourism sector;
- Visa problems;
- Lack of foreign direct investment;
- Underdeveloped communication system.

Goals, objectives and targets for SFYP

Considering various prospective economic benefits and global competition, the present government has given emphasis on tourism in their election manifesto.

Goals

- To develop Bangladesh as an Exotic Tourist Destination in Asia;
- To enhance contribution in GDP from 0.69 to 2 percent.
- To generate employment opportunity.

Development Strategies and Policies for SFYP

- a. To establish tourism infra-structure through Public-Private Partnership Investment.
- b. To build a positive image for Bangladesh in abroad.
- c. To arrange various tour programs and provide information services to tourists.
- d. To ease visa arrangements.
- e. To create awareness for tourism development.
- f. To develop tourism human resources through special academic and training programs
- g. To identify and popularize new tourist products of Bangladesh;

Objectives & Targets

- To promote domestic and international tourism in Bangladesh;
- To develop human resources in tourism sector;
- To develop infrastructural facilities at tourist sites.
- To increase foreign tourist flow in Bangladesh from 4.00 lacs to 15 lacs;
- To provide on-line booking system for all hotels and tourist centre of Bangladesh;
- To enhance marketing of tourism products at home and abroad;
- To arrange better communication system by adopting modern IT based technology.
- To develop Eco-tourism in Bangladesh

DEVELOPMENT RESOURCE ALLOCATION FOR TRANSPORT SECTOR IN THE SIXTH FIVE YEAR PLAN

The investment needs in Bangladesh infrastructure sector is enormous. The Transport Ministry has already identified a large number of major projects in the transport sector which could be implemented in the medium to long term (by 2021 and over two five year plans starting from 2011). In the transport sector, the amount of investment in road, railways, inland water transport, new sea port, deep sea port, airport and Dhaka transport system development will

requires TK 1,321,42 crore or more than \$ 17 billion (Table 4.8). A major share of the estimated transport sector investment would be forthcoming during the SFYP.

Table 4.8: Summary of Total Investment Requirement for Major Transport Projects during the Period 2008/09-2020/21

SLN	Sector	Project Cost (Tk in crore)
1	Road Sector Development	455,69
2	Railways Development	362,14
3	Inland Water Transport (IWT) Development	81,60
4	New Sea Port Development (Tentative)	600
5	Deep Sea Port Development (Short Term)	74,20
6	Dhaka Transport System Development	341,79
	Total	1321,42

Source: Ministry of Communications

The resource requirements are clearly very large. While the Government gives highest priority to energy and transport sectors and is committed to take all necessary steps in order to reduce these bottlenecks to higher growth, the spacing of investments will depend upon mobilization of foreign funding from multilateral sources, public-private ventures and available public sector resources. Wherever relevant, the Government will also ensure that there is adequate user fees and cost recovery mechanisms in place.

Based on the available resource envelope and reflecting the priority given to transport sector, the development resource allocations in current and constant prices are shown in Tables 4.9 and 4.10 respectively.

Table 4.9: Development Resource Allocation for Transport Sector in Sixth Plan
(Crore taka; current price)

Ministry/Divisions	2010-11	2011-12	2012-13	2013-14	2014-15
Roads and Railways	3402	5525	6793	8660	10682
Shipping	409	221	253	298	340
Civil Aviations and Tourism	283	277	318	374	427
Bridges Division	1277	1666	2007	2514	3057
Total	5370	7689	9371	11846	14506

Table 4.10: Development Resource Allocation for Transport Sector in the Sixth Plan
(Crore taka; FY2011 price)

Ministry/Divisions	2010-11	2011-12	2012-13	2013-14	2014-15
Roads and Railways	3402	5139	5905	7069	8226
Shipping	409	205	220	243	262
Civil Aviations and Tourism	283	258	277	306	329
Bridges Division	1277	1550	1745	2052	2354
Total	5370	7153	8147	9670	11172

CHAPTER 5: MANAGING THE URBAN TRANSITION

INTRODUCTION

It is widely acknowledged that Bangladesh is a rapidly urbanizing country where urban base has expanded rapidly from 7.6% to nearly 25% between 1970 and 2005. A combination of socio-economic, political and demographic factors is responsible for this. It reflects for instance the redistribution of the rural and urban population. Also the growth in the magnitude of urban economy, change in the scale and nature of economic activity and distribution of income between regions and among classes, demographic transition and change in the scale and nature of governance are likely to be influenced by rapid urbanization and urban settlements patterns in Bangladesh”

With a population of about 14.3 million, Dhaka mega city currently ranks as the world’s 9th largest city (World Urbanization Prospects: The 2009 Revision, UN). At the same time, it is consistently ranked as one of the world’s least livable city. Although income growth is higher and the poverty incidence is lower than the rest of Bangladesh, Dhaka still is a low income city with large numbers of poor when compared with most mega cities of the world. Holding the prospects for better income opportunities than most parts of Bangladesh, rapid migration is causing Dhaka’s population to grow much faster than the rest of the country. This fast urbanization is putting pressure on the city’s limited land, an already fragile environment, and weak urban services. The population density is now believed to have reached around 34000 people per square kilometer, making Dhaka amongst the most densely populated cities in the world.

Poor city management, low efficiency and massive corruption are exacerbating the problems. Urban traffic has reached nightmare proportions, often causing huge delays in covering small distances with associated productivity losses. Water and air pollution from poor waste and traffic management poses serious health risks. The already acute slum population is growing further, contributing to serious human and law and order problems.

Similar problems are emerging in other major urban centers, especially Chittagong. The urbanization challenge unless managed well could pose a serious problem to the future growth prospects for Bangladesh. But urbanization is also an opportunity and an integral part of the development process. As income grows and the economy relies more and more on manufacturing and organized services, urbanization will grow. The challenge for public policy is to manage this natural transition of Bangladesh from an agrarian economy to a modern economy well through appropriate institutions, programs and policies. The Government is cognizant of this challenge. It also understands that this is a long-term challenge. The backlog of unmet demand and new demand for basic urban services like housing, sanitation, water supply and urban transport requires huge resources, sound planning, and strong

implementation capacity. These require strategic planning and implementation over a long period. An ambitious urban development program during the Sixth Plan will be adopted. This will lay the basis for consolidation in the Seventh Plan.

THE URBANIZATION CHALLENGE IN BANGLADESH

With an area of 147,750 square km, the agrarian economy of Bangladesh is experiencing a very high rate of urbanization. In 1974 people living in urban areas accounted for only 8.8% of the population (Table 5.1). By 2001, urban population was 23.10% of total population. UN data estimates that currently 25% people of Bangladesh live in urban areas. This is indicative of the fact that growth of urban population and labor force is increasing relative to rural population and labor force.

Table 5.1: Growth of Urban Population in Bangladesh

	1974		1981		1991		2001	
	Number	%	Number	%	Number	%	Number	%
Urban	6273603	8.78	13535963	15.05	20872204	18.73	28605200	23.1
Rural	70124397	91.79	76376037	84.95	90582981	81.27	101424549	76.9
Total	76398000	100	89912000	100	111455185	100	130029749	100

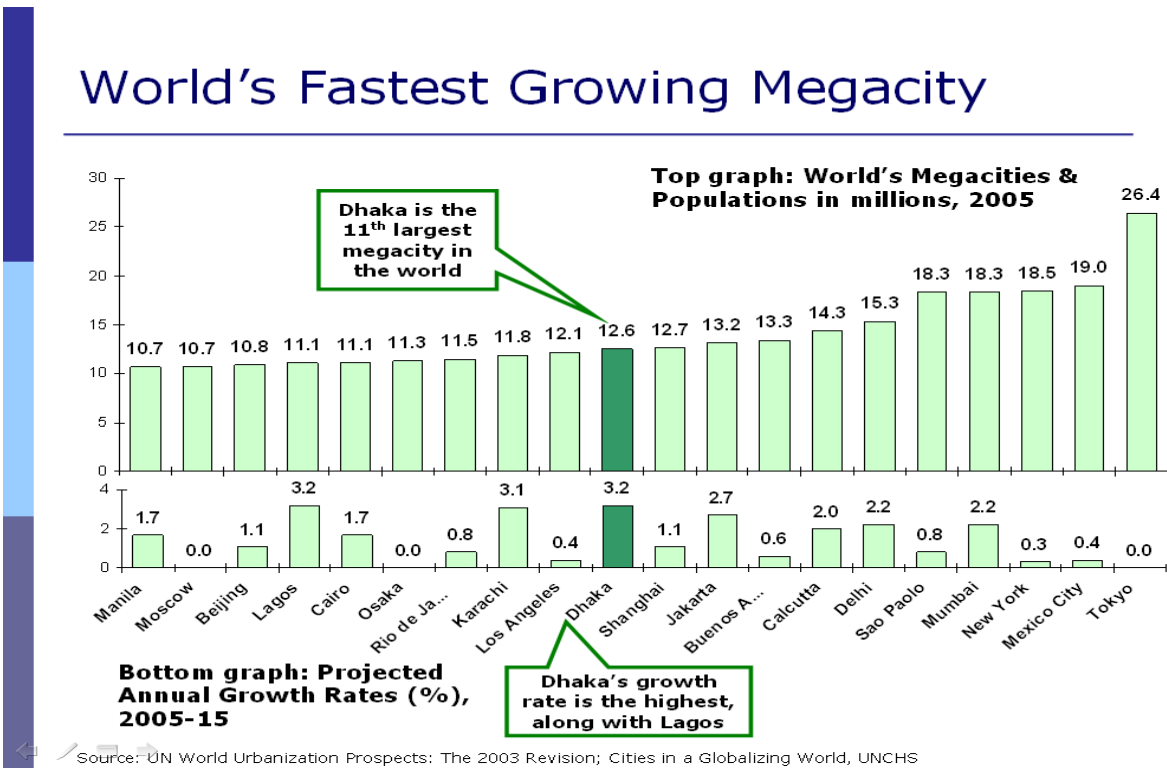
Source: Bangladesh Bureau of Statistics

A study on the level of urbanization and share of national urban population along with total urban population for each of the six divisions reveals that Dhaka Division overwhelmingly holds the highest rank in all the census years both for level of urbanization and share of national urban population⁴. On the other hand, the rank of Sylhet Division was the lowest for both of the above-mentioned cases.

Dhaka is the largest city in Bangladesh and its capital. It is also the financial, cultural, and business center of the country. The total urban area of Dhaka spans about 1530 square kilometers. About 80% of the garments industry in Bangladesh, accounting for the overwhelming majority of the country's exports, is located in Dhaka city. Dhaka city contributes about 13% to the country's GDP. Per capita income and literacy rate are higher in Dhaka than in the rest of the country, and the poverty incidence is also lower. From 1906 to 1991, Dhaka city's area grew by 58 fold and its population grew by over 35 fold (Asian Development Bank 2000). More recently, Dhaka's population grew from 3.43 million in 1981 to a staggering 10.712 million in 2001. In 2005, its population was estimated to have swollen to 12.56 million (Figure 5.1).

⁴ Urbanization in Bangladesh: Patterns, Issues and Approaches to Planning, Rouf and Jahan (2009)

Figure 5.1: World's Fastest Growing Megacity



Dhaka is also the fastest growing mega city⁵ in the world along with Lagos, Nigeria. Due to this high growth rate, Dhaka's share of the country's total population has been steadily growing, currently at over 10% (Figure 5. 2). By 2015, almost 13% of Bangladesh's total population, a staggering 22 million people, will call Dhaka their home.

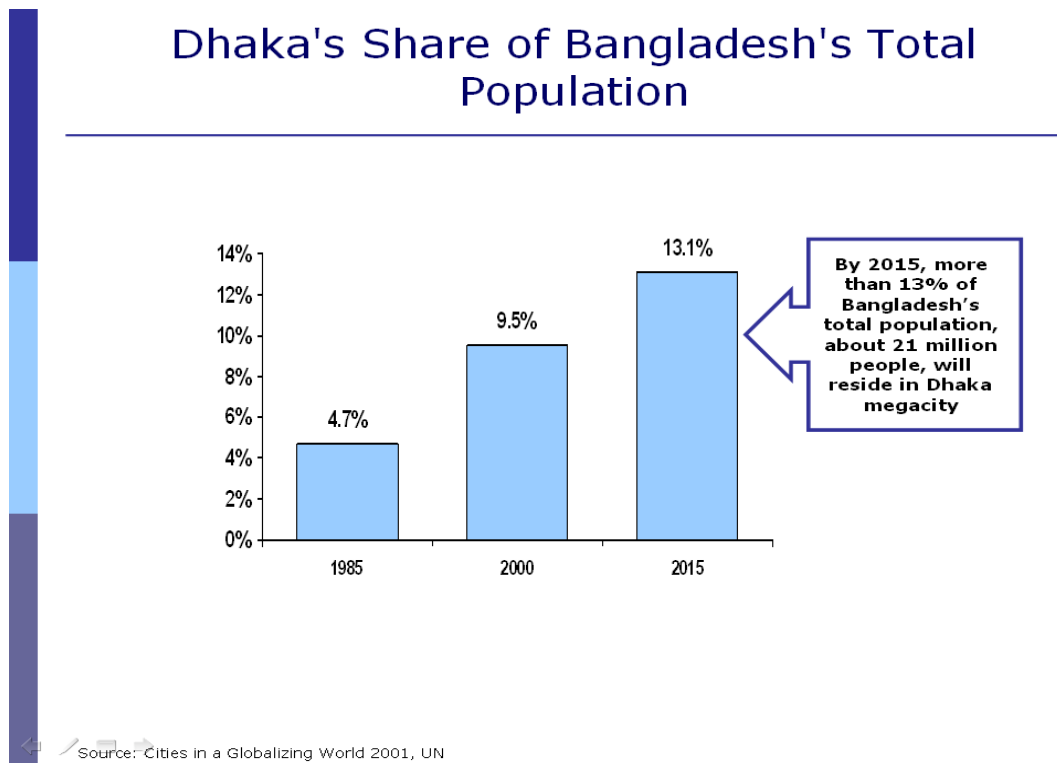
Estimates by UN, World Urbanization Prospects, 2009 projected Dhaka to move up to the 5th position with 20.9 million people in 2025, just behind Tokyo, Delhi, Mumbai, and Sao Paolo. The projected populations for 2010 and 2016 have been estimated at 9 million and 10 million for Dhaka City Corporation (DCC) area and 14.88 million and 18.00 million for the Dhaka metropolitan Development Plan (DMDP) area.⁶

During the decade from 1985 to 1995, the city's population growth rate averaged more than 7% a year, much higher than any other South Asian mega cities and substantially higher than Bangladesh's average growth rate. Most of Dhaka's growth was due to migration from rural areas. Although the city's population growth rate is expected to slow down, it is still projected to grow at around 3.2% per annum, as compared with 1.7% for the country as a whole. If this projection materializes, then Dhaka will become the third largest city in Asia and the sixth largest in the world by 2015.

⁵ Mega cities are defined as those urban centers with 10 million populations or more.

⁶ Dhaka: Improving Living Conditions for the Urban Poor, World Bank (2007)

Figure 5.2: Dhaka's Share of Bangladesh's Total Population



Although the proportion of people living in urban areas in Bangladesh is low in a global comparison, but the changes in the rates of growth of urban population since 1970 show that relatively rapid urbanization is taking place in Bangladesh. One significant feature of urbanization in Bangladesh is that urban population is increasing at different rates in different urban centers. A considerable proportion of urban population lives in district towns and Pourashava areas in Bangladesh. According to population census report of 2001, Dhaka Metropolitan Area had a total population of 10.712 million comprising 37.45% of total urban population. Next in the hierarchy, Chittagong SMA had 3.386 million or 11.84% of the total, followed by Khulna SMA with a total population of 1.341 million or 4.69% of total, Rajshahi SMA with a total population of a 0.70 million or 2.45% of total and Sylhet City Corporation with 0.32 million or 1.12% of the total. All other had below 1% of the total population. Thus, four Metropolitan Areas together with Sylhet City Corporation population comprised 57.55% of the total urban population. There were 33 towns with population above one lac of which 7 had population of above 5 lac, 26 with population between 1 to 4 lac, 50 with population between 50 thousand and one lac, and 116 with population between 25,000 and 50,000 (Table 5.2). There were 332 urban centers with population below 25,000. Populations of many towns were more or less stable and there were depopulation in 15 districts during the decade 1991 and 2001. These suggest that there is ample scope for the development of new small satellite towns and expansion of small existing intermediate towns or urban centers around the big cities or in prospective regions to reduce excessive urbanization pressure on large cities. In

order to succeed, this policy must be carried out through comprehensive study, planning and effective urban management systems.

Table 5.2: Number of Urban Centers by Census Year and Size Classes

Size Classes	Number of Urban Centers					
	Census Year					
	1951	1961	1974	1981	1991	2001
5,00,000 and over	--	1	2	3	4	7
1,00,000 –4,99,999	2	3	4	10	14	26
50,000 –99,999	2	5	14	23	26	50
25,000 –49,999	14	16	23	45	76	116
Under 25,000	45	53	65	411	402	332
Total	63	78	108	492	522	531
Level of Urbanization	4.33	5.19	8.78	15.54	20.15	23.1

Source: Bangladesh Bureau of Statistics

Driving Forces behind Rapid Urbanization in Bangladesh

A major cause of urbanization in Bangladesh is that the agriculture sector is no longer able to absorb the surplus labor force entering the economy every year. Inability of the agriculture sector to provide sufficient employment or sufficiently high household incomes to cope with a growing number of dependents can encourage people to seek employment outside agriculture. In the case of Bangladesh the rural to urban migration has contributed to more than 40 percent of the change in urban population. The lure of employment opportunities existing in these cities is another reason for urban migration.

Most of the industrial establishments and businesses as well as business services are concentrated in the largest cities. Dhaka alone accounts for 80 percent of the garments industry-the mainstay of manufacturing in Bangladesh.⁷ The domination of business services, particularly finance and real estate services is considerably higher in the four major cities relative to the rest of the country.⁸

Despite the fact that majority of the country's population live in rural areas, the importance of the traditional rural sector has been declining over the years. The share of the agricultural sector in GDP has come down from about 60 percent in 1972-73 to only 17 percent in 2009. The urban sector led by non-agricultural activities (commerce, trade, industry service etc.) accounts for a relatively larger share of GDP compared to its rural counterpart. Its contribution to GDP has increased from a low of 25 percent in 1972/73 to over 50 percent in 2009.

Household income in urban areas is also found to be much higher than in rural areas. Report of the household income and expenditure survey 2005 (BBS, 2007) indicated that monthly income per household in urban areas was Tk.10463 compared to Tk. 6095 in rural areas. The

⁷ *Dhaka Urban Poverty: Land and Housing Issues*. Draft Paper, World Bank (2005).

⁸ *Bangladesh: Strategy for Sustained Growth*, World Bank (2007).

distribution of income in urban areas is however, more skewed than in rural areas. Thus Gini coefficient of income in 2005 was 0.497 in urban areas compared to 0.393 in rural areas. This is not unusual due to large scale migration of poor people into urban areas from economically depressed areas of the country.

Although rising levels of urbanization and rapid population growth in urban areas have often been considered problematic, it is a fact that these areas generally have a significantly higher concentration of nation's economic output than their population. Urban areas also account for a disproportionate higher share of national economic production and are the main sources of economic growth in most countries. This is also no exception for a developing country like Bangladesh where urban dwellers constitute about 25 percent of the total population of the country, but their contribution to GDP is more than 50 percent. National economic growth is thus closely correlated with urbanization.

Urban Sector and the Emerging Challenges

Drastic changes in the physical, economic and social structure in the urban areas resulting from rapid urbanization has been posing serious challenges for sustainable urban development. Urban areas are now afflicted with innumerable problems ranging from law and order situation to deteriorating environmental conditions. Although majority of the urban centers face such challenges, severity of the problems vary depending on the size of the centers.

The environmental problems of urban areas have direct and immediate implications for human health and safety, especially for the poor, and for business productivity. Urban environmental problems are of central concern for policy makers since adverse environmental conditions resulting from inadequate waste management, poor drainage, air pollution, lack of access to safe water and sanitation, exposure to excessive noise level, traffic congestion as well as inadequate health services exact a heavy toll on the quality of life.

The impact of urbanization is felt more intensely in major cities of the country. In Dhaka, for example, the quantity of solid waste generated at present varies between 3000 to 3500 tons per day. DCC is capable of collecting only 50% of this waste, leaving the remaining half unattended. A part of this waste either remains in the streets or on nearly open ground. Some of the waste flows to the open drains and blocks the normal drainage flow. As a result, water logging sometimes disrupts the normal city life for days during monsoon. The serious health hazard posed by this situation is of major concern.

The situation with respect to water supply is also quite unsatisfactory. The Dhaka Water and Sewerage Authority (DWASA) was capable of supplying only 1500 million liters of water in 2004 (75% of demand) per day for the population of about 13 million while the demand of the consumers was 2000 million liters per day. Only a limited segment of the population is enjoying adequate supply of water while for the rest of the population the water supply is quite inadequate. The situation in low income communities is much worse. The supply of piped water at the Pourashava level is also extremely unsatisfactory. Only about 35% of the

Pourashavas have some facility for supply of piped water and that is also in a very limited area in each of these Pourashavas. In 2005 only 28.8% of the households in urban areas had connection to piped water supply.

Extreme traffic congestion on urban roads is a major challenge for big as well as intermediate urban centers in Bangladesh. Rapid urbanization in Bangladesh during the last few decades increased transport demand quite significantly leading to manifold increase in the number of motorized and non-motorized vehicles on the streets. The increase in the number of vehicles without concomitant expansion of road facilities has led to severe congestion on roads and deterioration in urban environment.

The situation further deteriorated due to insufficient public transport facilities and weak management of traffic. Non-existence of transport planning and inefficient traffic engineering result in low quality traffic management. Mass transit facilities are poorly organized and dominated by slower forms of vehicles such as rickshaws. Buses are in short supply and there is inadequate metro or rail system to handle day-to-day commuter traffic in big cities.

One of the major problems that the urban residents are facing is the lack of access to serviced land which is posing as an obstacle to their meaningful participation in the urban economy. The urban land market which directly affects the urban environment and quality of urban life suffers from many distortions due to lack of proper land development and management policies including lack of planning and slow provision of infrastructure and services, thus leading to unplanned or ribbon development of land in the urban periphery. Inadequate supply of serviced land in the market leads to land speculation which often prices the poor out of the formal land markets into the informal land markets which are characterized by slums and squatter settlements. During the last four decades the price of land in urban areas increased by as much as 80 times. The level of price rise, however, varies with the area and depends on a number of local factors including the level of services available. Of particular importance are the width of the main road, width of the access road, distance of the area from the main road and duration of water logging. Other factors influencing land value to a lesser extent include the type of neighborhood (planned or unplanned), distance of the nearest market and distance of the nearest school.

Ever increasing land price has also contributed to the deterioration of housing situation in urban areas. Housing deficit in urban areas was estimated to be about 0.95 million units in 1991 which increased to about 1.13 million units estimated in 2001. The dismal housing scenario has also been a major factor contributing to significant homelessness in urban areas.

Apart from the existing huge shortage in housing stock, the majority of the dwelling units is structurally very poor, lack services and utilities, and built without proper planning. According to BBS (2007)⁹ only 24.24 percent of the houses in urban areas in 2005 were pucca (made of brick/cement) compared to 71.68 percent houses made of corrugated iron sheet/wood and 4.08

⁹ Household Income and Expenditure Survey- 2005, BBS (2007)

percent made of straw/hay/bamboo etc. Rapid growth of urban population and consequent demand for land and housing has made the situation even worse, particularly in big cities. Very few households have access to land and credit facilities. The situation is particularly worse for the lower income group and the poor who live on marginal settlements built by small land developers or by the occupants themselves without any security of tenure. Due to lack of tenure, the poor cannot meet the need for guarantees of loan repayment. This puts most conventional sources of credit for housing construction out of the reach of the poor resulting in lower level of housing investment. This led to overcrowding, lower quality of housing units and the proliferation of slums and squatter settlements.

URBAN POVERTY IN BANGLADESH

Poverty in Bangladesh, as in most other developing countries, has long been associated with rural areas. But with rapid urbanization during the last few decades, poverty has increasingly been urbanized by way of transfer of the rural poor to urban areas. But manifestation of urban poverty is often more appalling than that of rural poverty. Urban poverty is invariably associated with poor quality housing.

Using the upper poverty line, BBS¹⁰ estimated the Head Count Rate (HCR) of incidence of poverty as 31.5% at national level, 35.2% in rural areas and 21.3% in urban areas (Table 5.3). There was a reduction of HCR by 8.5% point at national level, 8.6% point in rural areas and 7.1% in urban areas during the period from 2005 to 2010. The estimates of Head Count Rate using the upper poverty line show that in 2010 Barisal division had the highest incidence of poverty, estimated at 39.4% followed by Rajshahi division (35.7%) and Khulna division (32.1%). Chittagong division had the lowest HCR of incidence of poverty (26.2%) followed by Sylhet division (28.1%) and Dhaka division (30.5%). The incidence of urban poverty was also highest in Barisal division (39.9%) followed by Khulna (35.8%) and Rajshahi (30.7%) divisions.

Table 5.3: Poverty Head Count Ratio by Divisions, 2005-2010

Division	2005			2010		
	Total	Urban	Rural	Total	Urban	Rural
National	40.0	28.4	43.8	31.5	21.3	35.2
Barisal	52.0	40.4	54.1	39.4	39.9	39.2
Chittagong	34.0	27.8	36.0	26.2	11.8	31.0
Dhaka	32.0	20.2	39.0	30.5	18.0	38.8
Khulna	45.7	43.2	46.5	32.1	35.8	31.0
Rajshahi	51.2	45.2	52.3	35.7	30.7	36.6
Sylhet	33.8	18.6	36.1	28.1	15.0	30.5

Source: Bangladesh Bureau of Statistics, HIES 2005 and HIES 2010

A comparison of incidence of poverty in 2005 and 2010 indicates some significant differences

¹⁰Household Income and Expenditure Survey- 2010

in the pattern of urban poverty reduction. Chittagong division experienced the most rapid reduction in urban poverty. At 11.8 percent, Chittagong now has the lowest incidence of urban poverty. Rajshahi and Khulna divisions also experienced significant decreases in urban poverty. Thus, the incidence of urban poverty in Rajshahi division came down from 45.2% in 2005 to 30.7% in 2010 while the incidence of urban poverty in Khulna division came down from 43.2% in 2005 to 35.8% in 2010. As compared to these good performers, Sylhet and Dhaka experience modest improvements in urban poverty reduction while in Barisal the urban poverty rate has remained nearly stagnant at an alarming 40% rate.

Most of the urban poor live in slums and squatter settlements characterized by substandard living conditions. According to the UN, 31.6 percent of world's urban population lived in slums in 2001. In the developed regions, the proportion was only 6 percent compared to 43 percent in the developing regions. The percentage of urban population living in slums and squatter settlements may, however, vary across countries depending on local definition of slums. Even within the same country variations may be observed. Slums and squatter settlements are found in all major cities in Bangladesh although their concentrations may vary depending on the size of cities. The largest concentrations are found in Dhaka followed by Chittagong, Khulna and Rajshahi. Secondary cities or district towns also have significant concentrations of slums and squatter settlements. CUS in its survey of 2005 found 4300 slums and squatter settlements and about 2.8 million slum dwellers in Dhaka City Corporation area. The same survey found 1814 slums in Chittagong City Corporation with about 1.8 million slum dwellers followed by Khulna City Corporation having 470 slums with 0.17 million slum dwellers and Rajshahi City Corporation having 539 slums with 0.148 million slum dwellers.

Majority of those living in slums are very poor and nearly 80 percent of the households have income below the upper poverty line. More than 50 percent of the slum dwellers earn less than half of the poverty line income while about 25 percent of them are in extreme poverty and destitution¹¹. More than 90 percent of the income earners are engaged in informal sector activities. They work mainly as rickshaw-pullers, transport workers, hawkers, day laborers, small factory workers, construction workers, etc. Many of the female members of slum households in Dhaka and Chittagong are employed in the formal sector garment factories and in very large numbers in domestic work as maids. What is interesting, however, is that few among the male slum dwellers remain unemployed because of their easy access to informal sector activities. This is perhaps the most important factor stimulating rural to urban migration.

POLICY AND REGULATORY FRAMEWORK IN THE URBAN SECTOR

Policies and regulations for urbanization have evolved in response to problems faced rather than on the basis of a vision and a long-term road map. After partition of India in 1947 Dhaka became the provincial capital and experienced significant population increase. This led to major infrastructure development and building activities. In order to regulate and control urban development activities the government enacted legislations and framed rules which included

¹¹ CUS Bulletin 48, 2005

the building construction act 1952, the Town Improvement Act 1953 and the Building construction rules 1953. The Building Construction Act 1952 provided for the prevention of haphazard construction of buildings and excavation of tanks which are likely to interfere with development in certain areas. The Town Improvement Act 1953 provided for the development, improvement and expansion of the towns of Dhaka and Narayanganj and certain areas in their vicinity and the formation of a board of trustees. The Building Construction Rules 1953 were made to facilitate exercise of powers conferred by the Building Construction Act 1952.

In 1959, Master Plans were prepared for Dhaka, Chittagong, Khulna and Rajshahi cities. This was a major venture for guiding the overall development of the four major cities. But in course of time, especially after independence of Bangladesh in 1971, these plans were found to be inadequate with regard to population growth and land use changes. Despite rapid urbanization in the country there was no initiative to plan or control urban development activities during 1970's and 1980's. It was only after 1990 that some steps were taken for control of development in big cities. These included preparation of development plans for Dhaka, Chittagong, Khulna and Rajshahi cities, and formulation of Building Construction Rules (1996), Private Residential Area Development Rules (2004) and Dhaka Metropolitan Building Construction Rules (2008). The Bangladesh National Building Code (BNBC) which was prepared in 1993 came into force in 2006 after some modification. Other legislations which are relevant for the urban sector include Bangladesh Environment Protection Act 1995 (modified in 2000) and the Wetland Preservation Act 1998.

In intermediate and smaller urban centers, the Pourashavas are responsible for preparing and implementing Master Plans and carrying out development control functions. The Pourashava Ordinance 2008 has given the Pourashava wide responsibilities in town planning and development, public health and sanitation, water supply and sewage disposal, maintenance of public infrastructure and amenities. It is now mandatory for the Pourashava to prepare Master Plans within five years from the date of creation of a new Pourashava or from the date of enforcement of the Ordinance for the old or already created Pourashava.

One of the main reasons for haphazard urban growth in Bangladesh is the lack of proper planning. In the area of urban planning, the Pourashava Ordinance has empowered the Pourashvas to prepare Master Plan for development, expansion and improvement of any area within its jurisdiction and impose restrictions, regulations and prohibitions with regard to the development of sites, and the erection and re-erection of buildings. But due to lack of technical manpower and equipment, no Pourashava has been able to prepare and implement a Master Plan on their own.

INSTITUTIONAL FRAMEWORK FOR URBAN GOVERNANCE AND MANAGEMENT

Central Government Agencies: National level agencies provide services to different urban areas including city corporations, Pourashavas and other urban centers as part of their national responsibilities. Some of the important national agencies are Urban Development Directorate (UDD), National Housing Authority (NHA) and the Public Works Department (PWD) under the Ministry of Works, the Department of public Health Engineering (DPHE) and the Local Government Engineering Department under the Ministry of Local Government, Rural Development and Cooperatives, the Roads and Highways Department under the ministry of Communication, the Directorate of Environment under the Ministry of Environment and Forest and the power Development Board under the Ministry of Energy and Mineral Resources. Other Ministries such as the Ministries of Commerce, Education, Finance, Agriculture, Youth and Sports, and Water Resources Development are also actively involved in the process of urban development mainly through their regional and local level agencies.

Special Purpose Authorities: There are also some special purpose agencies that provide special services to the city dwellers. These are Water Supply and Sewerage Authority, Electricity Supply Authority, Road Transport Authority, etc. There are two water and sewerage authorities i.e. DWASA and CWASA which are working in two metropolitan cities of Dhaka and Chittagong respectively. Two other agencies involved in the development activities of Dhaka Metropolitan Area are Dhaka Transport Coordination Board (DTCB) and Bangladesh Bridge Authority. DTCB is mainly responsible for planning and development of transportation facilities within the metropolitan area while the Bangladesh Bridge Authority is responsible for constructing flyovers, elevated expressways etc.

Urban Local Governments: Two types of local government institutions exist in Bangladesh e.g. urban and rural. The urban local governments are of two types. In the Divisional Level, the City Corporation functions whereas Pourashvas function in other towns. At present there are 6 City Corporations and 309 Pourashvas in the country (Table 5.4). *Pourashvas* or Municipalities again are classified according to financial strength. In addition, there are also some urban centers that are under Cantonment Boards.

At the local Level, Pourashava is the basic planning and development authority. Through the Pourashava Bill 2009, the Pourashava authorities were empowered to prepare Master Plan, implement development schemes and exercise building control. A Pourashava consists of a Mayor, Councilors whose number is fixed by the government and women Councilors of reserved seats. The Chairman and Councilors of a Pourashava are elected by direct election on the basis of adult franchise. The Pourashava (Municipal) Act, 2009 has given the Pourashavas wide

Table 5.4: Hierarchy of Urban Local Governments

Mega City	For example: Dhaka Metropolitan Area
City Corporations at Divisional Level	For example: Dhaka, Chittagong, Khulna, Rajshahi and Barisal
<i>Pourashvas</i> (Municipalities)	Number of <i>Pourashvas</i> – 278 in 2001, 309 at present
Category determined by income level	Annual income level
Class I <i>Pourashvas</i>	Average Population (2001) – 88,907
Class II <i>Pourashvas</i>	Average Population (2001) - 41,275
Class III <i>Pourashvas</i>	Average Population (2001) - 25,466

responsibilities, but the administrative, financial and technical capabilities of the *Pourashava* are not adequate to meet the challenges associated with rapid urbanization in the country.

Development Authorities: *Pourashava* were originally created for planning and management of urban areas. Later on separate planning and development organizations were created for the cities of Dhaka (RAJUK), Chittagong (CDA), Khulna (KDA) and Rajshahi (RDA). The development authorities in these cities are authorized to undertake local urban planning as well as infrastructure and site development activities for housing, commercial and industrial use. The authorities are also empowered to exert development control functions. The effectiveness of these authorities, however, is generally limited by such factors as inadequate management and financial system, multiplicity of institutions with urban development function within their jurisdictions, uncoordinated development, lack of integration with other agencies, inadequate manpower and lack of public participation.

A REVIEW OF PAST POLICIES AND PROGRAMS FOR MANAGEMENT OF URBANIZATION

During the last two decades, Bangladesh has followed broad sector directions while policies on specific themes have been issued periodically. The national Housing Policy 1993 aimed for “housing for all” and recognized the importance of planned development of human settlements. The Urban Management Policy statement 1994 envisioned sustainable and equitable urban development through decentralized development, public awareness and sector participation. Later on, the government updated the statement and issued Urban Management Policy Statement 1999 which provides a basic policy framework to guide and sustain the process of gradual decentralization. The purpose of this policy statement is to improve upon and augment the existing policy statement, with a view toward efficient urban management and increased decentralization in the longer term. The National Urban Sector Policy drafted in 2006 envisioned a decentralized and participatory process of urban development in which the national and local government, private sector and civil society play complementary roles. The policy prescribes far reaching actions on multiple dimensions of urban management and national level institutional changes and public participation structures at the city and sub-city

levels. This draft National Urban Sector Policy initiated by the Local Government Division will go to cabinet for its approval and will be adopted within the SFYP period.

Other developments relevant to the urban sector includes the national Policy for Safe Water Supply and sanitation (1998), Water Supply and Sanitation Sector Development Plan, National Policy for Arsenic Mitigation, The National Sanitation Strategy and the pro-poor water and sanitation and cost sharing strategies. Many of these policies have attempted to give coherent directions to developments in the urban sector including adoption of principles like devolution of powers, resources and responsibilities to local governments and community groups, treating resources as economic goods, using awareness generation and mobilization and motivational tools for sanitation and solid waste management, tempering off subsidies on sanitation hardware and promoting private-public partnerships. The recommendations made by the Committee on Urban Local Governments for long-term municipal development and urban sector programming, property tax system, improved financial system management etc. are now under active consideration of the government.

Past urban sector interventions mostly tried to address the long neglected infrastructure maintenance and rehabilitation needs and to develop the capacity of the Municipalities especially to raise income, improve financial management capacity and design municipal services in a planned way. But not much has been done to establish strong urban institutions that are capable of meeting the future service demand of the projected urbanization pattern.

Lessons Learned from Past Development Initiatives and Key Constraints

Municipalities in Bangladesh have witnessed nearly two decades of urban infrastructure initiatives with STIDP-I and II, MSP and the on-going UGIIP-1 since 2003. The MSP and its successor institution, Bangladesh Municipal Development Fund, presented a model of supporting decentralization especially by opening up access to infrastructure funding based on objective financial and institutional criteria outside the government's inter governmental fiscal transfer frame. UGIIP-1 made a radical departure from earlier initiatives in linking performance of Municipalities in achieving action based governance improvements to access infrastructure funding in phases.

Focusing on governance improvements and a performance based approach urban infrastructure improvements have proved very successful; (i) it addresses a wide range of areas simultaneously from improved participation of various stakeholder groups in service delivery to increased financial accountability and improved administrative procedures; (ii) local governments feel full ownership in improving governance reforms, considering these reforms as an opportunity to improve their financial and administrative shortcomings. They have been able to adapt to the new governance practices within a short period of time. The following lessons learned: (i) The performance of the Municipalities has been particularly good in areas where the identified governance indicators are concise and output oriented; (ii) municipalities took greater ownership and interests in areas where their legitimacy and performance in the

local public eye improved immediately and turned out to be credible; (iii) adopting governance improvements require substantive and timely capacity building inputs.

Based on an extensive review of previous projects focusing on governance improvement and a performance based approach, the following opportunities for improving this approach have been identified; (i) ensure that mechanisms are in place to deepen participatory planning ensuring prioritization of the needs of the poor; (ii) refine the governance improvement action plan to include more qualitative achievements and ensure that the achievements will sustain beyond project implementation; (iii) inculcating the practice of responsible financial decisions and discipline through financing and repayment mechanisms; (iv) strengthening citizen's interface and accountability of the municipalities; (v) greater focus on capacity building of institutions at the municipality level in particular and (vi) improvements in O&M management.

One of the most significant lessons is the criticality of national level support to municipalities in terms of sector wide policy support, legislative and executive actions to enable more effective functioning of municipalities and supportive measures to improve their finance and financial management. In this regard the parliament has recently passed the Pourashava Bill 2009 and City Corporations Bill 2009.

Performance During Previous Plan Periods

Ministry of Housing and Public Works

Of the two Ministries mentioned earlier responsible for urban development and management activities, the Ministry of Housing and Public Works is the main Government body dealing with housing and accommodation. A review of performance of this Ministry and related agencies during past plan periods is given below.

Performance during 1973-90. During the period, land-use master plans for 398 Thana headquarters and master plans for 60 district towns were undertaken. Office accommodations at 44 districts and Thana headquarters were completed and 13,918 service plots were distributed among people belonging to low income group and about 6,860 squatter families were rehabilitated. Besides, 17,480 flats, 252 dormitories at Thana level, 1,065 office buildings, 2,033 union Tahsil offices and 362 thana land offices were constructed. Noteworthy achievements during this period were the construction of 20-storied office buildings at the Bangladesh Secretariat and the international conference centre at old Sangsad Bhaban.

Performance during Fourth Five Year Plan (1990-95). Achievements during this period included:

- a. Providing core houses for 1,000 squatter families at Dattapara, Tongi and developing 5,000 residential plots at Mirpur, Dhaka and 4,100 plots at Kaibalyadham, Chittagong for low income group;
- b. Construction of 3,000 residential flats in 44 newly created districts and 3,000 flats in Dhaka for public sector employees;
- c. Developing of 4,787 plots at Uttara by RAJUK;
- d. Renovation of the Prime Minister’s Secretariat at Tejgaon and installation of four-channel conference system;
- e. Significant strides by private enterprises to develop housing in urban areas and low cost housing programs by some NGOs in rural areas.

Performance during 1995-97. During this period 2,020 flats for government employees in Dhaka were constructed and 8,480 sites and service plots were distributed to low income and middle income groups. Achievements during this period and during the Fourth Plan period are shown in Table 5.5

Table 5.5: Housing Sector Performance

Major areas	Unit	Position June, 90	4 th Plan (1990-95) Target	Achievement	Position June, 95	Position June, 97
Housing						
Rehabilitation of squatter families	Nos	6860	3620	3400	10260	10260
Distribution of site and services plots for low and middle income group people	“	13918	8480	8480	22398	22398
Government flats and offices	“		3120	3120	18508	20528
Construction of flats	Nos	17408	225	180	1245	1245
Construction of office buildings	“	1065	950	950	2983	2983
Construction/Reconstruction of Union Tahsil offices	“	2033	110	60	422	423
Construction/Reconstruction of Thana Land offices	“	362				

Source: Ministry of Housing and Public Works

Performance during Fifth Five Year Plan (1997-2002). Developments during this period included:

- a. Construction of 3000 residential flats at Dhaka, 30 quarters at Rangamati, Martyrs Monument at Rayer Bazar and Banga Bandhu Convention Centre at Agargaon. A total of 16 projects were taken up with estimated outlay of Tk. 1609.18 crore. Of these, 3 projects

were fully completed and 11 projects were partially completed. Two projects were not taken up due to shortage of fund.

- b. Activities by RAJUK: Construction of 1265 residential flats at Nikunja, 290 flats under NAM Villa and NAM Village Project, development of 2600 plots at Uttara under Uttara 3rd Phase Project and construction of 2km link road from Dayagonj to Jurain, Dhaka.
- c. Activities of Rajshahi Development Authority (RDA): Preparation of land use Master Plan, construction of 1.5 km roads, distribution of 625 plots for low and middle income groups, construction of a multi-storied office building, a truck terminal accommodating 500 trucks and an inter-district bus terminal accommodating 500 buses.
- d. Activities of Khulna Development Authority (KDA): Completion of 7.05 km road, developing of 637 plots, construction of two-storied mini-community centre, undertaking welfare activities like development of mosque, school and monument, and preparation of DAP (Detailed Area Plan) for Khulna City. Total project cost was Tk. 23.36 crore.
- e. Activities of Chittagong Development Authority (CDA): CDA prepared DAP for Chittagong under guidance of Chittagong Metropolitan Master Plan, Development of Kalpoloke, Karnaphuli, Chandrima, Chandgaon Residential Areas, D.C. Hill Park, widening and improvement of Chaktai Road, O.R. Nizam Road, Chatteshori Road, and M.A. Hannan Airport Road.
- f. Preparation of land use Master Plan for six Pourashvas, namely, Gopalganj, Tungipara, Kotalipara, Godagari, Kaliakoir and Patharghata by UDD.
- g. Undertaking projects like construction of medical colleges and hospitals in different districts, specialized hospitals and medical centers on behalf of Ministry of Health and Family Welfare.

Ministry of Local Government, Rural Development and Cooperatives

The Ministry of LGRD & Co-operatives is closely involved with the various issues related to the urban sector. A committee namely Municipal Performance Review Committee (MPRC) was established under the chairmanship of the Secretary, Local Government Division to monitor the performance the municipalities. A Municipal Support Unit (MSU) established in LGED under the Municipal Services Project provides secretarial support to the committee. MSU developed a municipal data base and regularly monitors the capacity building initiatives undertaken by the municipalities as well as monitors the progress of infrastructure development and maintenance works undertaken by the municipalities.

The government has been trying to remove the deficiency in infrastructure maintenance and rehabilitation of municipalities by raising income, improving financial management capacity as well as better service delivery. The municipalities are implementing different development projects under Physical Planning, Water Supply and Housing (PPWS&H) Sector through

Annual Development Programme (ADP). The allocation and utilization of funds under ADP for the Municipalities are shown in Table 5.6 below.

Table 5.6: Allocation and Expenditure under PPWS&H Sector in Municipalities during 2002-2009 (Crore Taka)

Financial Year	No. of Projects	Total Amount of ADP Allocation	Total Expenditure
2002-03	10	169.93	148.33
2003-04	9	134.81	128.39
2004-05	13	165.13	161.67
2005-06	11	367.92	361.48
2006-07	9	322.34	302.42
2007-08	12	229.65	221.52
2008-09	9	354.68	348.98

Table 5.7: Physical Targets and Achievements of PPWS&H Sector in Municipalities during 2002-09

Item of work	Unit	Target	Achievement
Development of Road and Footpath	Km	1326	1307
Construction of Drains	Km	412	393
Construction of Bridge/Culvert	M	3595	3463
Market Development	Nos.	51	51
Installation of Tube-wells	Nos.	3837	3835
Slum Improvement	Family	18320	18320
Maintenance of Bridge/Culvert	M	1514	1504
Rehabilitation of Road and Footpath	Km	3218	2805

Taking the rapid rate of urban growth as well as different problems and challenges in views, the six city corporations are implementing different development projects under both block allocation from development budget and Annual Development Plan. The allocation and utilization of funds under block allocation and ADP for the six city corporations are shown in table 5.8. The six city corporations of the country have been implementing different development projects to create better living conditions for the people in their respective areas. These development projects include among others construction and improvement of roads, drains and footpath; waste management; creation of recreational facilities etc.

Apart from the physical achievements shown in table 5.9, the introduction of computerized holding tax billing, water billing, and accounting in 4 city corporations and 129 municipalities could be considered as other milestone achievements by LGED. Another landmark initiative by LGED during the past plan period is the preparation/updating of Master Plans of 23 district level and 223 upazila level municipalities. This master planning process is still continuing and will be completed during the SFYP period.

Table 5.8: Allocation and Expenditure of Six City Corporations under ADP Allocation and Block Grants during 2002-2009 (Crore Taka)

City Corporations	Total Amount of ADP Allocation	Total ADP Expenditure	Total Amount of Block Allocation	Total Block Expenditure
Dhaka City Corporation (DCC)	1580.07	1488.90	472.05	472.05
Chittagong City Corporation (CCC)	160.05	160.05	144.75	144.75
Rajshahi City Corporation (RCC)	120.93	117.87	88.65	87.45
Khulna City Corporation (KCC)	80.27	80.27	80.09	80.09
Sylhet City Corporation (SCC)	147.82	147.82	22.96	22.96
Barisal City Corporation (BCC)	65.77	65.77	32.18	32.18

Source: Ministry of LGRD&C

Table 5.9: Achievements of Development Activities of the Six City Corporations under ADP and Block Grants during the Period from 2002 to 2009

Development Activities		Achievement of Development Activities in Six City Corporation Areas under ADP	Achievement of Development Activities in Six City Corporation Areas under Block Grants
Construction of Road	(Km)	1617.00	1260.00
Construction of Drain	(Km)	660.46	536.07
Construction of Footpath	(Km)	142.28	45.54
Construction of Bridge/Culvert	(Nos)	98	10
Construction of Bridge/Culvert	(Meter)	1540.00	-
Construction of Retaining Wall	(Meter)	3674.00	-
Construction of Retaining Wall	(Nos)	-	5
Installation of Street Lighting	(Km)	9.0	7.50
Installation of Street Lighting	(Set)	3750	1150
Installation of Traffic Signal	(Nos)	18	-
Construction of Level Crossing	(Nos)	3	-
Construction of Boundary Wall	(Meter)	2237.00	-
Development of Playground	(Nos)	-	1
Construction of Palisade	(Km)	5.84	1.65
Construction of Building	(Sqm)	2237.00	-
Construction of Building	(Nos)	13	106
Construction of Pipeline	(Km)	15.00	84.00
Re-excavation of Khal	(Km)	40.60	4.00
Construction of Community Facilities	(Nos)	7	211
Construction of Embankment	(Km)	1.04	-
Improvement of Sanitary Landfill	(Nos)	1	-
Installation of Ring Latrines	(Nos)	-	9000
Development of Park	(Acre)	3.77	22
Procurement of Equipment	(Nos)	106	-
Installation of Deep Tubewell	(Nos)	-	446
Plantation	(Km)	-	28.50

Source: Ministry of Local Government

URBANIZATION STRATEGY UNDER THE SIXTH PLAN

A review of past policies, institutions and programs suggest that the urbanization strategy needs to change substantially to meet the challenges of future urbanization in Bangladesh. In the past much of the focus has been on implementing piecemeal programs. Multitudes of local government agencies, weak planning, poor governance, inadequate resources and weak project implementation capacity have limited the progress with meeting the urban challenge. The Sixth Plan will internalize these lessons of experience and shift the emphasis to the development of sound urban institutions, improve city governance and emphasize urban resource mobilization.

Improving City Governance

The key constraints to the effective functioning of the municipalities and city corporations are unclear mandate and service responsibilities; lack of accountability; weak finances and financial autonomy; poor coordination and control among service agencies and weak management. These problems call for a major rethinking and wholesale change in the management of these entities and their enabling environment.

The ability of city managers to coordinate fiscal, regulatory and administrative systems which influence the efficiency of cities is crucial to improving the welfare of urban citizens. In this context, cities need to be managed as standalone economies where project investments are planned in the context of a coherent city strategy and better understanding of how urban markets perform overall. The Government's role in this regard will be to support initiatives to combine local-level skills, resources and ideas to stimulate the local economy towards the goals of job creation, poverty alleviation and redistribution; and take proactive measures to deal effectively with changes in the national and global economies.

Thus, a key institutional reform during the Sixth Plan is that the municipalities and city corporations will be organized to manage their functions on the basis of elected representatives. For the urban centers of Bangladesh to be dynamic growth centers it is essential that they have elected and accountable municipalities and city corporations with clearly defined responsibilities. They must be able to attract private investment and mobilize public resources based on service delivery and the quality of the city environment. In order to implement the strategy the Government will take steps for:

- institutional reforms and decentralization of responsibilities and resources to local authorities;
- participation of civil society including women in the design, implementation and monitoring of local priorities;
- building capacity of all actors (institutions, groups and individuals) to contribute fully to decision-making and urban development processes; and
- facilitating networking at all levels

Promoting Balanced Development of Urban Centers

In view of the severe problem of concentrated migration and economic growth, efforts must be made to select new centers away from the main centers (i.e. Dhaka and Chittagong Metropolitan areas) for location of economic activities. If urban population growth is arranged and distributed over space in cities and towns of different population sizes in a balanced manner, the process of urbanization can be managed in a better way. Special emphasis, therefore, will be given to the development of urban centers of various sizes and policies will be directed towards strengthening of economic base and allied infrastructure and services in these centers. Special Attention will be paid to supporting services – housing, education, health etc. – again with a view to channeling those investments which are made at these centers in the most productive manner. Creating employment opportunities in these urban areas would require integration of local economic development and poverty alleviation initiatives. In order to achieve this, the government will pursue growth paths that encourage labor intensive sectors of the economy, support small, medium and micro-enterprises (SMMEs) and enforce a regulatory framework that creates an environment conducive to investment. In addition, steps will be taken to attract private investment through investments in infrastructure and utilities that reduce production and distribution costs within their economies.

Urban Resource Mobilization

A major constraint on urban services is the lack of adequate funding. Even with best city governance unless new sources of funding are found it will be difficult to meet the demand and development needs of the urban sector. Presently, much of the financing comes from the Government's own budget; property taxes and user charges for urban services are very limited¹². The Sixth Plan will emphasize resource mobilization through much better implementation of the property tax and stronger cost recovery of key urban services. The policies include steps to improve land and property valuation, better tax collection through improvements in property tax administration, and setting prices for urban services with due regards to cost. Additionally efforts will be made to reduce inefficiency and eliminate corruption in the collection of property taxes.

Developing a Sound Real Estate Market

The target of providing decent housing to the rising urban population rests to a large extent upon development of sound real estate or housing market in the near future. The private housing market which was constrained by finance constraints is recently emerging as a major activity. Presently around 80 percent of the housing purchased is from self-finance. As such the housing market serves mostly the upper and middle-income households. Therefore to meet the housing needs of the lower income households the House Building Finance Corporation will be restructured and housing finance in the private sector for lower income households will be encouraged.

¹² Ahmed, Sadiq et. al.2007. *Making Dhaka Livable*. University Press Limited, Dhaka

Facilitating NGO Involvement in Housing

NGO involvement in housing programs in Bangladesh has been limited. However, some programs exist that offer interesting insights into solutions to this issue. A promising approach to providing shelter solutions to the poor is the type of projects run by Nari Uddaog Kendra (NUK) which offers cost-effective rental hostel accommodation for female garment workers. The feasibility of replicating such initiatives will be explored as a housing strategy.

Taking Steps for Better Urban Land Management

The pressure of urban housing in the major cities, particularly Dhaka ultimately puts focus on the government's land management policies and practices. The limited urban supply of land is subject to competitive claims for commercial, industrial, administrative, educational, recreational, and military use as well as for road building besides demand for residential purposes. As such, sound land management policies are crucial in solving urban housing problems. The government, therefore, will take appropriate measures to promote sustainable land-use planning and innovative land management practices, and meet the land requirements for urban development through integrated and environmentally sound physical planning and land use. Special emphasis will be given to improve present land registration system so that it can provide security of ownership and tenure rights, ensure more efficient land transfers, facilitate public control of land markets and lead to improved land use and land management. The government will also use regulatory tools such as zoning, subdivision regulations, transfer of development rights etc. to protect sensitive land resources, public interests, environmental and cultural values etc. Economic incentives and disincentives (such as tax exemption, transfer and development taxes etc.) will also be used to encourage land development in accordance with desired objectives

Better Environmental Management

Strategic options in this area will seek to promote cleaner environment, control pollution and protect public health from environmental hazards. Emphasis will be given on preventive actions, that is, to develop preventive polices that can forestall future environmental degradation; and on holistic and integrated approach, with particular attention to participatory planning and management, public-private partnerships, capacity building and cost-recovery

Developing Sustainable Urban Transportation

Transport interventions in urban areas should aim at improving transport and traffic infrastructure so as to meet existing and potential demands, and developing an integrated and balanced system in which all modes (motorized and non-motorized) can perform efficiently and each mode can fulfill its appropriate role in the system. The main objective of urban transport strategy will be to support sustainable urban development. Urban transportation strategies will focus on developing an integrated and balanced transportation system taking into consideration the needs of the road system, non-motorized transport, public passenger

transport and mass transit issues such as a city's balance in the locations of employment and housing, demand management, and the roles for the public and private sectors. Reducing congestion in city roads, especially in Dhaka Metropolitan Area, would require considerable reduction of dependency on private automobiles, taxi cabs, baby taxies, and non-motorized transport modes such as rickshaws. Steps, therefore, will be taken to increase the number of large-size buses including double-decker buses on truck routes and buses of optimum sizes on other routes. Introduction of Rapid Bus Transit through the use of high capacity dedicated bus lanes will be given due consideration. Elevated expressways and rail-based mass transit systems will also be considered as parts of a long-term integrated transport strategy for Dhaka Metropolitan Area.

Making Provision of Infrastructure and Services

Basic infrastructure and services at the community level include the delivery of safe water, sanitation, waste management, social welfare, transport and communications facilities, energy, health and emergency services, schools, public safety, and the management of open spaces. Strategies will be formulated to provide adequate and affordable basic infrastructure and services focusing on demand, equity and accessibility, economic efficiency and cost recovery, public-private partnerships and capacity buildings of local governments¹³.

Reducing Urban Poverty

Poverty is understood to encompass many different aspects including inadequate consumption, inadequate income and asset base, and inadequate access to basic infrastructure and services. Economic growth and consequent increase in income does not necessarily lead to reduction in urban poverty. 'poverty reducing' measures outside of economic growth is important which, however, depends on local institutions that can address one or more of the inadequacies as mentioned above. The plan strategy to deal with urban poverty will promote equal access to and fair and equitable provision of services in urban areas; and emphasize on urban policies that ensure equal access to and maintenance of basic services, including those related to education, employment and livelihood.

SUB-SECTORAL GOALS, TARGETS, STRATEGIES AND PROGRAMS FOR THE SIXTH PLAN

Physical Planning and Housing

The urbanization situation, particularly the housing situation in Bangladesh is getting more acute with every passing year. Government efforts to mitigate the problem in the past have been far from adequate, and have been confined to areas in and around metropolitan cities. Residential quarters for government employees can hardly meet 10 percent of the requirement. However, private sector participation in housing especially in the metropolitan cities has been

¹³ Urban transport issues are discussed in greater detail in Chapter 4 on Transport.

encouraging. Against this backdrop, goals and objectives for urban development under the Sixth Five Year Plan will be as follows:

Goals

- a. Sustainable urban development that supports increased productivity, employment and investment;
- b. Better quality of life by improving the standard and quality of civic facilities in city corporation areas;
- c. Urban governance and management with greater accountability, transparency and improved public participation;
- d. Institutionally and financially capable City Corporations and Pourashavas;

Objectives

- a. Development of low cost houses/multi-storied buildings for housing/resettlement of slum dwellers, the disadvantaged, the destitute and the shelter less poor and in situ development of the slums and shelters for squatters;
- b. Strengthening and supporting authorities like RAJUK, CDA, KDA and RDA so as to make them play important roles in town planning and regulation of urban development;
- c. Development of sites and services for residential accommodation of low and middle income groups of people;
- d. Construction of condominiums for low and middle income groups of people;
- e. Construction of multi-storied flats for sale to government employees at different places to ease the accommodation problem;
- f. Construction of housing facilities for working women;
- g. Construction of low cost houses in the coastal areas of Bangladesh;
- h. Involvement of the private sector with necessary incentives for its greater participation in the housing sector

City Corporations for respective city areas undertake projects for improving urban environment and services by developing road and road infrastructure, solid waste management facilities, drainage system, primary health care facilities, street lighting infrastructure etc.

SFYP Targets for the Organizations under the Ministry of Housing and Public Works

The present Government with its vision 2021 has planned for housing for all by 2015. In this context the government has undertaken public-private partnership (PPP) concept for contributing to the household sector. To implement the vision, the Ministry of Housing and Public Works (MOHPW) has chalked out the following activities for the organizations under the Ministry:

- a) In recognition of the severe land constraint, especially in the urban areas, and huge inefficiencies in the land market including severe governance problems, the government will undertake a systematic review of land policies and land management with a view to undertaking corrective reforms. This review will encompass functioning of land markets, land pricing, registration, land use regulatory policies, land taxes and other relevant aspects. The recommendations of this review will provide the basis for systematic reform during the Sixth Plan period.
- b) The government recognizes that much of the housing supply in both urban and rural areas will come from the private sector. There is already a very active private sector but there are various problems relating to land availability, pricing taxation, registration etc. The land policy review noted above will provide a long term solution to land related issues in private housing. At the same time, other issues related to housing permits, registration, mortgage issues, housing infrastructure, etc require government attention to create a more favorable environment for housing supply by the private sector
- c) Under the DAP, RAJUK will expand the city area to establish a planned capital city. At the same time, to manage the acute housing problem caused by population pressure and provide civic amenities to city dwellers including modern arrangements for car parking, RAJUK will take up different projects for allocating 45,200 residential plots, 1,14,000 residential flats, 2,547 commercial plots, 506 administrative plots, 41 diplomatic plots, 52,624 apartments for low and middle income group people, 520 car parking spaces, 2,00,000 sft. Commercial space for offices and to connect central Dhaka to Eastern by-pass and increase East-West road network.
- d) PWD has undertaken programs to construct 1,802 residential flats for government officers and staff on vacant land in a planned way to mitigate the acute shortage of accommodation. To mitigate the office space crisis for Govt./semi-Govt./NGO officials 11,01,451 sft. Office space will be constructed.
- e) National Housing Authority (NHA) has been addressing the housing problem through developing residential plots in district towns and constructing high rise flats in Dhaka and Chittagong cities. A pilot project has been undertaken to examine the feasibility of developing housing projects in Upazila towns. Besides, a plan has been chalked out to establish 4 satellite towns around Dhaka city under PPP. NHA is undertaking various projects for allocating 21,248 residential flats and 6,081 residential plots.
- f) CDA is in the process of undertaking various projects for construction of 1,105 residential plots and 3,422 residential flats with its own finance.
- g) KDA will undertake construction of 2,492 residential plots, 2,800 residential flats, 9,831 sqm. Commercial and office space, 19.88 km road, 40 km drainage and a botanical garden at Fultala, Khulna.

- h) To reduce the housing problem 1,706 residential plots and 100 flats will be constructed by RDA, as well as construction of 14.19 km road to reduce traffic jam.
- i) House Building Research Institute (HBRI) will be taking up different projects for using fuel efficient brick and low cost house building technology, updating of National Building Code, development of a process to recycle minimum 1% polymer materials and production of building materials using the recycled polymers.
- j) UDD has formulated Project Proposal for National Comprehensive Development Plan for the whole country. Under this project all sectoral policies of the Government (such as Water Policy, Agriculture Policy, Land use Policy, Housing Policy, Environmental Policy, etc.) would be translated into spatial form which would guide the government in physical development activities.
- k) To implement the vision of the government during SFYP (2011-2015) different organs of the government will take up projects of various magnitudes. The Department of Architecture will play its required role by planning and designing these facilities in line with the aspiration of the people of the country.

SFYP Objectives and Strategies for the Pourashavas and City Corporations

Major objectives and strategies of the SFYP with respect to Pourashavas and City Corporations are the following:

Objectives

- a. Development of effective road network to setup congestion free, safe and sound communication system.
- b. Development of pedestrian facilities in the cities.
- c. Reduction of traffic accident.
- d. Auto traffic signalization for better traffic management.
- e. Sustainable parking management.
- f. Improvement of solid waste management.
- g. Improvement of environment & infrastructure.
- h. Provision of safe water supply for the citizens.
- i. Development of recreational facilities (parks, playgrounds etc.).
- j. Development of modern street lighting.
- k. Development of primary health facilities.
- l. Improvement of drainage system to address the problems of water logging.
- m. Development of Commercial complexes for expanding economic activities.
- n. Infrastructure development of low-income settlements.

Strategies

To achieve plan objectives, the following strategies will be pursued:

- i. Establishing strong elected municipalities and city corporations in all major urban centers. These entities will be given adequate operational and financial autonomy to enable them to provide the services demanded by the residents.
- ii. Revamping the property tax system to make this the major source of financing the expenditures of municipalities and city corporations.
- iii. Strengthening the capacities in the Ministry of local government and the Planning Commission to support the development of municipalities and city corporations as well as monitoring their performance to ensure accountability.
- iv. Planning road infrastructure development and public transportation for all the city corporation areas.
- v. Developing comprehensive layout plans comprising all civic amenities like parks, lakes and other recreation facilities in all city corporation areas.
- vi. Improving urban environment by regulating disposal of solid waste.
- vii. Creating strong mechanism for coordination of infrastructure development and provision of utilities in all city corporation areas.
- viii. Building comprehensive databases in LGD and all city corporations for urban planning.
- ix. Government Khas land will be used to the maximum extent possible for solving the housing problem, especially for poorer households.
- x. Abandoned houses will be turned into multi-storied buildings by the Housing and Settlement Directorate in phases for solving the housing problem.
- xi. Necessary actions will be taken to strictly enforce the building code of 1993.
- xii. Arrangement for soft loans for housing will be made for the poor; to this end, a special fund will be created by the government;
- xiii. Houses for working women will be constructed by the relevant city/town authorities.
- xiv. Constructions of Public physical service structures will respond to specific needs of men and women such as, hospitals, educational institutions.
- xv. Necessary action will be taken to reduce wage discrimination.

Water Supply and Sanitation (WSS)

In order to cope with the present and future demand of safe water supply and sanitation, the Government of Bangladesh has formulated and adopted several policies and strategies, some of which are named below:

- National policy for safe water supply and sanitation 1998 (WSS policy)
- National water policy 1998 (NWP)
- National water management plan 2004 (NWMP)

- National policy for arsenic mitigation & its implementation procedure 2004 (Arsenic policy)
- Sector development framework on water supply and sanitation 2004 (SDF)
- National sanitation strategy 2005
- Pro-poor strategy for water and sanitation sector in Bangladesh 2005

Bangladesh is also committed to achieving the targets of the Millennium Development Goals (MDG). The Government is in a process of preparing a cost sharing strategy for water and sanitation services. Meanwhile some framework and strategies like the SDF 2004, National Sanitation Strategy 2005 and the Pro-Poor Strategy 2005 have been formulated to further define and complement the WSS Policy 1998. The Arsenic Policy 2004 is formulated specifically to address the widespread ground water contamination problem with arsenic. The NWP 1998 and the NWMP 2004 give broad direction for water resources management including a broad outline of water and sanitation sector. PRSP recognizes the importance of water and sanitation as a means of achieving accelerated poverty reduction.

The Local Government Division of the Ministry of LGRD&C is preparing a Sector Development Plan (SDP) for the Water and Sanitation sector for the period 2010-2025 which is now in the process of approval. The objective of the SDP is to provide a framework for planning, implementing, coordinating and monitoring all activities in the sector. The SDP is a strategic planning document to meet emerging and future challenges and includes a road map for development and a corresponding investment plan. It is prepared in line with the objectives of Second Poverty Reduction Strategy Paper (Steps towards Change), the Sixth 5-Year Plan and the upcoming Perspective Plan (2010-2021). SDP covers all urban and rural areas of the country and the activities of all relevant government functionaries like the Ministries and Divisions, government agencies such as DPHE, LGED, WASAs and the Local Government Institutions. It also provides a framework for other players in the sector like NGOs and private sector.

The 15 year period of SDP will have three 5-year terms: short-term, medium- term and long-term – these terms coincide with the Sixth and the forthcoming Seventh and Eighth Five Year Plans respectively. In these three terms gradual development of the sector will be taken up. During the short-term, i.e. in the Sixth Five Year Plan period, the aim is to provide at least minimum levels of service for water and sanitation to all. In parallel, institutional strengthening will be initiated. The sector governance instruments, such as establishing legal and regulatory framework and preparing new or revising existing policies and strategies, will be done. Platforms for cooperation and coordination among the sector stakeholders would also be established and a step by step approach towards Sector wide Approach (SWA) will be initiated.

It is expected that all the further water and sanitation related national and sectoral policies and strategies and international commitments will be aligned with SDP. The line agencies under the Local Government Division would formulate development projects under the framework

of SDP, align the ongoing ones to it to the extent possible and undertake institutional development activities accordingly.

Goals, Objectives and Targets for Water Supply and Hygienic Sanitation under SFYP

Goals and Objectives

The Sixth Plan will try to achieve the long-cherished goal of making safe water and sanitation facilities available to all to improve quality of life. The overall goal is “Improving the health and living standard of the people in rural and urban areas by providing access to safe water supply, hygienic sanitation and adequate drainage system.”

Objectives are identified as the following:

- Achieve 100% coverage of Water Supply & Sanitation services throughout the country including their safe use and effective management.
- Improve overall environment of the country.
- Achieve congenial environmental sanitation for overall development of the country in a sustained manner.
- Ensure quality water for drinking and domestic purposes.

Water Supply and Sanitation Targets

Table 5.10 and 5.11 show the water and sanitation targets for the Sixth Plan. Full coverage by providing minimum basic level of service in water supply sector is expected to be achieved by 2011. However, programs and projects will be undertaken during 6th Five Year Plan to increase and sustain the service level. One hundred percent access to minimum level of service in the sanitation sector is expected to be achieved by 2013 by a combination effort of DPHE, Local Governments, NGOs, CBOs, private sector and individual household owners. The 6th Five Year Plan is aimed to increase the service level in a sustainable manner.

Table 5.10: Water Supply- Target Coverage at the end of SFYP*

Sl. No	Service Area	Target Coverage at the end of SFYP		
		By Piped Water	By Water Points	Total
1	City Corporation	70%	30%	100%
2	District HQs Pourashava	70%	30%	100%
3	Upazila HQs Pourashava	30%	70%	100%
4	Growth Centre & Other Pourashava	20%	80%	100%
5	Rural Areas	1%	99%	100%

*Reflecting National Policy for Safe Water Supply

Table 5.11: Sanitation- Target Coverage at the end of SFYP

Sl No	Service Area	Target Coverage by Sanitation Options at the end of SFYP
1	City Corporation	
	Onsite sanitation	100%
	Sewerage	10%
	Drainage	50%
2	District HQs Pourashava	
	Onsite sanitation	100%
	Sewerage	5%
	Drainage	50%
3	Upazila HQs Pourashava	
	Onsite sanitation	100%
	Drainage	50%
4	Growth Centre & Other Pourashava	
	Onsite sanitation	100%
	Drainage	50%
5	Rural Areas	
	Onsite sanitation	100%
	Drainage	50%
	Solid Waste Management	75%
6	Transport Sanitation (River, Road, Railway)	
	On board	100%

Policies and Strategies for the development of WSS under SFYP

Institutional Responsibilities

At present, DPHE is involved in Water Supply and Sanitation activities in the Urban and the Rural areas under physical planning, water supply & housing sector. These activities will continue to be planned and implemented during the 6th FYP. In addition, it is extremely important that DPHE is involved with the activities relating to environmental sanitation in Pourashava Towns. Urban Environmental Projects to be implemented by DPHE will include the following Components:

- Urban Water Supply
- Urban Sanitation (Waste water collection and transportation, Treatment of Human waste and Wastewater)
- Urban Environmental Sanitation (Solid waste management and Storm water and Sullage draining)

Besides these, DPHE will implement projects related to Capacity building of LGIs and sector professionals, Establishment of national data bank etc.

The Arsenic Mitigation Policy 2004 gives preference to surface water over ground water as a source of drinking water for the arsenic-affected areas. The WSS Policy 1998 talks about

proper use of surface water and rainwater. Government alone shall have the ownership of the water source including its protection, development/ extraction, treatment and transmission up to service area. Shouldering this responsibility on behalf of the government DPHE will carry out these activities. Within its own service area the concerned LGI will manage O&M of the WSS services. If required DPHE will provide necessary assistance to them.

Technological Options

The need for promoting technology options for sustainable water and sanitation services responding to the needs of specific areas and socio-economic groups of people will be recognized. The Arsenic Mitigation Policy 2004 envisages the promotion of rural piped water systems in the long run. It recognizes that appropriate technologies for arsenic mitigation are yet to be developed and thus promotes some options like improved dug wells, pond sand filters, deep hand pump tube wells (following prescribed installation protocol) and rainwater harvesting. Any arsenic removal technology before implementation must be validated from the Bangladesh Council for Scientific and Industrial Research (BCSIR).

Sewerage treatment technologies with greater emphasis on resources recovery and recycling will be given top priority in improving sanitation situation. Emphasis will be given on less energy intensive technologies like constructed wetland, oxidation ditch, extended aeration, stabilization ponds, etc. Appropriate desludging of septic tanks and pit latrines will be enforced and effluent disposed off in a proper manner. Sludge emptying services by city corporations and Pourashavas will be made available.

Water Quality Monitoring

The WSS Policy 1998 sets goals to ensure the supply of quality water through observance of acceptable quality standards. It says that the monitoring of water quality will be the responsibility of DPHE, DOE, BSTI, Atomic Energy Commission and CBOs and they will send their reports to the water quality control committee in the Local Government Division. The Arsenic Mitigation Policy further states that the water quality of all new water supply sources is to be tested prior to commissioning. Laboratory facilities must be developed at Upazila levels through public/private initiatives and linked to a network with the existing DPHE laboratories and DOE laboratories. Government will formulate and enforce effective regulatory instruments for certification and accreditation of these laboratories. Recently World Health Organization (WHO) introduced Water safety Plan (WSP), a preventive mechanism to ensure safe water.

Environmental Integrity

The WSS Policy 1998 desires that all development activities related to water and sanitation are considered within the broader environmental considerations. The Policy emphasizes the prevention of groundwater contamination from sewerage and drainage in urban areas. The

Arsenic Policy 2004 puts up a tentative protocol for safe disposal of waste from arsenic removal technologies.

Major Interventions/Activities to Achieve Targets

The specific major interventions/activities to achieve the vision targets are:

Management Aspects

- Update and strengthen “Organizational Setup” of DPHE so that it can perform its mandated responsibility and can meet desire of the people.
- DPHE will concentrate more on and look after the water quality as well as WSS system monitoring, surveillance and co-ordination of WSS sector on behalf of the government.
- DPHE will carry out the WSS Human Resources Development (HRD) activities for capacity building of personnel (Public/LGIs/ Private/ NGOs/ Unemployed youth etc) involved in the development and O&M of WSS system.
- DPHE will look after information management and R&D activities of the WSS sector to support policy making and strategic planning.
- Gradual shift of DPHE from its exclusive role of “Service provider” to the role of “Service provider and Facilitator”.
- On behalf of the people, government alone shall have the ownership of the water sources including its protection, development/ extraction, treatment and transmission up to service area. DPHE will shoulder this responsibility on behalf of the GoB. DPHE with its own manpower or by engaging professionals/ professional bodies or private operators will carry out these activities. DPHE will also facilitate LGIs in discharging their responsibilities in the development, operation & maintenance of the WSS service delivery in their jurisdiction. Within its own service area the concerned LGI will manage O&M of the WSS services by itself or by engaging private operators for different functional areas of the WSS system.
- DPHE will facilitate overall capacity building of the concerned LGI before withdrawal of its WSS activities from the service area of the LGI.
- Strengthen capacity of DPHE in the identification of appropriate source of water supply and location specific water supply options, supported by detailed investigation, feasibility study, water modeling, design, etc in respect of surface as well as ground water.
- Withdrawal of WSS development activities of DPHE from the service area of the concerned LGI is dependent on its development status and capacity of the LGI in managing WSS services.
- DPHE will extend advisory services to the LGIs as and when required, supported by law/ ordinance, to maintain good order in the WSS service delivery.

- Effective involvement of the people/ community in WSS management.
- More involvement of the private sector in the O&M of WSS services.
- Public-Private partnership in the O&M of WSS services.
- Public-Private partnership in the development of infrastructure for adequate WSS service delivery in limited scale.
- Involve financial institutions in the development and O&M of the WSS services.

Development Aspects

- Ensuring safe water and sanitation facilities for all through the development of different water supply and sanitation options to improve quality of life and to accelerate development of the country in a sustained manner taking into consideration of poverty alleviation, promotion of private sectors, arsenic mitigation, human resources development, protection of environment, gender issues, climate change and global warming.
- Ensuring safe water through the development of different water supply options in areas affected by the presence of arsenic and other micro-pollutants in ground water and presence of micro-organisms, industrial wastes, fertilizers, insecticides, herbicides etc. in surface water.
- Ensuring safe sanitation facilities for all through the development of different sanitation options based on hydro-geology/ weather, socio-economic condition of the people/ community, soil condition etc.
- Ensuring safe water and sanitation facilities in the hydro-geologically difficult and problematic areas through the development of appropriate and affordable technological options.
- Establishment of WSS HRD centre in DPHE to ensure adequate supply of trained and skilled manpower in the WSS sector for its balanced development and effective management.
- Establishment of the NAWASIC (National Water Supply & Sanitation Information Centre) in DPHE to ensure information management of the WSS sector and DPHE as well which is necessary for policy making and strategic planning of the sector.
- Establishment of water quality examination, monitoring and surveillance systems throughout the country by establishing laboratory network and onsite testing facilities using portable water testing kits.
- Establishment of monitoring, surveillance and coordination units in DPHE.
- Ensuring the adequacy of financial resources through proper user charges, public-private partnerships, foreign aid resources and Government's own resources.

- Urban Environmental Sanitation (Solid waste management and Storm water and sullage draining)

The sixth five year plan is deemed to increase the present coverage of safe drinking water both in rural and urban areas and to ensure access to hygienic sanitary latrines for all, WSS facilities in every school, important public places, and religious institutions and in densely populated poor communities. These will be achieved through installation of water supply systems (both piped and non-piped) & sanitation facilities, implementation of water safety plans, water quality surveillance, adoption of appropriate technology to specific regions with different hydro-geological situations and social groups, behavioral development in sanitation & personal hygiene practice, social mobilization for awareness building, institutional capacity building, proper management of solid & liquid waste, increased use of surface water, storage & use of rain water, strengthening Local Government institutions & communities.

Bottom up demand responsive planning, sustainable development through Local bodies, increased involvement of NGOs, CBOs and women groups, gradual increment of community cost-sharing and introduction of economic pricing, assigning priority to under-served & un-served areas, poverty alleviation, promotion of private sectors, arsenic mitigation, human resources development, strengthening & improvement of existing technologies through research & development activities, protection of environment, climate change and global warming etc. have been the key issues addressed during preparation of the plan. Every attempt will be made in future to address these key issues while preparing and implementing any WSS projects/programs.

ALLOCATION OF DEVELOPMENT RESOURCES FOR THE URBAN SECTOR IN THE SIXTH PLAN

Given the large backlog of unmet demand and rapidly growing new demand for urban services in Bangladesh the investment financing needs of the urban sector are large. This is also reflected in the indicative resource requirements provided by line ministries and shown in Annex attachments. Creative means will need to be found to meet the financing requirements based on a combination of sound planning of new investments, proper attention to maintaining and better using existing urban assets, strengthening of property tax system and user charges, partnership with private sector through outsourcing and PPP arrangements, mobilization of donor funding, and assigning funds from the government's own resources. While the government recognizes the urgency of meeting the needs of the urban sector, a holistic approach to resource mobilization as stated above will be essential.

Based on the projected overall resource envelope and a careful assessment of relative expenditure priorities, Tables 5.12 and 5.13 provide allocation of development resources to the urban sector in current and constant prices during the Sixth Plan. These are indicative targets and will be reviewed on an annual cycle in light of actual resource availability, implementation performance and changing priorities.

Attachment in the annex shows the indicative costs of various programs/projects proposed by various agencies of the Ministry of Local Government, Rural Development & Cooperatives and the Ministry of Housing and Public Works for inclusion in the Sixth Five Year Plan. These programs/projects are proposed to fulfill government's manifesto and target to ensure safe water and sanitation facilities for all in a dynamic environment. In view of the large gap between available resources and proposed expenditures the programs/projects will have to be prioritized for funding.

Table 5.12: Development Resource Allocation for the Urban Sector in the Sixth Plan
(Taka Crore; current price)

Ministry	2010-11	2011-12	2012-13	2013-14	2014-15
Local Government Division	8099	9519	10804	12687	14430
Ministry of Housing and Public Works	479	565	641	754	862
Total	8578	10084	11445	13441	15291

Table 5.13: Development Resource Allocation for the Urban Sector in the Sixth Plan
(Taka Crore; FY2011 price)

Ministry	FY2011	FY2012	FY2013	FY2014	FY2015
Local Government Division	8099	8855	9392	10357	11112
Ministry of Housing and Public Works	479	525	557	616	664
Total	8578	9381	9950	10972	11776

ANNEX

Sixth Five Year Plan (2011-2015) Ministry of Local Government, Rural Development and Cooperatives

**Annex Table 5.1: Indicative Costs for Proposed Programs/Projects
(Crore Taka)**

1. Urban Development (Municipalities)	11862
2. Urban Development (City Corporation Areas)	
a. Dhaka City	4960
b. Chittagong City	4836
c. Rajshahi City	1335
d. Khulna City	972
e. Barisal City	507
f. Sylhet City	1000
Sub-total: Urban Development (City Corporation Areas)	13610
3. LGED (urban roads, bridges/culverts, urban drains, community/public toilets, Bus/Truck Terminals, Municipal Kitchen Market, Municipal Infrastructure Development Plan, Master Plan of Upazila and Zila Towns, Urban Poverty Reduction Programs)	11509
4. DPHE (Water Supply and Hygienic Sanitation in Rural and Urban Areas)	10313
5. Water Supply System, Sewerage System, Storm water drainage	
a. DHAKA WASA	16769
b. CHITTAGONG WASA	5685
c. KHULNA WASA	153
Total for Urban (excluding transport)	69901

Source: Ministry of Local Government

(Ministry of Housing and Public Works)

**Annex Table 5.2: Indicative Costs for Proposed Programs/Projects
(Crore Taka)**

1. Public Works Department (PWD)	1205
2. National Housing Authority (NHA)	11748
3. Rajdhani Unnayan Katripakka (RAJUK)	40309
4. Chittagong Development Authority (CDA)	2930
5. Khulna Development Authority (KDA)	990
6. Rajshahi Development Authority (RDA)	306
7. Housing and Building Research Institute (HBRI)	142
8. Urban Development Directorate (UDD)	163
TOTAL	57793

Source: Ministry of Housing and Public Works

CHAPTER 6: BOOSTING THE KNOWLEDGE ECONOMY FOR HIGHER PRODUCTIVITY

OVERVIEW

With the onset of globalization the international environment is becoming more competitive and demanding. Greater globalization, combined with more liberalization of markets and products means greater global competition. Since capital markets mobilize capital to economies where highest risk adjusted returns are expected, this implies a relocation of international capital to markets showing potential, which includes a dissemination of knowledge economy.

The New Competitive Context

The nature of competitiveness has been changing. Depending on the economic and business environment, traditionally it was based on lower capital or labor costs, or of other local inputs including infrastructure services. Although these fundamentals continue to play a key role, given the very rapid rate of development and dissemination of new knowledge globally and the pressure to restructure, there are important new elements, including the ability to

- Rapidly re-deploy resources in order to capture new opportunities
- Ensure the quality, skills and flexibility of labor force (and management)
- Keep up with rapidly changing technological and organizational advances
- Move to higher value parts of value chain (research/design; and marketing, branding, managing of customer information)
- Make effective use of information technologies to reduce transactions costs and improve capacity to respond quickly to changing opportunities and threats

As new knowledge and innovation is coming up, the advancements in information processing and communication technology is making international dissemination of such knowledge quicker and more diffused such that those who are not keeping pace with these changes end up falling behind. The increase in information technologies, along with decreases in transport and communication costs due to technological progress are leading to increases in international trading of goods and services.

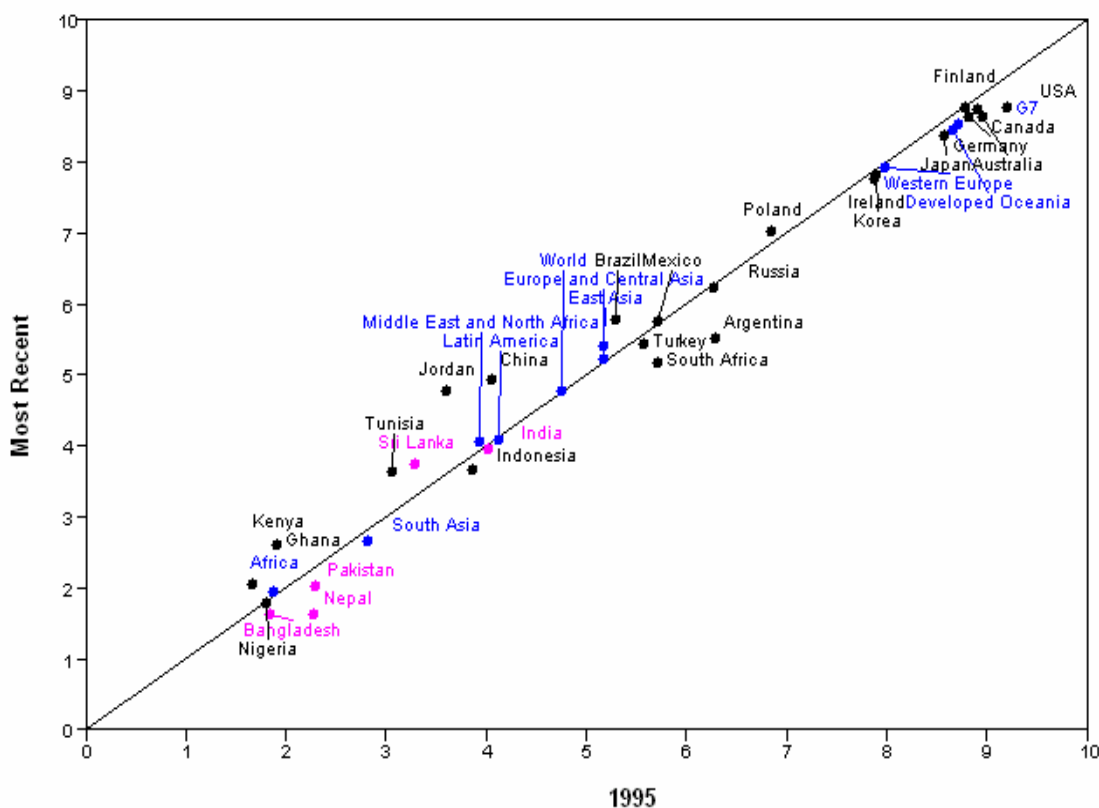
The transition to a knowledge economy depends upon the readiness of a country to use such knowledge for its development. To help countries understand their strengths and weaknesses in making this transition to the knowledge economy, a useful benchmarking tool namely

Knowledge Assessment Methodology (KAM) has been developed by the World Bank Institute. The KAM provides global ranking of countries in terms of their readiness to use knowledge for their development in the context of four pillars namely,

- (i) a regime that provides incentives for efficient use of existing knowledge;
- (ii) An educated and skilled population that can create and share such knowledge;
- (iii) A dynamic information structure for facilitating effective communication and dissemination of information; and
- (iv) An efficient system of innovation of research centers, universities and other organizations that can tap into the growing stock of global knowledge.

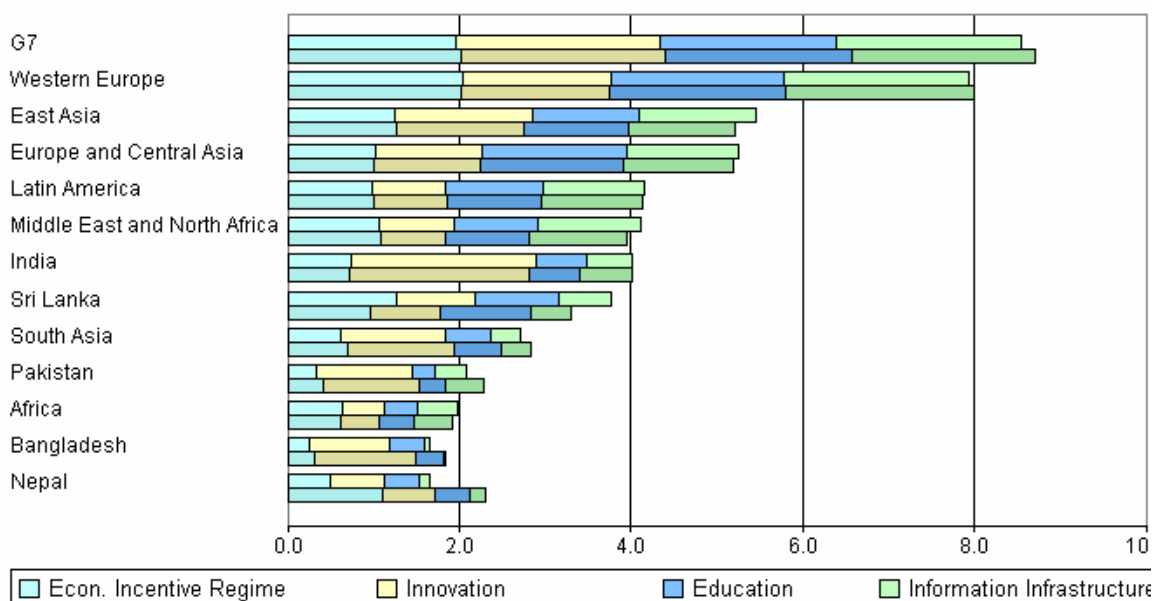
A reduced index of KAM called knowledge economy index (KEI) to give a quick summary of a country's overall position is presented in the table below. Figures 1-2 show a comparison of KEI component of Bangladesh with countries of South Asian and other world regions¹⁴.

Figure 6.1: Overall KEI 1995 Vs Most Recent



¹⁴The horizontal axis represents the relative position of the country or region in 1995. The vertical axis represents the position in the most recent year (generally 2000-2003). The graph is split by a 45 degree line. The most advanced countries are on the northeastern section of the diagonal. But the position relevant to the diagonal is also critical. Those countries or regions that are plotted below the line indicate a regression in their performance between the two time periods. Countries or regions that are marked above the line signify improvement between the two time periods, while those countries that are plotted on the line indicate stagnation. Source: World Bank, KAM 2005.

Figure 6.2: Comparison of KEI component parts for World Regions with South Asian Countries (most recent in top line, compared to 1995 bottom line for each group)¹⁵



It is observed that among the developing countries South Asia does worse than the others except Africa. Within South Asia, India does the best, although it does not show any improvement over time. Its higher knowledge economy index is largely due to its high index on innovation given the large absolute size of scientists and engineers in R&D as well as the absolute volume of scientific and technical publications. Pakistan, Bangladesh, and Nepal all lose ground in the aggregate KEI. Bangladesh slips most in the innovation index and also slips in the economic incentive regime, but makes some gains in the ICT and smaller gain in the education index. The challenge for Bangladesh to catch up on the knowledge economy front is immense.

A Framework for Knowledge-based Development for Bangladesh

The need for higher levels of scientific manpower and new skills: With the on setting of the knowledge revolution, higher levels of education are imperative to keep up with and make effective use of rapidly changing knowledge. It also necessitates high levels of scientific and technical manpower to create new knowledge. However, since sharing the newly created knowledge entails learning of new skills, there is a need for a system of continuous training in order to constantly upgrade skills or re-skill people who have already passed through the formal educational system. This is reflected in the very high percentage of adults who are taking additional courses at work, in specialized institutions, or even going

¹⁵The top bar chart represents the most recent aggregate KEI score for a selected region or country, split into the four KE pillars. The bottom represents the index in 1995. Each color band represents the relative weight of a particular pillar to the overall country's or region's knowledge readiness, measured by the KEI. The first line for each country is its position in the most recent year for which data is available (generally 2002-2003). The second line is for 1995. Source: World Bank, KAM 2005.

back to tertiary institutions for formal education (in Finland, this is true for over 50% of adults). This is also reflected in the number of students at universities who are older than the typical university age cohort of 18 to 24 years old. In the U.S., over 40% of undergrads are over 25 years of age. In Australia, New Zealand, Denmark, Norway and Sweden, over 20% of first time entering students were over the age of 27 in 2000.

The need to keep up with the new skills—in computer literacy, communication skills and the ability to work in groups—has led to the adoption of education and skill-oriented policies across countries to improve their overall business environment and enabling greater flexibility of their economies to respond to the rapidly changing circumstances. Countries are now improving their education and skill systems as part of their development and competitiveness strategy. Between 1990-91 and 2002-03, for instance in high income countries enrollment rates at the secondary level increased from 94% to 107% and from 47% to 66% at the tertiary level. In Korea, an economy that has placed a very high value on education and is now well known as a knowledge economy, tertiary enrollment rates increased from 39% to 85%, which put her second only to Finland (with 86%), the other well known knowledge-based economy¹⁶. At the same time, an increasing number of private educational institutions have arisen to fill in the needs not adequately addressed by public education system. Firms are undertaking increasing amounts of in-house training to give their workers the skills they need to compete. In addition, some of the larger firms are even setting up their own in-house universities to provide the most advanced specialized skills needed to be competitive. Firms are also more proactive in approaching universities and specialized training centers to get them to develop specific training programs to meet their needs.

Equally noteworthy is the increasing use of information-based technologies, which has been gathering speed as the technology has improved and more experience acquired on its use. In the U.S., 16% of tertiary level students are taking at least one course on line, and 40% of those are full time on line. E-learning is expanding very rapidly and much is being provided by non-traditional universities (new entrants, including publishers and mass media). E-education, by crossing boundaries, has also facilitated the internationalization of education.

It is also being increasingly felt that to be globally competitive and to be able to make innovation countries need high level human resources. There is thus also increasing competition for high level human capital across countries. For example, even the US, where there is no free trade in labor, except for highly trained persons has had more liberal immigration policies and developed a program for the temporary immigration of specialized manpower in the ICT sector.

¹⁶ World Development Indicators 2005, World Bank: Washington DC

Education is a key to the establishment of a knowledge economy: A part of the reason for low knowledge base in South Asia is low education attainment in these countries. Taken as a group their low enrollment ratios at the secondary and tertiary levels, low average educational attainment among the adult population, extremely low percentage of professional and technical workers among the labor force combined with emigration of the highly skilled workers and low quality of mathematics and science education, pose serious obstacles to their transition to knowledge economy.

The concept of a national innovation system: The innovation system plays an important role in acquiring, creating, adapting and disseminating knowledge, which is crucial for success in the knowledge economy. It consists of the network of institutions, rules, and procedures that affect how the country acquires, creates, disseminates, and uses existing global knowledge. It also concerns the application and use of existing knowledge to the local context.

The concept of a national innovation system rests on the premise that understanding the linkages among the various actors involved in innovation are key to improving a country's technology performance. These actors include private enterprises, universities, research institutes, think tanks, consulting firms, and others. The innovative performance of a country depends to a large extent on how these actors relate to each other as elements of a broader system.

These suggest that a comprehensive knowledge economy strategy will need to emphasize education, science and technology (to promote research and innovation), and information communications technology (ICT) to harness the knowledge effectively.

DEVELOPMENTS IN SCIENCE AND TECHNOLOGY

National science and technology policy: The vision of the National Science and Technology Policy of 2010 was to meet the basic needs of human beings by harnessing the potential of science and technology. Two significant milestones were the emergence of Information and Communication Technology and the potential of Biotechnology. Dramatic changes in the global scenario as well as in the field of science and technology during the last two decades were reviewed and the existing policy has been accommodated these changes in meeting the challenges of the 21st century.

The new Policy focused on scientific research and production using indigenous resources as much as possible. It also focused on finding solutions to the emerging problems in agriculture, health, environment and climate change. In view of the frequent onslaughts of pandemic diseases like bird flu, malaria, etc., the policy supported research in areas such as prevention and treatment of diseases having pandemic impact. The new Policy suggested access to quality educational materials for studying science, mathematics, engineering and other subjects requiring instruments. At the same time, provision may be made for attracting Bangladeshi researchers living abroad. To encourage innovation and production of new technology, a

proper institutional system of copyright and patent should be established. In view of the expanded agenda for research in science and technology, allocation for R&D may be enhanced to 1-2% of GDP.

National biotechnology policy: In Bangladesh, biotechnology received much attention of policy makers since the first decade of the 21st century. The biotechnology policy focused on the tools and techniques of biotechnology for poverty alleviation, health, nutrition and livelihood improvement, environment protection, and ensuring sustainable development.

This policy may be examined further and the following issues should be considered:

- The policy should have clear resolutions on research misconduct;
- The policy should have clear direction on setting up laboratories and their roles i.e. whether they will be hierarchically organized or geographically distributed independent entities;
- The import policy should include special provisions for importing chemical reagents needed for biotechnology research. The policy may provide incentive for producing them locally.
- The policy should include guideline on projects to preserve genetic profiles of endangered species;
- The policy should provide clear stand on animal cloning, stem cell cloning and human cloning;
- The policy should give clear indication on genetically modified organism (GMO);
- A permanent committee should be available for regular revision of the policy.

Institutions involved in Development of Science and Technology

Ministry of Science and Information and Communication Technology: The Ministry of Science and Information and Communication Technology (MoSICT) is the umbrella government agency for science and technology development. Since 1984, the S&T division under Ministry of Education had been functioning as an independent division. One of the key roles of the division was to provide secretarial assistance to the National Council for Science and Technology (NCST). In 1993, the division was upgraded to an independent Ministry (MoST). In April 2002, the ministry was renamed as Ministry of Science and Information and Communication Technology (MoSICT). Govt. has recently reconstituted the MoSICT in to two separate Divisions namely Science and Technology Division and Information and Communication Technology Division.

The ministry has seven agencies under its umbrella – Bangladesh Atomic Energy Commission (BAEC), Bangladesh Council for Scientific and Industrial Research (BCSIR), Bangladesh Computer Council (BCC), National Museum of Science and Technology (NMST), Bangladesh National Scientific and Technical Documentation Centre (BANSDOC), Bangabandhu Sheikh Mujibur Rahman Novo Theatre and National Institute of Biotechnology (NIB). Among these, BCC deals with ICT and all other agencies are related to S&T.

Others institutions working like BARC, BAS, BMDC are also contributing for the development of the science and technology.

Bangladesh Atomic Energy Commission (BAEC) and Bangladesh Council for Scientific and Industrial Research (BCSIR): These are the two principal organizations dealing with scientific and industrial research in the country. BAEC deals with research and development in peaceful application of atomic energy, generation of electricity and promotion of international relations congenial to implementation of its programs and projects.

Since its inception, BCSIR has been pursuing research and development activities in various fields of scientific and industrial interests of the country and has contributed noteworthy services to national causes.

Bangladesh Academy of Science (BAS): This was established in 1973 with the objectives to promote research in pure applied sciences and their practical applications to problems of national welfare in Bangladesh; to disseminate scientific knowledge among people. BAS regularly publishes proceedings, journals, memoirs, transactions and other publications on scientific subjects, holds conferences, symposia seminars, workshops, lectures etc on scientific topics of national and international importance either alone or in collaboration with local and international organizations and institutions. BAS awards scholarships and fellowships for approved scientific research and award prizes and medals for outstanding scientific work.

The Bangladesh Agricultural Research Council (BARC): The BARC under the Ministry of Agriculture is at the apex body of the national agricultural research system (NARS). The institutions under the NARS are: Bangladesh Agricultural Research Institute (BARI), Bangladesh Rice Research Institute (BRRI), Bangladesh Jute Research Institute (BJRI), Bangladesh Institute of Nuclear Agriculture (BINA), Soil Resources Development Institute (SRDI), Bangladesh Sugarcane Research Institute (BSRI), Bangladesh Live stock Research Institute (BLRI), Bangladesh Fisheries Research Institute (BFRI), Bangladesh Tea Research Institute (BTRI), Bangladesh Forest Research Institute (BFRI). It has the responsibility to strengthen the national agricultural research capability through planning and integration of resources. It is the umbrella under which the entire Bangladesh agricultural research is coordinated. This involves cooperative activities in several ministries of the government: Agriculture, Forest and Environment, Fisheries and Livestock, Rural Development, Education, Industries, Commerce, and Science and Technology. National Oceanographic and Maritime

Institute of Bangladesh was established, which is yet to play the expected role in guiding relevant agencies in managing marine resources.

Bangladesh Medical Development Council (BMDC): This was established to coordinate the research in the field of medicine. However, there is no such coordinating body for the field engineering. The National science and technology policy recommended a similar council for engineering research.

BANSDOC: Bangladesh National Scientific and Technical Documentation Centre (BANSDOC) is the national apex body in the field of scientific and technological library, information and documentation services in Bangladesh. It has already passed 47 glorious years for the benefit of scientific and technological research and experimental development and upholds the socio-economic development of Bangladesh. According to mandatory role and responsibility BANSDOC is dealing with library, documentation and information services, products and systems in the field of science and technology & information and communication technology.

BANSDOC houses the National Science Library (BANSDOC Library) that acts as a major information resource centre in the country in the field of Science and ICT. It has the finest collections in Information Science and Information and Communication Technology and a strong reference collection in general S&T aspects. It holds over about 17000 books, about 300 periodical titles and receives over about 90 periodicals both Local and Foreign in the field of S and ICT.

To support its ICT services, BANSDOC has set up an ICT based Cyber Service Centre which is well equipped with the computer and online broadband connected networking facilities to ensure all out high quality cyber services to the users. It is also associated with the activities of International Federation for Information and Documentation (FID), international Federation of library Associations (IFLA), Commonwealth Library Associations (COMLA), SAARC Documentation Centre (SDC), European Patent Organization (EPO), European Commission (EC).

Public and private universities teaching involved in science and technology: Of the 31 public and 54 private universities in Bangladesh, 5 public universities are dedicated for engineering education, 1 for medical science and the rest cover both general and science education. Dhaka University and Bangladesh University of Engineering and Technology (BUET) have few specific institutes dedicated to scientific and engineering research, respectively. The Institute of Appropriate Technology (IAT) of BUET is playing an important role in identifying appropriate and sustainable technology for the country. The research activities in this type of institutions are conducted by professional scientists and their projects are funded both internally and externally. Only few universities have graduate research programs in science and technology. Of these, Dhaka University, Rajshahi University,

Chittagong University, Jahangirnagar University, Bangladesh University of Engineering and Technology offer graduate level courses on science and technology. The engineering colleges in the country were upgraded to engineering universities. As a result, number of engineering graduates has gone up.

Non-government initiatives in science and technology: There have been a number of initiatives from non-government and voluntary sector in Bangladesh for promoting science and technology. Bangladesh Mathematical Olympiad is a good example of non-formal activities related to promotion of mathematics education among the school and college students. It has been running successfully since 2001. From 2005, every year, the best performers of the National Olympiad participated in the International Mathematical Olympiad one of the most prestigious knowledge based competitions for high school students around the world. In 2009, two of Bangladeshi students have achieved Bronze medals. The Bangladesh Mathematical Olympiad is organized and run by the Bangladesh Mathematical Olympiad Committee, a not-for-profit voluntary organization. A similar event in the field of informatics was also organized. However, the arrangement of Physics, Chemistry and Biology Olympiads are yet to attract popular attention of the students because of lack of enough organizers.

Constraints and Challenges in Progress of Science and Technology

Bangladesh needs to come out of the "basic needs" agenda for research and come up with ambitious research programs in the field of science and technology which are closely related to its aspirations of becoming a middle income country with rapid poverty reduction. For example, Bangladesh may aspire to have its own satellite, which would serve the purpose of economic growth through accurate and timely forecasting of natural disaster including flood and cyclone. However, constraints remain in the way of progress of science and technology. These are as follows:

Need for autonomy: The dynamic life cycle of scientific research requires quick decision making system. The current process is slow and inefficient, which hinders undertaking progressive research agenda. To allow quick decision making the research institutions need autonomy within the framework of national policy for science and technology.

Lack of proper incentives: In Bangladesh, an incentive mechanism for creating intellectual property of high financial value has not yet developed fully. As a result, many scientists prefer to work for institutions abroad or for private institutions. The pay structure for research institutions should be determined autonomously so that adequate financial incentive can be provided to the capable scientists.

Poor initiative for talent hunt: Today's scientific research demands talented students. To attract them to science and technology popularization activities are essential. Such activities were launched in early 1980s by the National Museum of Science and Technology. A good number of science clubs had also emerged then. But the number of science clubs and their activities has been reduced drastically due to lack of patronization. The National Science Fair,

a competitive process of selecting young scientists is now dormant. There is need for reviving such activities.

Human resource problems: Capacity building of scientific personnel tailored to the theme of projects as well as adapting new and state of the art technology is not taking place as desired. This is mainly because firstly, the in-house and overseas training facilities for the scientists working in the field of cutting edge technology are not adequate, and secondly, very often the scientific personnel sent abroad for short-term training do not return home after the expiry of the training period, thus contributing to partial failure of a project. Other human resources constraints are as follows:

1. Lack of training: There is lack of training for teachers of colleges under National University as well as the new Science and Technology Universities in terms of upgrading and modernizing syllabuses and teaching quality. There is small coordination between the MOSICT and UGC. Establishment of private universities without complete regulatory preparation creates problems.
2. Inadequate fellowships: The government introduced the national science and technology fellowship (Now National Science and ICT fellowship) in the year 1977-78 to encourage young scientists and researchers in different universities and research institutions. Selected students studying in Masters or pursuing their M. Phil and PhD degree receive this fellowship. Students studying in the field of inorganic science, organic science and agricultural science are eligible for the fellowship. In the year 2009-10, Tk. 20.2 million was distributed among 409 students. Besides the NSICT fellowship, a few corporate agencies including a multinational bank also provide financial support to some researchers. However, the amount of money of the fellowships needs review in the context of pursuing scientific research.
3. Lack of professionalism: There is a severe lack of professionalism in conducting research. Only those who choose to be serious researchers in the long run take research-based courses. The absence of proper and rich graduate research programs in universities results in poor intake of scientists and technologists in national research organizations. On the other hand, lack of adequate financial incentives inhibits talented students to join science and research courses.
4. Inadequate facilities: Opening of new science departments as well as universities of science and technology without ensuring appropriate space, teachers, equipment and ICT environment is a reason behind degradation of standard of science and engineering education.
5. Lack of patronage for popularizing science: Today's scientific research demands talented students. To attract them to science and technology popularization activities were launched in early 1980s by the National Museum of Science and Technology. The National Science

Fair, a competitive process of selecting the best young scientists and awarding them with suitable prizes was also introduced. Such competition is not organized any more. Informal scientific activities carried out by Science Clubs and Societies such as outer space observation, science fair, science quiz competitions, debates, essay writing, lectures etc. has been reduced drastically due to lack of patronization. Only a few educational institutes arrange science fair regularly. The Bangladesh Academy of Sciences has a role to play in encouraging such young talents through arrangement of such periodically arranged lectures.

6. Lack of research funding: There is a severe dearth of financial resources for undertaking research and development in various fields under a long term vision and plan. Allocations for science and technology in previous Plans as a proportion to total allocation have been inadequate. There is a severe lack of efficient mechanism for dialogue between relevant ministries dealing with research and ministry of finance. There is lack of freedom and mechanism for scientific institutes to mobilize financial and technical resources from various sources, including private sector.
7. Inadequate research and laboratory facilities: While lack of adequate research and laboratory facilities is a problem, in some cases existing facilities are not fully utilized because of the absence of the skilled human resources.
8. Lack of promoting success in R&D: Most of the institutions do not have appropriate communication plan and system in place. The success of research institutions does not reach general people, particularly new generation. As a result, young talents do not have any role model among the scientists and researchers. While scientific publications are generally in English, the need for local language scientific literature is ignored. For example the catalogue, website, or various publications of BANSDOC all are in English. So it is out of reach for most of the people.
9. Inadequate collaboration: International and regional collaboration are essential to bring in new ideas and skills. However, existing act/rules sometimes prohibit the collaboration with international organizations and/or even with local private organizations. Inadequate collaborative projects between the universities and the research organizations widen the gaps between research institutions and the academia.

Objectives, Targets, Strategies and Policies for Science and Technology in the SFYP

Sixth Plan Objectives

The major objectives of the Sixth Five Year Plan in the field of science and technology are as follows:

1. Development of new sustainable technologies and industrial processes for production and preservation of products for poverty alleviation and income generation by environmentally sound and appropriate biotechnology.

2. Development of nuclear service related infrastructure such as development of nuclear facility, improvement of health services, transfer of nuclear technology as well as service delivery to various end users including environment and human resource development.
3. Strengthening of the institutional and human resources development activities in the country for introducing nuclear power technology.
4. Development of technologies specially required for the capital goods sector and large industrial enterprises and improvement of appropriate traditional and indigenous technologies for small enterprises in both rural and urban areas.
5. Upgradation of research organizations involved in the field of science and technology and attempt to make Bangladesh into a knowledge-based modern state through use of indigenous technology and innovations.
6. Strengthening R&D programs of existing organizations of the Ministry of Science and ICT through dissemination of modern scientific and technical know-how.
7. Strengthening of the institutional and human development activities in the country through development of improved science and technological knowledge.
8. Development of new and renewable sources of energy and their dissemination for the end users.
9. Providing education, research and training in marine science and utilization of the knowledge for invention and exploration of marine resources and protection of marine environment.

Sixth Plan Strategies

The Sixth Plan will have two dimensions: one is to create opportunities for investment by private sector, NGOs and development partners through creating enabling environment (both infrastructure and policy), which will need massive reform; second, the government will invest to ensure constitutional obligations for offering public good. It is important to identify target areas for science and technology development with a twenty year vision. In this line, it is important to identify thrust areas.

Basic research: Considering national priority and need for food security and health security of the nation, Biology and Medicine Research is becoming very important in the context of new intellectual property rights regime, where life saving drugs are going to be expensive and detrimental to national agenda of poverty reduction. It is true that it is not possible within short time to come to a stage when new drugs are possible to generate by our own scientists. However, a structured start may produce result in 20 years time. Research in the area of biodiversity and conservation will be very important for the country.

Specific areas of focus may be: Immunology and vaccine research; basic biology, biochemistry and drug design; genetics and genomics, ecology, biodiversity and conservation;

plant molecular biology and basic research in agriculture; biotechnology; bioinformatics; bioengineering.

Physical science: Energy security has become more important for Bangladesh with global volatility in energy prices, depletion of fossil fuel resources globally, and need for renewable energy development for protecting planet earth from adverse impact of climate change. Thus, Bangladesh can focus, again with long term plan, research related to "fusion". Fusion is the ultimate source of energy with minimal environmental degradation. The atomic energy research needs to push to the fusion program in the direction of commercial fusion reactors.

Chemical science: Chemistry of energy conversion processes and harvesting of different forms of natural energies can be one priority in the area of Chemical Science. Other possible areas may be: Chemical Biology with emphasis on biometric synthesis, molecular mechanism of drug action; Chemical ecology/ natural products.

Engineering: Engineering is one area, where Bangladesh may target to export technologies and know-how within coming decade. Robotics, Parallel computing; cyber security; bioinformatics; signal processing and communication networks; wireless communication; Structural mechanics; earthquake engineering; prediction of natural disasters including earthquakes, cyclones, tsunamis, etc.; early warning systems, structural engineering for resistance of natural disasters and loss mitigation technologies; energy engineering, including energy generation (renewable/ non-renewable), energy storage, efficient utilization and pollution control technologies.

New emerging research areas: There is a constant need to review developments at the cutting edge of basic research. A task force should be deployed to monitor global development in the R&D and bring in information for scientific communities on new area of development in science and technology.

Science and technology for micro and small enterprises (SMEs): As Bangladesh's economy is based on SMEs, effective methods and plans of promotion of innovations in the SME sector need to be devised in SFYP. The Plan may include a program for providing special technical and financial support to innovators to set up enterprises. More specifically, there may be three specific components of the plan for (SMEs):

1. **Technology/ knowledge-based new start-ups** (which need S&T inputs for incubation): There are no technology business incubators (TBIs) for providing technology supports for (SMEs) in Bangladesh. By comparison, in India there are 20 incubators, over 1000 in USA, 300 in Korea and 100 in Finland. Universities, Engineering colleges, business schools should be preferred institutions for TBIs. There is a difference in TBI and TIC (Technology Innovation Centre). TBIs are located in educational institutions and aim at converting results of R&D to industries. TICs are located in SME clusters and provide them technical supports in

technology up gradation and new product development. During the Sixth Five Year Plan 10 TBIs may be set up.

Other specific programs for (SMEs):

- Ministry responsible for Science & Technology should launch Science & Technology Entrepreneurship Park, Technology Business Incubator, Small Business Innovation Research Initiative.
- Ministry of Industries (MoI) should set up food parks for promoting technology for food production.
- MoI may prepare sectoral technology profile. These technology profiles will help critically examining and addressing technology needs in line with the business requirements of respective sectors. Involving CII, UNIDO.
- Ministry of Education/UGC should include Entrepreneurship/ Incubation into the engineering curriculum. Technical and vocational institutes need to be revamped for brining in school-dropouts and supply quality human resource for SMEs.
- Appropriate mix of man-machine is important for avoiding complete automation which is contrary to policy of labor intensive economy.
- It is desirable to encourage patenting by offering financial support/subsidies. Quality assurance, eco-labeling and bar coding of products also needs to be encouraged in a big way.
- Continuing education program for upgradation of skills at levels of technicians, supervisors, engineers and entrepreneurs is also necessary.

2. **Manufacturers of consumer products/ancillaries, driven by market demand** (which needs S&T interventions for innovation in process/product/packaging): Specific programs/initiatives for this component may include:

- MoI should launch Small Industries Services Institutes, Tool Rooms, Central Footwear Training Institutes, Product-cum-Process Development Centers, Regional Testing Centers & Field Testing Centers, CAD & CAM Centers, Product Development, Design Intervention & Packaging Scheme;
- Ministry responsible for Science & Technology should undertake program for technology development & demonstration and program for 'TechnoPreneur' promotion.

3. **Rural technology:** Science and technology intervention is useful in all areas of rural economy such as agriculture, physical and social infrastructure. However, most effective

results would be obtained through rural technologies for non-farm rural enterprises, particularly for sustainable job creation in rural non-farm sector. Because, task of development and application of appropriate technologies for non-farm rural enterprises lacks a definitive institutional framework in the government set-up and therefore, significant value would be added to existing developmental goals by establishment of new institution responsible for transferring technology to rural non-farm sector. Such an agency can be linked up with the employment schemes for rural unemployed people. Furthermore, non-farm rural employment is of increasing importance due to low employment elasticity in the farm sector and the phenomenon of "job-less growth" in industrial sector. Currently, development of rural technology is promoted by BCSIR and by S&T non-governmental organizations and Institute of Appropriate Technology (IAT). All agricultural research institutions are major suppliers of technology to rural areas.

A dedicated agency for rural technology identification, development and promotion needs to be introduced. This agency can search out and link up thousands of disparate, small but sincere groups, working in far-flung corners of the country and provide them necessary support to implement technology transfer program. R&D institutions, universities, can supply technology to the new agency, which may be disseminated through grassroots partners including telecentres. There should also be a mechanism of field support for those grassroots partners. This institution can partner with telecentres for building their capacity to make them technology hubs for farmers, rural artisans and small producers. Specific programs for rural technology development will include:

- Training programs on Packaging for Exports;
- Scheme of Fund for Regeneration of Traditional Industries;
- Food Processing & Training Centers;
- Support to Training and Employment Program for Women (STEP);
- Intensive Dairy Development Program (IDDP); and
- Fisheries Training and Extension.

Biotechnology: Induction of biotechnology is necessary for Bangladesh to maintain our agriculture remunerative and globally competitive in the face of major challenges such as declining per capita availability of arable land; low productivity levels of crops, livestock and fisheries; heavy production losses due to biotic (insects and other pests, weeds etc.) and abiotic (salinity, drought, alkalinity etc.) stresses; heavy post-harvest crop damage during storage and transportation; and declining availability of water as an agricultural input. Investment in agriculture-related biotechnology has resulted in significantly enhanced R&D capability and institution building over the years, but progress has been rather slow in converting the research leads into usable products. Uncertainties regarding IPR management and regulatory requirements, poor risk assessment, and effective management and commercialization strategies have been the significant problems.

For ensuring food and nutrition security, value addition to primary agricultural produce through application of new technologies, employment generation, economic development and improved health and nutrition of all sectors of society biotechnology is very important. In an emerging era of preventive health care, it is envisaged that improved food products can be developed which promote well being and prevent diseases.

The mission mode projects in the areas of biotechnology can bring about significant value addition, cost effectiveness and competitiveness in product and process diversity. Biotech product/process development involves an elaborate pathway of innovation value chain over a period of years (7-10 years) with defined elements of basic research, translational research, development, verification and validation, prototype development, field trials, production/manufacturing and marketing.

In biotechnology research, problem arises concerning the protection of intellectual property for innovations in this field beyond legal and ethical questions. In view of the special quality of living organisms the scope of patents has to be clearly defined to find balance between innovation and public interest.

The mission mode project may include following components:

- Bio-fortification of agricultural crops with better nutritional traits for iron, zinc, vitamin A etc.
- Nutritional improvement of vegetable crops with special impetus on underutilized (neglected vegetable crop) species from different regions of the country
- Development of nutraceuticals/ health food supplements/ functional foods with proven evidence of efficacy and safety.

Bioinformatics: Sixth Five Year Plan proposes an initiative to establish a Centre for Bioinformatics under the National Institute of Biotechnology. For creating excellence in bioinformatics, following components may be included in the plan:

- Preparation of a pool of experts on bioinformatics through collaboration with biotechnology research institutions in the region, particularly with India and China, which obtains a very strong network of bioinformatics research institutions.
- Setting up supercomputing facilities for developing databases.
- Initiation of courses on bioinformatics in universities by inviting Bangladeshi scholars from abroad.
- Supporting Bioinformatics incubator facilities.
- Developing a resource pool of at least 10 PhDs in the field of bioinformatics within the period of Sixth Five Year Plan.
- Making online courses on bioinformatics available through globally reputed institutions.
- Institutional mechanism may be put in place for testing public domain databases and software and making them available to the users from the academia and the industry. After

such testing, these databases and algorithms may be graded so that scientists can use them with higher confidence.

- Commercial databases and software may be tested before the industry invests in the products. Such service will help the industry to reduce their costs and use only certified products.
- Giving priority to bioinformatics companies in High Tech Park.
- Facilitating collaboration between bioinformatics, agricultural scientists and plant molecular biologists. Special emphasis may be laid on adaptation to environmental stress.
- Another sector which merits attention is the documentation of the microbial wealth of the country and its possible utilization. Here again extensive collaboration with microbiologists is important.

Bioengineering: Bioengineering covers a wide range of areas such as tissue engineering, biomaterials for therapeutics, biomedical sensors, biomedical devices and implants, etc. Bioengineering offers opportunities for indigenous development of critical implants and devices, advanced biomaterials for therapeutic applications, tissue engineered products, etc. in coming decades.

The mission mode programs in the area of bioengineering may include:

- Charting of a national program on bio-design providing an incubator for generation of new ideas to develop novel biomaterials for therapeutic applications, design of indigenous devices and implants, tissue engineered products, etc.
- Establishment of a stable network amongst engineers, clinicians, basic scientists and the industry.
- Creation of partnership with universities, medical colleges, public research institutions having expertise in various disciplines such as chemistry, life sciences, molecular biology, medicine, engineering etc.
- Initiation of programs to facilitate indigenous production and evaluation of implants and devices which are currently available internationally but not available in the country at affordable cost.
- Establishment of a regulatory mechanism for testing and validation of bioengineered products and devices.
- Creation of new as well as improved Vaccines to create effective single-dose vaccines; prepare vaccines that do not require refrigeration; and develop needle-free delivery systems for vaccines.
- Solve how to design antigens for effective, protective immunity; and learn which immunological responses provide immunity. Priority diseases are: Dengue, Influenza, Tuberculosis, Malaria and emerging Indian pathogens.
- Participation in formation of regional biotechnology foundation in the region.

Marine resources: Research on marine resources is an underserved area, which can be a major source of economic development and employment for the country. The Sixth Five Year

Plan will undertake specific programs in the area of marine resource management which will include:

- Research on protection of coastal breeding & nursery areas:
- Research program on Integrated Coastal Resource Management by Integrated Coastal Zone Management (ICZM)
- Long term project on conservation of marine biological resources
- Program on protection of IUU (illegal, unreported and unregulated) fishing in Bangladesh waters
- Program on prohibition of pollutants discharge from ship breaking and other sources and their impacts
- Deep-sea resource survey every five years.

Strategies for Meeting Science and Technology Targets in the Sixth Plan

Science and Technology Agenda will consist of four components:

1. Appropriate R&D agenda in line with national development aspirations;
2. Appropriate institutional system for managing R&D;
3. Appropriate HRD for Science and Technology;
4. Appropriate resource allocation for accomplishment of the agenda.

Programs and projects to be undertaken in Sixth Five year Plan will be of two types:

- i. Regular programs and projects; and
- ii. Mission mode projects: This is more like special milestone or flagship initiative to promote science and technology in new areas. "Manhattan project" during Second World War for developing nuclear bomb is an example of mission mode projects.

The following strategies will be followed for development of science and technology in the Sixth Five Year Plan:

- i. Increasing public sector allocation for advancement of science and technology in Bangladesh.
- ii. Expanding education in science and technology to cover at least 80 percent of enrolment at secondary and higher secondary and 60 percent at graduate levels during the Plan period.
- iii. Training of scientists, technologists and ICT personnel in selected fields at post-graduate levels in centers of excellence at home and abroad on a massive scale.
- iv. Integrating policies for development of science and technology with macro-economic, industrial, agricultural, commercial and educational policies.

- v. Effectively linking the entrepreneurs within the country with the supply of technology originating both at home and abroad through a national network.
- vi. Remodeling the legal framework for protection of intellectual property, providing incentives for local entrepreneurs and development and transfer and absorption of technology.
- vii. Linking the remuneration package for scientists, technologists and ICT experts to their individual productivity and potentiality.
- viii. Providing institutional support and financing for commercializing technology, setting up venture capital fund to this end will be a step in the desired direction.
- ix. Encouraging and enabling expatriate Bangladeshi experts to generally forge linkups with scientific and technological development of the country inclusive of wooing back home recognized experts in selected fields.
- x. Entering the nuclear age through setting up of a nuclear power plant at Roopur for productive and peaceful use of nuclear technology.
- xi. Modernizing science education syllabi at all levels of education as per present and future national needs.
- xii. Providing strong support for theoretical R&D in sciences like computer science and engineering, physics, chemistry, mathematics and medical science; appropriate balance is to be evolved between theoretical and applied research.
- xiii. Establishment of Hi-tech Park, IT and Bio-technology incubator, IT Village and Software Park, Community e-Centre in suitable locations of the country.
- xiv. Establish unique educational/recreational facilities at different suitable locations of the country such as tilted dome Planetarium/Digital Pavilion for making people science and ICT conscious.
- xv. Compiling of all laws, rules, statutes relating to science and technology, identification of their necessary modifications for help in adaptation to the requirements of the day and also for harmonization with the international conventions, particularly relating to intellectual property, patent of indigenous products and processes as an incentive to the scientists and technologists and the local entrepreneurs.
- xvi. Assessing the need for focusing research on perceived national problems; research in fields of biotechnology and genetic engineering; its application in agriculture, aquaculture, animal husbandry, food processing, health and environment , promotional of technologies for enhanced use of renewable energy (e.g. bio-mass, wind, solar) and new materials.

- xvii. Strengthening regional and sub-regional cooperation with SAARC countries and with other science and ICT organizations for better cooperation and bilateral relations.
- xviii. Research for proper exploitation and exploration of resources of the Bay of Bengal for socio-economic development of the country and encouraging for inclusion of ocean science related subjects in the curriculum of the educational system.
- xix. Providing budget allocation for women involved in science and technology related R&D, higher education and entrepreneurship.

Policy Framework

Formulation of a new National Science and Technology Policy (NSTP) will top the agenda for five year planning. Besides updating of NSTP, there is need for enactment of appropriate laws and acts and modification of existing ones. The issue of knowledge transfer as well as adherence to the Intellectual Property Rights will be given proper attention.

Role of PPP in Development of Science and Technology

For the balanced development of science and technology, steps will be taken to involve the private sector. The role of the public and private would assume new dimensions through the explicit adoption of Public-Private Partnership (PPP) in SFYP. Under the initiatives the public sector would join hands with the local and international private sector to ensure investment for science and technology infrastructure, particularly in power and energy, Public Key Infrastructure (PKI), Hi-tech Park, Software Technology Park, ICT etc. The PPP would be aimed at promoting efficiency of overall investment in science and technology sector incorporating with managerial skills, technical know-how and experts from local and international sectors. Similarly, the local bodies will also be involved in promoting and disseminating technical knowledge for setting up of projects relating to solar energy, bio-fertilizer and IT enabled services.

Institutional Reform

With renewed emphasis on science and technology for national development both in the short to medium term and long term, setting up a system of appropriate institutional mechanism is important to reflect in Sixth Five Year Plan. A task force will be formed for developing appropriate institutional system by first two years of the SFYP. Such institutional system will be led by an apex institution, 'autonomous from but related to' the Ministry responsible for science and technology. This apex institution will replace existing National Council for Science and Technology. This institution will have responsibility to formulating and implementing the new schemes for enhancing research infrastructure and for attracting new generation of students and faculty into research institutions and universities. Appropriate allocation during Sixth Five Year Plan period would be necessary to inject fresh vigor into research system of the country. Institutional reform program will include the following:

- **Appropriate human resource in Ministries dealing with R&D:** Competitive exams for awarding of research and Ph.D. fellowships under the umbrella of research institutes, universities and joint programs with sandwich Ph.D. programs with foreign research establishments will also be introduced.
- **Funding new infrastructure in the University System and in National Institutions:** Flexible mechanisms will be evolved where funding is effected rapidly and installation and operation of equipment follows quickly. The apex institutions will act as creator of facilities and as watch dog to ensure efficient operation.
- **Establishment of higher education commission:** A higher education commission with two components will be set up, consisting of eminent scientists covering all branches, e.g. biological, physical, and mathematical as well as social science disciplines. One component will be related to institutions up to the pre-university level and the other will be related to university level institutions. The Commission will submit its report and recommendations to the Government at an inter-ministerial level meeting chaired by the Prime Minister, to enable inter-ministerial cooperation for effective and rapid implementation of its recommendations. Both components of the commission will work independently, but will however coordinate between each other. This commission will work upon the following issues:
 - To form a small group with invited scientists to monitor and report on the science and technology (including agricultural, health, industrial, engineering and social) development in different countries relevant to our needs;
 - To develop a few priority research programs and projects, which could lead to tangible benefit for the country;
 - To invite industry and research/university scientists to dialogue to assess the needs of industry in establishing linkages, which would reduce industry's dependence on expensive imports of know-how and raw materials;
 - To consider funding of relevant research work undertaken by industry;
 - To work with public university authorities on ways to reduce their dependence on government funds. For example, increasing fees, but providing scholarships to needy students, seeking R&D resources from institutions abroad and private sector as well;
 - To upgrade selected departments in carefully chosen areas of science;
 - To establish University of Engineering and Technology (UET): the UGC will establish 10 UETs of international standards;

- To make the research internationally competitive, quantum of grant support to selected departments will be increased;
- To support to scientific associations.

Human Resource Development for Science and Technology

The following strategies will be adopted in the field of human resources development under Sixth Five Year Plan.

a. **Initiative for recruitment of faculty/ scientists:** Most pressing problem in research institutions is shortage of newly recruited faculty members, as a result, having decline of research profiles. For attracting quality human resources, including those from foreign research institutions following actions will be taken:

- A new attractive recruitment policy will be introduced, which would stipulate ground rules different from those in force for recruitment for administrative positions. The apex science and technology institution with autonomy should be free to develop new schemes in which new recruits to the academic S&T system can be centrally funded and placed in institutions.
- Flexibility in salary support will be built in for attracting appropriate human resources.
- The initial invitation for joining the research institutions will accompany a start-up research grant in order to attract the best scientists to work in Bangladesh.
- Scheme for creating a prestigious Chair in different departments of the university will be adopted, where foreign eminent scientists will be invited to serve for 2-3 years in order to modernize teaching and research.

b. **Plan for bringing Bangladeshi scientists working abroad to lead specific Agenda item:** A database of scientists and technologists of all disciplines will be created with the help of the Bangladesh Embassies and Offices of the High Commission abroad. The Global Network of Bangladeshi biotechnologists is such a website, but limited to scientists of that discipline only. Such a database will be of tremendous benefit to any Ministry in need to prepare a comprehensive plan for attaining certain specific objective.

c. **Incentive mechanism for R&D:** Promotion of university teachers will be only on considerations of combined merit of research and teaching. There should not be any departure from the principle from the selection criteria followed throughout the world over if we want to keep abreast with them in academia. A system of awarding and giving special incentives for the working scientist and technologist will be developed. Government may think of a separate pay-scale and facilities for researcher and scientist like the judiciaries. In this regard linking the remuneration package for the scientists and technologists to their individual productivity and potentiality may be considered.

d. **Increased fellowship and grants:** A scheme will be taken up to convert a large number of public universities in the country into graduate research institutions. This will require allocation of adequate funding, with consequential increase in the number of teaching and mentor staff and physical facilities of the universities. It will also require increase in the amount and number of S&T fellowship/internship/scholarship. Sufficient research funding sources will have to be made available so that the research work is not hindered for lack of equipment.

e. **Improve effectiveness of research grants:** For improving effectiveness of research grants existing grant money for research, result based system of monitoring will be introduced.

f. **Development of research talents:** There will be an arrangement for 4-year prestigious Ph.D. fellowships under sandwich programs and tying these to research themes identified previously and also to the international laboratory links mentioned below. The system of administrative file movement for higher research in universities will be streamlined for quick approval and allocation of funds. Research experience under local conditions must be mandatory for recruitment of the best students as teachers for the university.

g. **Attracting young talents in R&D:** For attracting young talents to research in science and technology, the following programs will be included in the Sixth Five year Plan: (i) An attractive financial reward will be introduced for teachers of Science, Mathematics, English and other related subjects. (ii) Fresh graduates having excellent academic record will be tapped for research and development with adequate incentives. (iii) The apex institution will make online scientific resources free of cost for all members of academia and research institutions.

h. **Inter-institutional linkage program:** Academic research institutions and national laboratories play a major role in scientific research outputs. The university system does not contribute much to scientific research output in a major way. This is largely because of the decline in research activities in the science departments of universities. To enhance scientific activity within university system, a new program to promote inter-institutional linkages will be introduced in Sixth Five Year Plan period.

i. **Building system of awarding scientific invention and innovation:** A prestigious award system will be introduced during Sixth Five Year Plan for various categories of scientific research on annual basis so that scientists are encouraged for conducting quality research and contribute to achieving national agenda.

j. **Policy for international and national collaboration:** Collaboration with the international scientific and technological institutions and organizations needs to be encouraged. The concerned ministry should make sufficient budgetary allocations for their membership and funds to attend their important meetings. A case in point is the membership fee of the International Centre for Genetic Engineering and Biotechnology, Trieste and

funding to attend the meeting of the Board of Governors. Almost every year concerned scientists are to approach the Government for renewal of membership and funds to attend its meeting by the concerned representative of Bangladesh. Developing better relationship with the neighboring and developing countries by sharing scientific methods, ideas, inventions, discoveries and to take initiative to bring and adopt new technologies from the developed nations.

Financing science and technology: It is essential to increase public sector allocation for the advancement of Science and Technology. A target of allocating 2% of GDP will be made in the next five years. The allocation will be clearly marked as the R&D part of total allocation. As in ICDDRB all the senior teachers will be encouraged to apply for research grants from Institutions such as NIH, USDA, WHO, FAO, Ford Foundation, funding bodies from UK, Australia, European Commission etc. so as to supplement their salaries instead of allowing them to be hired by private universities and foreign institutions.

Implementing copyright law: To encourage R&D activities in private sector implementation of copyright law is very important. For proper implementation of this law surveillance should be increased.

Building effective linkage between basic research and technology: New technology is closely related to basic research. Ideas of new technologies are generated by researchers working in basic research and these can spawn new products and processes. For such linkage public-private partnership will be promoted. The Sixth Five Year Plan will include:

Program for technology business incubators: Technology-business incubators will be established, so that the results of basic research can be transformed in to new technology. The incubators will provide support to scientists to start businesses based on technology developed in the lab. This type of technology transfer can be very effective in terms of implementation, particularly for low initial capital start-ups.

Providing incentive for R&D in industries: The Ministry of Finance will provide fiscal incentives to industries for producing products and services through R&D undertaken in Bangladesh or in collaboration with partners abroad. These industries will be encouraged to invite research students working in basic science related to new technology by some incentives. New techniques and methods are most easily transferred in this way.

New infrastructure: Rapid advancement of science in all areas necessitates that research infrastructure be constantly upgraded and added. Creation of specialized laboratories and advanced instrument facilities is essential if Bangladesh's research is to play a role in achieving national aspirations. The proposed apex body will form a committee to identify needs for establishment of new infrastructure and allocate financial resources for their implementation.

Modernization of R&D facilities: The existing facilities in the R&D institutions will be modernized and a research network among the different national organizations will to be set up. The capacity of BANSDOC will be strengthened so that it could become the effective national S&T information centre.

Technology transfer: Under the Sixth Five Year Plan a national centre for technology transfer will be established, which will cater to the need for various industrial segments.

Programs/Projects during Sixth Five Year Plan

In accordance with the strategies mentioned, the indicative work-plan in terms of physical components has been prepared considering the situational context and the specific objectives of the Ministry of Science and ICT and its agencies like Bangladesh Atomic Energy Commission, BCSIR, Bangladesh Computer Council, National Museum of Science and Technology, BANSDOC and Bangabandhu Sheikh Mujibur Rahman Novo theatre, National Institute of Bio-technology (NIB). During the Plan period the thrust areas of the Ministry of Science and Technology (MoSICT) will include:

- i. Establishment of Information Highway
- ii. Establishment of an ICT University in the country on PPP model
- iii. Offering overseas fellowship/scholarship programs for young scientists and technologists, computer programmers, system analysts annually for training at M.Sc./Ph. D level
- iv. Setting up a complete national institute of oceanography to achieve its targets
- v. Setting up an ICT cell within the Ministry to serve as a clearing outfit for acquisition, dissemination and adaption of ICT in Bangladesh
- vi. Establishment of computer labs at educational institutions, Community e-Centre (CeC) and Information Network Village (INVIL)
- vii. Updating laws and statutes relating to science and technology as per global requirements
- viii. Strengthening organizational support for the NCST, ICT and Bio-technology Taskforce
- ix. Upgradation of Bangabandhu Sheikh Mujibur Rahman Novo theatre with large format film and digital exhibits for attracting the young generation towards science and technology
- x. Encouraging science education through establishing the Science Museum and Digital Planetarium/Novo theatre at each Divisional headquarter
- xi. Establishing of a Centre of Excellence for transfer of technology

BCSIR

The main thrust of BCSIR during the SFYP will centre on:

- a. Training for the development of human resources
- b. Modernization of laboratories and institutes
- c. Promoting research on tissue culture, herbal medicine, bio-fuel, fruit-processing, etc.
- d. R&D activities on new and renewable energy, tools and bio-metallic implant
- e. Development of technology for preservation of food, fruits, vegetables and spices for local market as well as for export
- f. Pilot plant study on liquid fuels, re-cycling of bio-wastes, bio-fuels, etc.
- g. Development of molecular techniques
- h. Establishment of food safety laboratory and analytical research institute
- i. Development of energy standard and ISO-17025 accredited instrumentation and calibration laboratories
- j. Setting up regional laboratories at Sylhet, Khulna and Barisal Divisional headquarters
- k. Setting up three mobile laboratories for promoting and dissemination of science and education, and
- l. Support to university research for the development of scientific education.

BAEC

The main areas of activity during SFYP will be (a) expansion of medical diagnostic and therapeutic services using nuclear and other state-of-the art techniques (b) strengthening of non-destructive techniques as a part of quality control (c) strengthening of elemental and analytical techniques (d) expansion of food preservation and sterilization and tissue banking using radiation techniques (e) continuing environmental monitoring (f) development of radiation processing (g) acquisition of capability in electronic instrumentation and maintenance (h) acquisition of nuclear minerals (i) upgradation of Nuclear Safety and Radiation Control Act, 1993 (j) development of human resources for nuclear technology and (k) considering the paucity of indigenous primary energy resources, environmental dimension of fossil fuels, energy security and the need for maintaining a long-term energy-mix, the Rooppur nuclear power project will be implemented in SFYP.

BANSDOC

During the Plan period BANSDOC will concentrate on (a) transforming its library into digital library with the ultimate goal for establishing a virtual inter-library (b) launching inter-library cooperation and sharing at national and international level (c) establishment of new branch of BANSDOC at Divisional level.

The infrastructural facilities of National Museum of Science and Technology (NMST) will be expanded during this period for popularization of science and technology. During the SFYP

period NMST will concentrate on (a) digitalizing of NMST (b) introducing museobus (c) modernization of library (d) collection of 500 new exhibits (d) assist the science club in the country and (e) establishing new science museum at Divisional headquarters.

NIB

National Institute of Bio-technology (NIB) will play a very significant role in the promotion and advancement of bio-technology research in different areas. These include:

- (a) animal bio-technology (b) plant bio-technology (c) fisheries bio-technology (d) environmental bio-technology (e) microbial bio-technology (f) molecular bio-technology (g) medicinal bio-technology (h) food bio-technology (i) bio-informatics;

Specifically following actions will be undertaken:

1. Establishment of bio-technology incubator;
2. Human resources development in bio-technology;
3. Strengthening of NIB. The NIB has the potential to become the coordinating centre for technology transfer and human resource development in new and emerging areas of bio-technology. During the SFYP period NIB will emphasize on increased productivity, augment farm income, and reduce poverty through innovative application of genetic engineering and bio-technology in Bangladesh.

INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

The Vision 2021 adopted by the Government envisages Bangladesh to become a digital nation by 2021. For realizing vision 2021 designing of a comprehensive master plan has been taken up with adequate elaboration of individual components of that master plan. The master plan is being developed on the basis of a framework. The framework is built based on a few important documents: Vision 2021, ICT Policy 2009.

The ICT Policy 2009 identified the objectives of ICT in development. They are: (1) Social equity (2) Productivity (3) Integrity (4) Education and research (5) Employment (6) Strengthening exports (7) Healthcare (8) Universal access (9) Environment, climate and disaster management (10) Support to ICTs. The proposed framework captures the objectives of ICT in development.

At the centre of the proposed framework will be a National Information and Knowledge System (NIKS), which will be designed to provide the platform for developing and delivering services to all citizens in rural and urban areas, particularly emphasizing service delivery to poor and backward communities. In the model for ICT based economic development the role of information has been considered as mission critical and the completion of process of creation of a "universal" national information and knowledge system (NIKS) is the core of all development activities. There are five components of the

ICT based economic development framework which stem from the development of the NIKS. They are:

1. Connecting citizens: Under this component all citizens of the country irrespective of their residence, age, economic condition, race, sex, ethnicity, will have access to ICTs for accessing information and knowledge required to perform their day-to-day activities. Such access to information and knowledge will make the 'digital citizens' able to take informed choice in exercising their rights and entitlements, increase their economic opportunities and protect themselves from exploitation. The "connecting citizens" component will be built around (i) An inclusive information and knowledge system by way of allowing access to an information and knowledge system for all citizens through the various channels of ICTs and access to locally relevant content in Bangla language; (ii) Deployment of specific programs and projects through ICT for employment generation, promotion of agriculture, access to quality health care particularly maternity health care and digital empowerment of women; and (iii) Establishment of two-way channels for promote participation of grassroots in policy discourse and effective feedbacks to the policy makers on particular policy adjustments.

2. Human resource development: The education system will be restructured so that it ensures a higher quality of education which will produce skilled human resources for meeting the demand of domestic knowledge-based economy as well as global demand for quality human resources. The role of ICT in boosting the quality of education will be emphasized and steps will be taken for narrowing the ICT skills between urban and rural people. The human resource development component will have four parts:

- *Building E-learning Infrastructure:* One school one computer lab, smart class room with e-learning facilities
- *ICT in elementary education:* Creating facilities for ICT education for accessing information and knowledge for school children;
- *ICT based higher education:* Mainstreaming ICT in education process for collaborative learning of core courses;
- *Vocational ICT training:* Creation of facilities for youth to learn ICTs for jobs at home and abroad and self-employment.

3. Digital government: Work flow in government and semi-government offices will be fully integrated with ICTs through re-engineering of government's business process. This will bring efficiency in the decision making process as the government can now take informed and timely decisions on various policy matters due to data generation system from grassroots to the national level. Digital government also will also increase transparency government through implementation of "Right to Information" legislation, which also ensures participation of citizens in decision making process using ICT tools. There will be three specific sub-components of "Digital Government":

- *Building sound legal and policy infrastructure of the NIKS:* Creating appropriate dynamic legal and policy system to unleash potential for participation of citizens, private sector, development agencies and government for creating new services;
- *E-Administration:* business process re-engineering for the government agencies for efficient and transparent decision making and accessing, for improvement of transparency of the government
- *E-Citizen Services:* Converting traditional service delivery mechanism into e-service delivery system to bring "service at the door step of citizens".

4. **E-Parliament:** Digital Parliament is one of the important components of vision of 'Digital Bangladesh'. All documents and records of Constituent Assembly of Bangladesh (1972) and the documents since the 1st Bangladesh Parliament will be digitized. With that view a data base can be developed and published in the web site. Ultimate target is to build an e- Parliament – a paperless Parliament where the Members of Parliament can submit their notices electronically and get every response from the Parliament electronically.

5. **E-business:** The general economic and business activities will be carried out through the use of ICT which would enable business to utilize maximum potential with appropriate human capital created through digital education. Businesses irrespective of their size can avail ICT for production and access to market domestically and internationally. Businesses also can transact and make payment off line and online internally and globally.

6. **Institutional and financial framework for Digital Bangladesh agenda:** There are two sub-components of this component:

- Intuitional framework for implementation of digital Bangladesh agenda.
- Resource Allocation and Fiscal measures.
- The Parliament of Bangladesh can have a legislative calendar to ensure maximum utilization of parliamentary session in time.

Review of Past Progress

The National Telecommunications Policy (NTP), 1998 was a first step taken by Government towards developing a clear policy stance in telecom. As a first effort it was largely open-ended and there was inconsistency between some aspects of the policy. There was negligible focus on technological convergence and in many ways the policy statement did not address the key challenges facing the industry, which are reform of BTTB, privatization, and measures to encourage significant amounts of new investment. These changes happened outside of the purview of the policy. The NTP 1998 created confidence among the market players and actual progress exceeded expectations of the stakeholders.

The government decided in June, 1998 to withdraw all import duties and VAT from all computer hardware and software, which fortunately coincided with global reduction of prices of computer hardware. This has brought the prices of computers down to a level affordable by middle income households.

The National ICT Policy was adopted in 2002. The policy was updated in the year 2009. Ministry of Science and Information & Communication Technology (MoSICT) undertook several Programs from Revenue Budget and Projects from Development Budget to foster a sustainable e-Readiness in Bangladesh. These are: (1) TIER 3 Certified National Data Center; (2) Government wide Network Infrastructure under Korean and China Exim Bank Credit; (3) Human Resource Development through establishment of Computer Training Labs at secondary and higher secondary schools and colleges; and (4) Promotion of IT/ITES Industry in the country.

Current Trends in ICT Development

The ICT Policy of Bangladesh aims at building an ICT-driven knowledge-based society. In the light of this policy Bangladesh's ICT sector is growing at a rapid pace, with increased involvement from local and foreign investors. Submarine cable has connected Bangladesh to the global information superhighway. The Bangladesh Association of Software and Information Services (BASIS) estimate the value of ICT industry in Bangladesh at US\$ 150 million, and growing at an estimated 20 percent per year. According to the Bangladesh Computer Samity the number of sector-wise companies has been growing as shown in Table 6.1

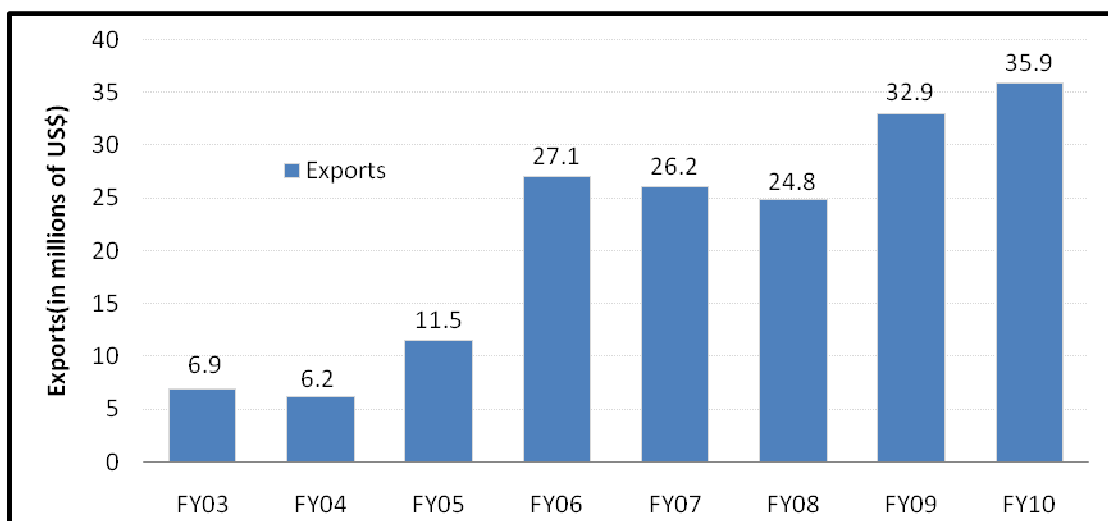
Table 6.1: Growth of ICT Sector-wise companies in Bangladesh

Sector/year	2000	2001	2002	2003	2004	2005	2006
Hardware	1200	1600	1900	1950	2000	2200	2500
Software	100	190	240	275	300	320	350
Internet service provider(ISP)	30	40	80	100	130	140	150
Training and other	100	150	150	140	130	140	150

Source: Industry Profile and Statistics Bangladesh, Bangladesh Computer Samity

Computers are now widely used in offices, businesses, educational institutions, at home and in the field. Besides, a number of cyber cafes are also providing e-mail and browsing facilities in all the major cities of the country. The annual market size for IT including computer hardware, peripherals and software was estimated to be worth approximately US\$ 25 million (Figure 6.3). The market is fast growing at an annual rate of over 25% and is forecast to rise to US\$ 43 million in 2009 (BOI). Software export has seen significant growth over recent years, rising from US\$ 12.6million in 2005 to over US\$ 27 million by 2006.

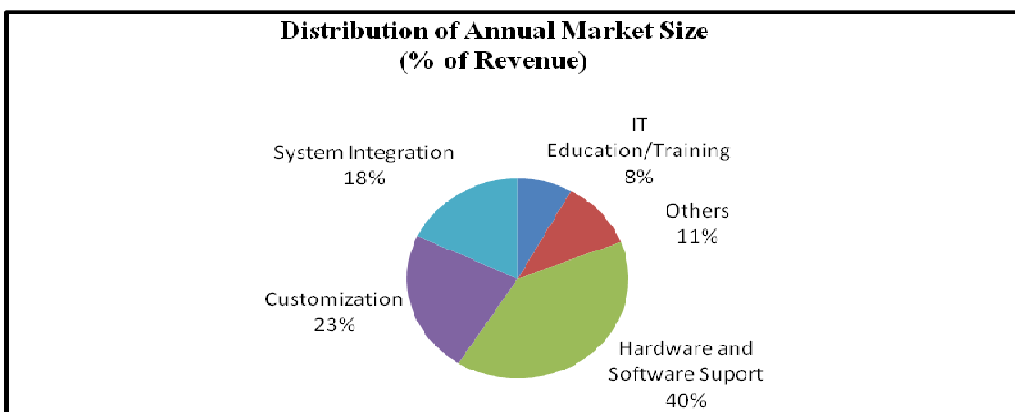
Figure 6.3: Value of Bangladesh Software Exports (US\$ m)



Source: Export Promotion Bureau of Bangladesh

Computer hardware accounts for around 65% of the IT market in Bangladesh while software and IT services account for the rest 35%. The local packaged software market is dominated by multinational companies, with Bangladeshi software companies accounting for 25-30% of the local packaged software market. Software applications comprise more than half the packaged software while systems infrastructure make up 30% and applications development and deployment makes up the balance. Hardware and software support and installation are the largest segment of the IT market, accounting for 40% of revenues. IT education and training account for 8% of the market.

Figure 6.4: Composition of the IT Sector in Bangladesh



Source: Board of Investment

Telecommunications sector in Bangladesh experienced robust growth during the last one decade. While mobile teledensity had been predicted to reach 10 percent by 2010, actual teledensity by end of 2008 stood at 31.21 percent, more than thrice the target. There were 52 million mobile phone subscriptions by the end of 2009. Competition policy and deregulation account for this phenomenal growth in the mobile sector. In contrast, the fixed/PSTN market observed modest growth, with only 1.19 million—PSTN subscribers (17.82 percent) at the end of 2008 slightly up from 1.01 million in June 2006.

A probable reason for the sluggish growth in PSTN may be issuance of too many licenses and uneven competition with mobile telecom industry. All PSTN operators are choking now competing with the mobile phone operators. The fierce competition among the mobile telecom operators led to a nosedive in call rates within the domestic market. Bangladesh offers the lowest mobile phone call rates among South Asian countries.

In contrast to mobile service uptake, Internet adoption was slow, mainly due to the high price of Internet connectivity. However, after Bangladesh got connected to the information super highway via the SEA-ME-WE4 submarine cable, the quality of Internet connectivity improved. Data transfer capacity went up to 14.78 gigabytes per second, 64 times higher than total capacity at the time of installation in May 2006. The bandwidth price was also subsequently reduced by the state-owned Bangladesh Telecommunications Company Limited (former BTTB). However, the reduced rate is still much higher than the price for the same bandwidth in India.

So far, the only submarine cable network is operated by BSCL. In May 2008 the government decided to allow the private sector to install and operate a submarine cable. Following this decision, the government gave license to a private company in 2009 to create a fiber optic network around the country. ISPs have been given telephone licenses to make telecommunication services more affordable.

To increase countrywide internet services via submarine cable, internet bandwidth price has been reduced by 33%. As of 2010, the number of mobile internet users was estimated to be around 5 million. Of this, around 4.5 million access the internet using mobile phone. The government implemented the International Long Distance Telecommunication Services Policy (ILDTSPP) in the second half of 2008. However, illegal Voice over Internet Protocol (VOIP) services continued due to inappropriate pricing policy of internal and local call termination.

E-governance and Digital Content Initiatives

Initiatives to migrate to e-governance: To migrate to e-Governance by 2014, implementation of an IT road map, designed and adopted by the government, initiatives are well underway. The Office of the Controller of Certifying Authority (CCA) began functioning to launch digital signature with an aim to introduce e-commerce by 2012. As a first step to digitalizing the manual file management system, a Digital-based Filing System has been introduced in the establishment ministry and its subordinate offices. The government has

established Community E-centers in 133 Upazilas to ensure easy access of rural population to information technology and thus minimize the digital divide. Measures are being taken to bring 4,409 Union Parishad Bhabans under the optical fiber network. Steps have also been taken to establish one crore land phone connections and convert 8,000 rural post offices in phases into Community Information Centers (CIC) within a short span of time.

As part of the program to introduce compulsory computer and technical education at secondary and primary levels by 2013 and 2021 respectively, steps have been taken to establish computer laboratories in 1,200 educational institutions at Upazila level in seven divisions and in 200 educational institutions in six metropolitan cities. Tax rebates are proposed on any assistance made to schools and colleges under MPO (monthly payment order) for improving computer education. This has been proposed with a view to encouraging Corporate Social Responsibility (CSR) activities in this sector.

Besides, the South Asian Sub-regional Economic Cooperation (SASEC) Information Highway project has been undertaken, to strengthen regional cooperation and establish connectivity between India, Nepal, Bhutan and Bangladesh.

Digital content initiatives: Enhancing relevant digital content has become a major issue as PC penetration and Internet access have increased across the country. Without locally relevant content, ICTs are of no use to people. Content development is now a priority not only of the private sector and civil society organizations but also of government. The content issue has been highlighted in the draft Broadband Policy. Government has recently established *infokosh* (Web Portal) that provides key information on the activities of different ministries/divisions/agencies.

The most noteworthy government initiative is with content both in English and Bangla languages. The website of the Bangladesh Government Press or BG Press is facilitating access to government information. In the mean time 64 district portals have been made operational and construction of 5,000 government websites is under way. BG Press is the single point of publication of all gazettes and documents related to the functioning of the government and state. An earlier digital content initiative by government made government forms more accessible to citizens via the website www.forms.gov.bd. People access the forms through telecentres which charge a minimal fee for downloading and printing the forms.

The downloadable forms include passport application, visa application, citizenship form, pension form, Internet connection (BTCL), birth registration, income tax return, and driving license. The availability of these forms online helps citizen's access government services in less time and costs. The website is bilingual. Those who cannot read can get the forms from telecentres, which are now becoming popular in rural Bangladesh

Use of digital technology: Use of digital technology in educational institutions has been increasing rapidly. SSC and HSC results are now available via mobile and internet and are

also e-mailed to the educational institutions. Using data obtained from the Education Boards, Shahjalal University of Science and Technology, Sylhet, completed its administration registration process via mobile-phone-based applications. In 2009, for the first time, results of medical college exams were available through mobile SMS system.

To make high speed internet more affordable for students of Shahjalal University and Dhaka University, special free Wi-Fi zones have been created. To ensure timely availability of textbooks to students, they have been published online. The science and ICT ministry has not only set up computer labs in 128 schools in 64 districts, but has also appointed IT professionals there.

The country's 800 health centers have been given internet and mobile connectivity. Several telemedicine centers have been built. Along with mobile health services by the private sector, upazila health complexes have started offering similar services. To ensure equal access to technology for all, the government is setting up community e-centers/tele-centers all across the country — there are more than 2,300 of them now. The Registrar of Joint Stock Companies and Firms has digitalized its registration process. Bangladesh Bank started an automated clearing-house on a trial basis since November 2009.

Initiatives from the Non-government Sector

Apart from government initiative, a number of initiatives have been taken in the non-government sector. D.Net was the pioneer in development of digital content in Bangla language. In 2003 D.Net started research on content development targeting the rural poor. Since then, a huge content base in Bangla has been developed. D.Net initially focused on the CD-ROM version of the content since Internet connectivity was not available in the rural areas at that time. But with the availability of access to the Internet through EDGE or GPRS from almost anywhere in Bangladesh, the Web version is available. The second largest Bangla website is dedicated to human rights issues and provides legal practitioners with access to the full text of laws, explanation of laws, addresses of legal redress institutions and the like. Local digital livelihood content generation by NGOs gained further momentum in 2007. Bangla Wikipedia (bn.wikipedia.com) is also getting richer with participation of large number of volunteers.

Besides, “Digital festivals” and “IT festivals” have been held in various parts of the country to familiarize the people with ICT use. Even a remote place like Bagerhat organized a knowledge festival. BCS, BASIS and Bangladesh Open Source Network took active part in these festivals, which have increased people's interest towards computers.

Role of ICT in Creating Equitable Job Opportunities

Access to ICTs is just a first step towards creating equitable opportunities for citizens. It has two distinct elements: communication infrastructure including high speed broadband, and, physical access points. In a country where 38% of the population lives below the poverty line, personalized access to ICTs for all citizens is a remote possibility in the near future. Community-based public access to ICTs is can be an interim solution for providing access to ICTs for all. However, as the proportion of population with mobile handset is increasing, services should be designed also for accessing ICT through mobile phones.

In Bangladesh, private sector and non-government agencies have been leading in enabling public access to ICTs through telecentres of various varieties and brands. The number of such telecentres is above 2,500. The government has also started establishment of telecentres in local government offices and other relevant institutions.

Services through ICT channels are very helpful in gaining employment opportunities. The private sector is offering ample services in this regard. An example is bdjobs.com, which was established in 2001 and which now has a monthly page view volume of 8,00,000 and 14,000 daily visitors. According to their records, over 2,500 employers in Bangladesh have recruited more than 35,000 professionals at different levels through the bdjobs.com service.

ICT in Access to Health Care Facilities

A number of help lines are now offering consultation and counseling on various issues. Grameen Phone's 789 and Bangla Link's 789 for health and Bangla Link's 7676 for agriculture offer consultation with experts. D.Net's *Teletathya* is the oldest helpline in the country leveraging mobile phone penetration since 2004. This helpline offers counseling on agriculture, health, education, human rights and information government services. It also offers directory services. BIID offers networking among farmers through its '*e-krishok*' initiative. The most significant e-health initiative till date is the *Amader Gram* Breast Cancer Initiative, which offers free of cost diagnosis and treatment of breast cancer for women.

Role of ICT in Education, E-learning and Human Resource Development

ICT has the potential to improve the quality of learning, expand access to learning opportunities and increase the efficiency of the administrative process. Through use of computer, the learning process shifts from learning-by-telling to learning-by-doing. However, for this to happen, extensive teacher training in the new technology is also necessary. Teachers may be equipped with learning aids for enhancing their skills and using them in the class room for enhancing learning experience of the students.

In Bangladesh, lack of local educational content is a barrier to increased use of ICT in schools. To address this gap, the Institute of Education and Development at BRAC University, in collaboration with Foundation of Education Research and Education (FERI) and D.Net, a Bangladeshi research institution promoting ICT 4 development, developed interactive digital content for Grades 6-10 students of Science and Mathematics.

Training in ICT vs. job availability: ICT education in Bangladesh is generally concentrated at the tertiary level. Although there is an optional course on computers in the secondary schools, the course curriculum is outdated and there is little opportunity for hands-on practice. Skilled human resources are currently in high demand but short in supply.

It has been observed that graduating ICT students are unable to find employment. There is a great gap between the academic and professional sectors. The ICT topics taught widely do not always match the needs and priorities of the private sector. Students learn the requisite theoretical and technical skills but do not know where to apply them: career counseling and formal contact with the private sector is non-existent or too general to be of any benefit to ICT students. Education in the ICT field is seen as formal and theoretical and as a result it does not convey the real picture of the private sector.

Constraints to ICT-related activity

Lack of capacity building: There is a great lack of capacity building. The teachers of colleges under National University as well as the new universities of science and technology are not sufficiently trained to adopt current changes in science and technology. The in-house and overseas training facilities are not adequate for the scientists working in the field of cutting edge technology.

Limited access to scientific sources: Research institutions and universities in general do not have access to high speed internet connectivity. Thus access to scientific resources is limited. Most often there is no budgetary provision for subscription of scientific online resources.

Electricity and power instability: Availability of continuous power is the biggest logjam in physical infrastructure. Power generation capacity in Bangladesh is still among the lowest in the world. Frequent power failure and low voltage stand as a big hurdle for software companies in Bangladesh. Domestic and international companies are working to find solutions such as low-power ICT equipment.

Lack of coordination among ministries: Implementation of National ICT Policy 2009 is being carried out by a number of Government entities but there is low level of coordination amongst them. This acts as impediment towards timely completion of these activities.

Currently as per the rules of business of the government, the responsibilities for ICT activities are fragmented across three ministries: Ministry of Post and Telecommunications (MoPT), Ministry of Science and Information & Communication Technology (MoSICT) and Ministry of Information (MoI). MoPT is responsible for telecommunication infrastructure; MoSICT through its ICT Division (ICTD) is responsible for e-Government and IT/ITES business promotion while MoI is responsible for Broadcasting. ICTD conducts its activities through its 3 organizations: Bangladesh Computer Council (BCC), Office of the Controller of the Certifying Authority and High Tech Park Authority. The country's lone ICT Incubator is operating at Karwan Bazar and the 12 storied building Janata Tower is now being renovated to

establish the IT/ITES Technology Park in Karwan Bazar. The ICT Division through High Tech Park Authority is in the process of appointing Park Operator for the Kaliakoir High Tech Park and has also initiated the process of acquiring lands outside Dhaka for the establishment of IT/ITES Technology Parks.

Various e-governance implementations are now being implemented by Access to Information Program (A2I) under Prime Minister's Office and Bangladesh Computer Council (BCC) under ICT Division.

Though lack of coordination among various agencies in implementation of ICT project is one of the challenges but the situation is improving. Ministry of Local Government and Rural Development, Bangladesh Computer Council and A2I Program have successfully implemented 4501 Union Information Service Centers and more collaboration at various levels is taking place.

Vision, Objectives, targets and Strategies for ICT in the Sixth Plan

The vision of the government is to make Bangladesh the most preferred destination for ICT and ICT- enabled services through the combined efforts of all stakeholders in both the public and private sectors.

The objective during the Sixth Five Year Plan will be to make an effective and maximum utilization of ICT to improve the quality of life of the citizens and promote inclusive growth through human resource development, so that Bangladesh can find its proper place in the community of nations.

Targets

The major Targets of the ICT sector in the Sixth Five Year Plan will be broadly as follows:

1. Expansion of infrastructure facilities for development of ICT sector for transforming the country into Digital Bangladesh.
2. Development of ICT skills in public and private sectors for ensuring productivity and efficiency of the economy and using ICT for good governance.
3. Ensure women participation in all professional trainings.
4. Development of national network for establishing connectivity in all government offices and public key infrastructure for electronic transactions.
5. Encouragement of IT enabled services and establishment of ICT incubator, Software Technology Park and IT Village in suitable locations of the country.

Main Elements of ICT Strategy

The main strategic elements for the development of the ICT sector in the Sixth Plan are presented below.

Development of a comprehensive master plan: The Sixth Five Year Plan will be designed as a part of a Master Plan developed for an 11 years period (FY 2010 - FY 2021). The Master Plan will be developed on the basis of existing works done by the ICT stakeholders in the country. The ICT Policy 2009 will be taken as a starting point for the development of the Master Plan. Huge energy was given in developing the revised ICT policy by stakeholders from all four segments of Digital Bangladesh concept. It captures works and recommendations from people of all walks of life during last 20 years. The Master Plan will be designed in a way so that the plan is incorporated in five-year planning process and annual national budget preparation process. The National ICT Task Force will be involved in the process of development of the Master Plan.

Framing of a universal access policy: The country does not have universal access policy. Public access to ICTs created fully on commercial basis denies access to citizens who are unable to pay for services. A hybrid model proved to be better for creating balance between crucial information services, which are less attractive in terms of income generation, and services which may generate income by serving better off part of a community. Income earning potential varies, and there is high correlation between income potential and severity of poverty in a particular location. High speed Internet connectivity can change the whole scenario of access to education, health care and government services. Thus, one of the priority agenda for the government will be creation of Internet infrastructure and make the bandwidth free for rural population at least for the whole period Sixth Five Year Plan. The free bandwidth may be for maximum 512 kbps, which is adequate for accessing rich content.

Developing legal and regulatory environment for ICT development: There is a need for formulation of universal access policy and broadband policy for ensuring equity in ICT-based growth and development. To implement this policy, details of the relevant rules such as the Patent Law, Secrecy Act, Consumer Protection Act, Trade Mark Act, Foreign Exchange Regulation Act and Income Tax Act should be taken into consideration so that there is no infringement of rights or violation of existing rules in implementation of the ICT Policy.

Ensuring access to Government information: Information is the currency of democracy. Government agencies are among the most prolific collectors and generators of information that is useful and valuable to citizens and business. Improvement of the nation's information infrastructure provides an opportunity for the citizens to be updated about the measures taken by the government in different sectors of the economy as well as government policy stance on important issues. It also alerts them about their duties as responsible citizens of the country. Thus improvement in the collection, compilation and easy dissemination of government information will be a target of the Plan

Promotion of e-commerce and automation of financial sector: The financial sector in Bangladesh has made rapid progress in adopting new technology for better and prompts service. Various ICT-based services like ATM, POS internet banking, etc. are in use. Absence of system of e-payment in Bangladesh is holding back the potential of e-business and e-commerce. However, unmonitored use of such a system can give rise to corruption. Therefore, identifying ways and means of promoting e-commerce, while protecting the national interest, will be a focus during the SFYP.

Establishing E-citizen services: Both government and non-government institutions offer online services, which range from information services to e-commerce. The government's SICT program initiated and in some cases completed over 40 e-governance projects of varying sizes across many government agencies. Expansion of e-citizen service with facility for women and disabled and increase its accessibility to rural and under-served areas of the country will be a target of the Plan.

Enabling E-participation in decision making: ICT creates opportunity for improving transparency as well as for participation of people in decision making process. Web 2.0 tools in local language have become a powerful tool for inclusive policy making by creating a two-way channel. Bangladeshi citizens are very active in various global online platforms and exchange ideas and promoting democratic practices. On national level, the government can obtain public opinion on vital issues through public opinion polls which are prevalent in developing countries. Encouraging E-participation in matters of public interest will be a target for ICT in the Sixth Five Year Plan.

Developing curriculum-based computer labs for educational institutions: The government has established 1800 state-of-the-art computer labs in 128 educational institutions. The Ministry of Science and ICT is planning to establish more 1200 computer labs in various educational institutions. However, for sustainability of ICT education curriculum-based computer labs will be established during the sixth Five Year Plan. The opportunity of teaching mainstream subjects will also be explored. Steps will be taken to introduce multimedia teaching system. Teachers will be trained for developing course contents for multimedia presentation.

Expanding digital content in Government websites: As part of the government's overall policy of increasing transparency, expanding digital content will be a target of the government in the Plan. The launching of the Bangladesh Government (BG) Press in February 2008 was an important event in the history of facilitating access to government information. BG Press is the single point of publication of all gazettes and documents related to the functioning of the government and the state. Initially, the website will publish gazettes released in 2008 and 2007. An earlier digital content initiative made government forms more accessible to citizens via the Web service. Many people access and download the forms through telecentres for a minimal fee. It may be mentioned here that some private and foreign as well as donor

organizations are involved in developing digital content. The opportunities for expansion of their activities will be explored.

Attracting local investment and FDI in ICT sector through PPP initiative: The vast scope for expansion of ICT sector in Bangladesh is evident from its international ranking in terms of teledensity and outreach. Existing incentives including fiscal and financial incentives will be advertised more vigorously for attracting local investment and FDI in ICT through the PPP initiative.

Specific Policies and Actions during the Sixth Plan

The main policies and actions to be taken for achieving the ICT targets in SFYP will be as follows:

- i. Increasing public sector allocation for the advancement of ICT in Bangladesh.
- ii. Developing ICT infrastructure facilities and expansion of connectivity even to the remote places of Bangladesh.
- iii. Transforming traditional file-based administrative work in the public sector into e-government/digital government for better and efficient services to the people.
- iv. Expanding education in ICT to cover at least 80 percent of enrolment at secondary and higher secondary levels and 60 percent at graduate levels.
- v. Training would be women friendly and less expensive.
- vi. Training of ICT personnel in selected fields at post graduate levels on a massive scale.
- vii. Effectively linking entrepreneurs within the country with the available ICT both at home and abroad through a national network.
- viii. Exposing the country as a whole to the process of change and progress at the frontiers of production, development, knowledge and the market through ICT.
- ix. Establishment of IT incubator, software park, IT village and community e-centre at suitable locations of the country.
- x. Assessing the need for focusing research in computer software development in the public and private sectors.

Institutional Reforms for Facilitating the Expansion of ICT

Creation of a "Digital Bangladesh Secretariat" under the Prime Minister's Office:

During the tenure of Awami League Government (1996-2001) a National ICT Taskforce was formed to accelerate development in the ICT area. Although task force was not abolished during the tenure of subsequent governments, the Taskforce remained under utilized. The government has reconstituted the ICT Taskforce as Digital Bangladesh Taskforce. To facilitate the activities of the Digital Bangladesh e-governance cell at PMO may be upgraded to Digital

Bangladesh Secretariat (DBS) to minimize inter agency/organizational conflict. The DBS will ensure regular and timely meetings of the Taskforce and the executive committee of the meeting and conflict resolution between various entities implementing e-government. The Bangladesh Computer Council may be strengthened and empowered with skilled and trained manpower to support the establishment of digital Bangladesh.

Single Point for ICT Infrastructure

A strong Ministry of ICT will be the first step towards institutional reform. This Ministry will be the key entity for supporting the master plan through ensuring robust ICT infrastructure. The formation of a strong ICT Ministry may take place in the following manner:

- a) Since information and Communication Technology encompasses the activities of MoPT, ICT Division under MoSICT and part of MoI. These activities which are part of ICT may be put together under Ministry of ICT. Since this convergence may take time the activities of MoPT and ICT Division can be strengthened to promote ICT in the society.
- b) S&T Division under MoSICT may be encouraged to promote Science & Technology in the society to nurture entrepreneurship in the society. The S&T Division should be strengthened to expedite implementation of nuclear power plant and promote development of local technologies.
- c) Reconstitution of Ministry of Information after transferring Broadcasting to Ministry of ICT to manage the information content in the media to portray positive image of Bangladesh. This may lead to increased foreign investments.
- d) Placing BTRC, BCC, High Tech Park Authority and Office of the Controller of Certifying Authority under reconstituted Ministry of ICT.

Coordination of e-Government activities

The e-Governance cell on upgrade to Digital Bangladesh Secretariat will provide secretarial service to the Digital Bangladesh Task Force. It will liaise with the MoPT, ICT Division under MoSICT and MoI to compile e-government and ICT related national indicators. The ICT focal points in each ministries/Divisions will coordinate the activities of Digital Bangladesh. The automation of all ministries/divisions/agencies will be focused on improved service delivery.

e-Citizen centric activities under DBS: DBS will promote e-Citizen centric activities by all ministries/divisions/agencies. The ICT Focal points may be utilized to disseminate the idea of e-Citizen to provide service to all. The reduction of digital divide will also be tackled under this activity.

Promotion of ICT based education: DBS will promote ICT based education in all public and private educational institution. To achieve the targets set in MDG the DBS will assist in institutional capacity building to mainstream ICT in the education.

Single window for ICT business coordination: High Tech Park Authority will provide single window service to all investors in the ICT sector. The service through single window will be comparable to other countries in the region to promote ICT based industry in the country.

Introducing financial rewards for promoting S&T and ICT: To promote young talents in Science & Technology and ICT the government may explore avenues for granting financial awards to students for exemplary achievements.

Promoting R&D in ICT: Scientific institutes are often unable to mobilize sufficient long-term resources for R&D. In many cases there is hardly any R&D agenda. To overcome this hurdle, the SFYP will ensure that the approved R&D strategy is adequately funded.

Establishment of technology-business Incubators: Technology-business incubators will be established so that the results of basic research can be transformed into new technology. These industries will be encouraged to invite research students working in basic science in the related field with the objective of promoting technology transfer.

The University Resources Centre (URC) and Bangladesh Education and Research Network (BdREN) were established for better coordination and cooperation between the Universities and the University Grants Commission of Bangladesh. This has paved the way for our students, teachers, officers and researchers to enter into the world-wide information technology network. University Grants Commission (UGC) can play a very important role in building up an online library or a portal to have access to the world class journals for research purposes. These journals usually are very expensive for subscription and sometimes it is not possible for a single university to become its member. As Bangladesh is lagging behind in the field of research and the universities generally do not share their research topics or outcomes with others, lack of knowledge sharing is a common problem.

BERNET can act as a centrally controlling body for the knowledge sharing activities of the universities. It can negotiate with the universities for information sharing so that other researchers can take advantage of available information rather than starting from scratch. In the private sector, the Bangladesh Computer Society (BCS) and Bangladesh Association for Software and Information Services (BASIS) play important roles in promoting the ICT industry. The ISP Association, Bangladesh, also facilitates the growth of ICT in the country. Both BCS and BASIS organize annual exposition of software and applications and hardware.

STRENGTHENING THE SUPPLY SIDE OF ICT

Ministry of Post and Telecommunications (MoPT)

The Ministry of Post and Telecommunications (MOPT) is responsible for facilitating the growth of telecommunication needs and introduction of new technologies. The MoPT plays an important role in the development of ICT services in Bangladesh through enhanced

accessibility to telecom and postal services. It gives special focus to extend telecom and internet services to rural areas of Bangladesh with the aim of fulfilling the “Vision 2021” of the Government of extending telecommunications up to the village level and also bring all Upazilas under internet connection. The departments and agencies of the MOPT are:

1. Bangladesh Telecommunications Company Ltd. (Former BTTB has been divided into BTCL and BSCCL)
2. Bangladesh Submarine Cable Company Ltd. (BSCCL)
3. Bangladesh Post Office (BPO)
4. Teletalk Bangladesh Ltd.
5. Telephone Shilpa Sangstha (TSS)
6. Bangladesh Cable Shilpa Limited (BCSL)
7. Bangladesh Telecommunication Regulatory Commission (BTRC).

The Ministry of Posts & Telecommunications is trying to facilitate the ICT sector during last few years. But the adoption of ICT is very limited in all the sectors. The adoption of ICT policy (2009) and some success in the ICT sector are the success in this sector. Lack of awareness of the benefit of ICT use insufficient telecommunication infrastructure, low density of internet connectivity, expensive internet access, absence of adequate legal and regulatory frameworks and lack of know-how about ICT among public officials are the reasons of the slow flourishing of ICT use.

Objectives and Targets of Tele-Communication during SFYP: One of the prerequisites for accelerated economic growth of Bangladesh in a competitive environment is the availability of adequate telecommunication services for quick acquisition and dissemination of information, both inside and outside the country. The government, in its election manifesto, has set year 2021 within which a Digital Bangladesh will be built. The sixth FYP will also target to fulfil the millennium development goals in the field of ICTs.

The major objectives of the Sixth Plan for the telecommunication will be to:

- Ensure universal access opportunity to the mass people through harmonious development of networks and exchanges throughout the country.
- Build a well-developed, strong and reliable telecommunication infrastructure for effective implementation of ICT Policy, Broadband Policy and ultimately for complementing Vision 2021.
- Ensure optimum utilization of resources specially expert, trained and untrained manpower.
- Reduce digital divide between ‘have’ and ‘have not’, urban and rural areas etc.
- Ensure optimum output from investments by coordinating all services provided by the systems and networks.
- Provide cost-effective telecom services to the people.

- Produce low cost Laptops to popularize e-learning particularly for the students.

Targets and Milestones

- Bring all Upazilas and important growth centres under optical fibre network to provide modern telecom facilities.
- Extend High Speed Internet services up to rural areas through Next Generation Network (NGN)/ WiMax Technology.
- Construction of modern Data Centres at the important cities to support IT enabled service providers.
- Provide Triple Play (Voice, Video & Data) service through a single converged network.
- Establish a modern Billing Centre for improving quality of revenue management service.

Strategies

- Coordinating among old systems and new latest systems to be built/ installed for effective utilization of the investments.
- Develop business by commercializing, re-building and focusing on customer needs throughout the country.
- Reduce operational expenditure (OPEX) through adoption of appropriate and cost-effective technology.
- Upgrading professional training in ICT and modern technology.

Constraints

- Subsidized operation in rural areas
- Lack of capital investment
- Lack of skilled manpower oriented in the latest technology.
- Non-availability of uninterrupted commercial power
- Unexpected Delay in project implementation
- Absence of Universal Service Obligation (USO) fund.
- Rapid technological development in telecom sector and problem of matching with these changes.
- Low level of salary in comparison with private sector.
- Lack of marketing approach

The submarine cable network is to be the main infrastructure for “Digital Bangladesh” as planned to be achieved by the year 2021. Bangladesh Submarine Cable Company (BSCCL) is providing submarine cable Bandwidth through SEA-ME-WE-4 cable system and contributing to the revenue earning of the Government of Bangladesh.

Bangladesh Post Office

Development Targets for SFYP: The development targets of BPO for the SFYP are shown below:

- Procure and distribute at least one vehicle per mail line in order to expedite the mail collection, transmission and delivery system throughout the country by 2013.
- Render all the departmental post office buildings secure for complete protection of government properties by 2013.
- Give training to all officers and staff of Bangladesh Post Office in order to render them capable of performing their duties in an IT-enabled work environment along with imparting them other essential skill building training and implementing other Human Resources Development Techniques by 2013.
- Bring 461 post offices under automation by 2013.
- Bring 304 post offices under automation by 2015.
- Convert 2220 rural post offices into Post e-center by 2013.
- Convert 1480 rural post offices into Post e-center by 2015.
- Completion of construction of 1776 rural post offices by 2013.
- Completion of construction of 1200 rural post offices by 2015.
- Completion of construction/reconstruction/extension of 420 Head Post Offices/ Sub Post Offices / Upazila Post Offices/Mail & Sorting Offices by 2013.
- Completion of construction/reconstruction/extension of 280 Head Post Offices/ Sub Post Offices / Upazila Post Offices/Mail & Sorting Offices by 2013.
- Expansion, Remodeling & Renovation of Dhaka GPO for Maximum Customer Satisfaction by 2012.
- Construction of Postal Directorate (Dak Bhaban) at Sher-e- Bangla Nagar, Dhaka by 2015.

Development Strategies for Meeting Targets: To meet the targets, BPO has spelled out a number of strategies, the main ones being: providing institutional autonomy and financial flexibility to operate a business; harmonize the domestic and international postal networks; incorporate modern technologies to provide customer responsive products and services and improve and expand postal services to under-served areas and help alleviate poverty and rural isolation. Additionally, the post offices throughout the country will be converted into development and outreach centers to serve the special needs of the poor for information technology and banking services (Box 6.1).

Box 6.1. Converting Post Offices into Development Centers

About 1500 Post offices in Bangladesh has been modernized as ‘call-centers and information centers’ to provide Information-Communication-Technology and financial services in addition to their traditional services.

During the SFYP the special programs will be undertaken to transform country’s post offices into ‘call-centers and information centers’ to provide following services: (i) quasi-banking services which may include deposit, and remittance of foreign funds; (ii) distribution of funds under the various ‘social safety net’ programs operated by the government; and (iii) access to information and technology using the internet and web facilities.

STRATEGY FOR KNOWLEDGE DISSEMINATION

Knowledge generation is useful only to the extent that this knowledge is made available to the citizens in a low-cost and timely manner. Telecommunications is critical for this. At the same the print and digit media have very important roles. Steady progress has been made in deregulating the television activities, although the Bangladesh Betar is still a public monopoly. Similarly, progress has been made in promoting a very active print media. Today, the media (print and digital) has become a major player in promoting good governance and economic development through timely processing of good knowledge and information and making it widely available.

This strategy will continue and strengthened in the Sixth Plan. The Government through the Ministry of Information will facilitate the growth of knowledge dissemination activities and ensure the freedom of information consistent with protection of public interest. Bangladesh Television and Bangladesh Betar will be encouraged and strengthened to provide best possible knowledge and objective information through technical upgrading, better management and better staff quality.

RESOURCE ALLOCATION FOR KNOWLEDGE MANAGEMENT IN THE SIXTH PLAN

The Government puts high priority to strengthening knowledge management activities in Bangladesh. The resource requirements are large. Given the overall resource constraints, a significant part of the financing will come from private sector in terms of investment in technology and related service facilities. However, the Government will take the lead role in areas relating to scientific education, research and development as well as in key support services including knowledge planning, prudential regulations, core technology related infrastructure and support institutions. The Sixth Plan knowledge strategy is built around this strategic partnership between public and private sector institutions. A part of the funding will also come from the resources mobilized by service agencies including BTCL and the Postal Authority.

Based on these strategic considerations, the planned development allocations for the Sixth Plan period in current and constant prices are shown in Tables 6.2 and 6.3.

Table 6.2: Development Resource Allocations for Knowledge Economy in the Sixth Plan
(crore taka; current price)

Ministry	FY2011	FY2012	FY2013	FY2014	FY2015
Science and ICT	170	212	243	289	330
Ministry of Posts and Telecommunications	105	115	132	157	182
Ministry of Information	160	192	220	259	295
Total	434	519	595	705	807

Table 6.3: Development Resource Allocations for Knowledge Economy in the Sixth Plan
(crore taka; FY 2011 price)

Ministry	FY2011	FY2012	FY2013	FY2014	FY2015
Science and ICT	170	197	211	236	254
Ministry of Posts and Telecommunications	105	107	115	128	140
Ministry of Information	160	178	191	211	227
Total	434	483	517	575	621

ANNEX
Anne6.1x : Targets and Strategies: Connecting Citizens

Item #	Description	Timeline	Accountable Agency/(ies)
<i>1. Building an inclusive information and knowledge system: To ensure that by 2011, all Bangladeshis have access within their community to ICT</i>			
1.1.	Building a national partnership to establish an inclusive system of information and knowledge for all citizens through telecentres and other forms of public access, with special emphasis on marginalized groups and disability, which will be delivered using a rich combination of different business models, including <ul style="list-style-type: none"> - Entrepreneur / Value adding sector - Voluntary sector - Schools computer labs opened up to the community out of school hours - Government infrastructure (e.g., many post offices having been enhanced as e-post/ Cyber Post/e-service hub for government/public service (e.g. direct foreign remittance, money transfer, bill payment), local government institutions have big establishments, public libraries are underutilized) - Through creation of information access through mobile telephone and community radio All the venues will be accessible to all citizens		
1.2	Deployment of low cost broadband Internet connectivity across the country for offering e-learning, e-health and e-government services to the citizens.	2nd year	Pub-private Partnership
1.3	Launch Citizens Helpdesk in public organizations. The host is not mandated to be physically located at the relevant public organization. Telecom operators will have to provide low-toll/toll-free numbers for these call centers.	2nd year	Relevant government agencies
1.4	Expand the voter ID to National ID platform to be used for all citizens' services such as birth registration, passport, bank account, school enrollment, healthcare, vaccination, VGF/VGD and other social safety net programs.	3rd year	Cabinet
1.5	Deployment of Electronic Public Grants (safety net benefits) Delivery System	2nd year	Multiple agencies

1.6	Launching of a development TV Channel	3rd year	Public-private partnership
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2. ICT for Equity			
2.1.	Launching of multi-year localization program which includes research on Bangla language computing and Bangla content development	1st year	Public-private partnership
2.2.	Launching of a program and system of protection of children from harmful content	1st year	Ministry of Home Affairs
2.3.	Deployment of public key custodian for ensuring network security. This is related to encryption standard and security related laws.	1st year	MoSICT, BTRC
2.4.	Deployment of system for protection of information, data and program from hacking, fraud and damage and introducing/spreading computer viruses	2nd year	Ministry of Home Affairs

2.5.	Deployment of a robust, country-wide system of market information with daily price update of all markets in the country	Gradually over the five years	Ministry of Food and Disaster Management, MOA
2.6	Program of digitization of land record	Gradually over the five years	Ministry of Land
2.7	Launching of Employment generation scheme for rural youth: info-lady, telecentre workers, BPO	Gradually over the five years	Public-private Partnership
3. E-Participation			
3.1.	Deployment of a system of public grievances and reprisal and publication of results of those grievances through electronic means	2nd year	Public-private partnership

Human Resource Development

Item #	Description	Timeline	Accountable Agency (ies)
4. Building E-learning Infrastructure: One school one computer lab, smart class room with e-learning facilities			
4.1.	Launching of program for ICT education in each secondary school which includes establishment of multimedia classroom, computer lab, teachers, training, technical support system, up-to-date curriculum, Community access for income generation	Over five Years	MOE, MOSICT, Public-private Partnership
	Launching of program of e-learning which includes providing free broadband access to each school	2nd year	MOE
	Installation of computers, LAN, reliable high-speed Internet connectivity for tertiary educational institutions	1st year	UGC
5. ICT Education			
	Redesigning of the ICT literacy curriculum for secondary and higher secondary syllabus at regular intervals based on the needs of an inclusive and cost-effective knowledge society.	1st year	NCTB
	Initiate ICT Professional Skill Assessment and Enhancement Program (IPSAEP)	1st year	MOE, UGC
	Develop labor market information system to assess domestic and global labor demands for education planning m	1st year	MoP, MoE
	Periodic ranking of IT programs of private and public universities by a competent body (including academia and industry) approved by UGC	1st year	UGC
	Introduce and allocate fund for industry-ready applied research projects with mandatory industry & academia collaboration using government grant facilities	1st year	MoE
	Ensuring ICT literacy evaluation as part of Public Service entrance exams	1st year	PSC
	Launching program to convert all libraries into digital library	3rd year	MOC
	Organizing regular national, regional, and International conferences.	2nd year	MOE, MoSICT
6. ICT-based Education			
	Introducing ECDP for all poor rural children in regular and community schools for at least six months using multimedia Tools	2nd year	MOE

	Launching program of ICT-based learning: Install computers, LAN, reliable Internet connectivity with reasonable speed and multimedia teacher training content for all Secondary Teachers' Training Colleges; with a special focus on Mathematics, Science and English	1st year	MoE
	Launching program of ICT-based learning: Install computers, LAN, reliable Internet connectivity with reasonable speed and multimedia teacher training content for all Primary Teachers' Training Institutes, like PTIs, URCs and NAPE	3rd year	MoPE
	Launching program of ICT-based learning: Establish smart class room with flat screen large television and laptop for supplementing learning in the class room with appropriate multimedia content	Over five years	MoE
	Organizing regular national (including at grassroots level), regional, and international competitions on ICT related topics and support participation of national teams in international events.	2nd year	MoE
	Creating central repository for e- Learning content for teacher training and for all students. Provide Incentives for e-Learning content development.	2nd year	MoE
7. Vocational ICT Training			
	Install computers, LAN, reliable Internet connectivity with reasonable speed and multimedia educational content for TVET institutions	2nd year	MTVEB
	Introduction of national certification examinations for different levels of ICT personnel/ professionals	2nd year	Multiple Agencies
	Establishment of a central body for streamlining syllabus, evaluating eligibility of training instructors and for ranking of ICT training institutions	2nd year	MoE
	Introduction of loan facilities for procurement of ICT equipment for government officials, students, teachers and working people	1st year	MOF

Digital Government

Item #	Description	Timeline	Accountable Agency (ies)
8. e-Administration			
8.1.	Digitally publish all govt. publications in Bangla using a standard encoding to guarantee document portability	1st year	All government agencies
8.2.	Mandate all public information to be made accessible through appropriate electronic means including SMS and other channels.	From 1 st year over 5 years	All government agencies
8.3.	Launching of online-data sharing and decision making system	3rd year	All government agencies
8.4.	Creating a national network for the government to connect the public organizations.	2nd year	All government agencies
8.5.	Establishing necessary policy framework and introduce IP telephony and video conferencing services in critical government offices.	1st year	All government agencies
8.6.	Establishing National Data Resource Centre to control and manage the public network and act as a system of national databases to store and supply national data	4th year	All government agencies, BBS, PPP

8.7.	Adding a 50-mark examination (to the current 300- mark examination) for applied computer and Internet literacy for senior scale promotion examinations for cadre services.	2nd year	MoEst
8.8.	Stopping new steno typist recruitment in the Government offices. Converting all existing steno typists into data entry operators through proper training.	1st year	All government agencies
8.9.	Redesigning ICT and e-Governance curriculum of government training academies with a distinct focus on change management and process re-engineering.	2nd year	MoEst, Cabinet, BPATC, PSC
8.10.	Deployment of computer-based project planning and resource allocation system	2nd year	MoP, MoF
8.11.	Launch ICT Technical Clusters to cover all public sector organizations to be run by ICT professionals. Create ICT posts for this Cell. All ICT posts in the public sector should be declared technical posts. Create an ICT cadre in the long term	2nd year	MoEst, Cabinet
9. e-Citizen Services			
9.1	Develop national web portal as a “one-stop shop” for delivering e-citizen services	From 1 st year over 5 years	All government agencies
9.2.	Enable payment of utility bills through mobile phones, banks, ATMs or other service centers from any location and at any time of the day	From 1st year over two years	All relevant government agencies, PPP
9.3.	Enable online status check of court cases	2nd year	MOL&PA, PPP
9.4.	Enable electronic filing of GD and FIR	2nd year	MoHA, PPP
9.5	Introduce service to access public transport schedules, fares and ticket purchasing through the Internet and mobile phone.	1st year	MOC, PPP
9.6.	Allow online registration and work permit for foreign investors	2nd year	BOI
9.7.	Introduce online tax filing for all citizens	1st year	NBR
9.8.	Introduce online application for licenses in business, vehicle registration etc.	From 1 st year over 5 years	Multiple agencies
9.9.	Introduction automation of all customs check points	By 3 rd year	NBR, Port Authorities, PPP
9.10.	Automation of land record and registration system	By 3 rd year	MOLPA, PPP
9.11.	Introduction of online payment both for transaction within country and international	By 2 nd year	BB, PPP
9.12	Introduce online procurement system (in phases)	By 3 rd year	All government agencies, PPP

E-Business

Item #	Description	Timeline	Accountable Agency (ies)
10. Online Transaction and Payment Infrastructure			
10.1	Establish Certifying Authority (CA).	1st year	MoF, BB
10.2	Develop capacity development programs for the judiciary & the law enforcement agencies	From 1st year over 5 years	MoLPA
10.3	Launch legal reform to protect interest of stakeholders in e-commerce	1st year	MoLPA

11. Promotion of e-business and commerce			
11.1	Establish an Authority/Body on ICT Industry Development	1st year	MOC
11.2	Establishment of ICT Industry Development Fund	1st year	MoF
11.3	Establishment of TP	1st year	MoSICT
11.4	Conduct research on global Human Resource needs vis-à-vis local capability to identify national focus	Every two years	MOE, MOC
11.5	Introduce free facilities for ICT industry/ ICT for Development Agencies in TP for five years	3rd year	
11.6	Conduct regular study on ICT economy	Every two years	MOC
11.7	Introduction of Venture capital Fund for ITES Industry	1st year	MOF
11.8	Arrange fairs, exhibitions & targeted workshops for local enterprises. Road shows and other interactive programs.	Every year	MOC
11.9	Implement ICT based model SMME (one for each category) at Dhaka and other divisional HQs	1st year	SME Foundation, MOC, PPP
11.10	Create special promotional program (by EPB BMET, Probashi Ministry, and Foreign Labor wings, and Bangladesh Missions abroad) for high end overseas employment in IT	1st year	MOFA
11.11	Create strategic roadmap for Human Resources Development for the ICT industry (both home & abroad)	1st year	MOE, MOC
11.12	Enhancing competitiveness of business through business process re-engineering		
11.13	Develop Agriculture, Food and SMME related content in Bangla	1st year	
11.14	Develop network within communities to share indigenous knowledge and innovations related to pest management, crop preservation, etc	1st year	MoI, MOA, PPP
11.15	Establish SME resource centre focused on agricultural needs spanning relevant supply chain in the local context.	1st year	MoI, MOA, PPP
11.16	Support the agricultural supply chain management system through business portals accessible through various electronic channels.	1st year	MOA, PPP
11.17	Provide training of extension workers and farmers on updated technologies, credit schemes, etc. using ICTs.	1st year	MOA, PPP
11.18	Utilize GIS based soil mapping system to analyze detailed data to provide information relating to crop suitability, land zoning, nutrient status and fertilizer dosage.	2nd year	MOA, SRDI, PPP
11.19	Provide access to m-banking for farmers and agribusinesses	1st year	MOF, BB, Telcos
11.20	Develop Internet and mobile-based trading platforms for agriculture produce for extended supply chain	2nd year	MOC, MOA
11.21	Initiate a pilot project to promote sector based customized ERP	1st year	MOC, PPP
11.22	Create and disseminate e-Learning resources on Energy Efficiency, ISO competencies, Lean Six Sigma, advanced Production System, etc	1st year	MOC, Industry Associations
11.23	Implement ICT based automation and MIS model at Division level.	2nd year	MOC, Industry associations, PPP

CHAPTER 7: EDUCATION, TRAINING, SPORTS, CULTURE AND RELIGION

INTRODUCTION

The role of education in facilitating social and economic progress is well recognized. It opens up opportunities leading to individual and group entitlements. Education, in its broadest sense, is the most crucial input for empowering people with skills and knowledge and for providing them access to productive employment in future. Improvements in education are not only expected to enhance efficiency but also to augment the overall quality of life. Education acts as an engine of growth for economic and social development of a nation. In this context, human resources development is at the core of Bangladesh's development efforts and access to quality education is crucial for poverty alleviation and economic development.

The Constitution of Bangladesh obligates the government to adopt effective measures for (a) establishing a uniform, mass-oriented and universal system of education and extending free and compulsory education to all children to such stage as may be determined by law; (b) relating education to the needs of society and for producing properly trained and motivated citizens to serve those needs; and (c) removing illiteracy within such times as may be determined by law. In line with the constitutional obligation, the present government is committed to undertake structural reforms that are expected to bring about significant improvements in the education sector. The government's commitment to education has been clearly stated in its new National Education Policy 2010. The major objectives of the Education Policy are as follows:

- To reflect the constitutional guarantee at all levels of education and make the learners aware of the freedom, sovereignty and unity of Bangladesh.
- To create stimulation in the intellect, work culture and practical life of the learners so that moral, human, cultural, scientific and social values are established at personal and national levels.
- To inspire the students with the spirit of our war of liberation and develop patriotism, nationalism and qualities of good citizens.
- To foster creative thinking among the learners through a system of education that contains indigenous spirit and elements, which lead to a life-oriented development of the learners.
- To remove socio-economic discrimination irrespective of race, religion and creed and to eradicate gender disparity; to develop global fraternity, non-communalism, friendliness, fellow-feeling and respect for human rights.
- To put special emphasis on the extension of education, priority should be given to primary and secondary education; to motivate the students to show dignity to labor; to enable students to acquire skills in vocational education to facilitate self employment at all levels of education

- To develop some uniform and basic ideas amongst all learners; to establish a sense of equal status amongst all citizens of the country, there should be a uniform curriculum of certain basic subjects at the primary level schools of diverse delivery systems; to prescribe some uniform textbooks to attain that; to initiate the some method at the secondary level to achieve similar objectives
- To build students as skilled human resources to fight the challenges of the world threatened by climate change and other natural disasters and to create in them a social awareness of environment.
- To ensure quality at the higher education level and motivate students in research and to create a congenial and necessary environment of research within the country in order to cope with the pace of knowledge being generated in the global level.
- To initiate an inclusive education to deliver education to vulnerable children and socioeconomically backward classes.

Training, sports, culture and religious studies are also important components of the overall education system. Training provides the practical hands-on knowledge, which is not normally taught in general education, to impart essential skills required at the work place. Sports and culture provide fuller context to education and helps develop healthy and well informed citizens and the labor force. Religion provides the spiritual context to human development. While each aspect is distinct, they also are inter-related. A well balanced combination of these aspects contributes to a sound human development strategy.

OVERALL PERFORMANCE OF THE EDUCATION SECTOR

The Government of Bangladesh has always been committed to bring significant improvements in education sector and in this context development plans with education have been given highest priority in public sector investments. Education sector allocations are currently about 2.3 percent of GDP and 14 percent of total government expenditure. This spending priority has served Bangladesh well as reflected in the progress made in education indicators of the country.

Bangladesh has made significant progress, especially with respect to increasing access to education and attaining gender equity, both at primary and secondary levels. Net primary enrollment rates rose from 60.5 percent in 1991 to 91.9 percent in 2010, 93.5 percent in 2009 while at the secondary level enrollment rates have risen to 43 percent in 2008 and 49.1 percent in 2009 from 28 percent. Gender parity in access to primary and secondary education has also been achieved. These achievements are particularly spectacular when compared to countries in the South Asian region and other countries at similar levels of per-capita income. Detailed data on enrollments and education institutions are contained in Part-3.

In terms of management of education system, it falls under two ministries: (a) Ministry of Primary and Mass Education (MoPME, responsible for primary education and mass literacy) and (b) Ministry of Education (MoE, responsible for secondary, vocational and tertiary

education). The Government is strongly committed to alleviate existing problems with respect to management and quality through reforms across the education system. In order to address issues at the secondary and higher levels, MoE has developed a medium-term framework for the secondary education sub-sector, focusing on quality improvements, policy measures and specific actions needed to reform the system. The main objective of reforms being proposed is to address systemic governance issues aimed at raising the quality and cost-effectiveness of service delivery, and to improve equity of access in secondary education.

MoE is aiming at moving towards a devolved system of governance within the current administrative structure. In this system the government will be responsible for formulating policies, financing, setting quality standards, and monitoring and evaluation etc., while lower levels of government will be responsible for administering the system. MoE is empowering officials at the district and upazila levels to take greater responsibility in monitoring school performance and to ensure public disclosure of information (e.g., SSC passing rates, teacher absenteeism, class sizes, etc.) related to school quality.

To ensure appropriate financial controls, MoF is implementing a Financial Management Reform Program (FMRP). This is intended to increase accountability and transparency in the use of resources. A twenty-year (2006-2026) strategic plan for higher education has been formulated for the overall development of the university sub-sector and projects are being carried out under the preview of the strategic planning.

MAJOR CHALLENGES IN THE EDUCATION SECTOR

Progress Towards MDGs: One of the key MDG goals is to achieve universal primary education by 2015. This entails: (a) 100 percent enrollment in primary education and (b) 100 percent completion of primary education.

As against these targets, the school enrollment rates fall drastically from primary (grades 1 to 5) to secondary (grades 6 to 10). In 2008 about 50.7 percent of pupils completing grade 5 made a transition to the first year of secondary school. Gross enrollment rate in the secondary phase was only 49.8 percent in 2008, 53.9 percent in 2009. This suggests that the country has not been quite successful in addressing and achieving equity, quality, and efficiency of the delivery of primary and secondary education. The wastage in education is very high due to internal inefficiencies such as high dropout, grade repetition, and poor quality of learning at school level. These are serious concerns for DSHE. The present SFYP, therefore, needs to look at the root of these problems of Secondary and Higher Education with the objective of overcoming this challenging situation and for advancing rapidly in the march of development.

The Access, Dropout and Equity Issue: This includes enrollment rates and completion rates in rural vs. urban areas, and gender-related access restrictions. Bangladesh has experienced impressive achievement in increasing access to secondary education among disadvantaged groups such as girls and those who live in rural areas. While these achievements should not be underestimated, it is imperative to recognize that there are still many challenges that must be

met in enhancing access in all levels in the Secondary and higher Education sector. The net enrollment rate is 43%, which means that 55% of all secondary school age children in Bangladesh are for one reason or another inhibited from making a transition to secondary school and net enrolled rate 49.1% in 2009. The principle reasons for this are the following:

Quality of Primary Education: The biggest problem Bangladesh seems to face in the pursuit of its educational goals is lengthy poor quality of primary education. Achievement and competency level of most children are also very low. This doubly disadvantages girls since they already face overwhelming gender discrimination.

Poverty and Child Labor: Poverty deserves special treatment in the context of all stages of education. In recent times poverty has been exponentially inhibiting students from going to higher education. Children from poor families have fewer chances for accessing schools especially in the secondary level, as a majority of them are engaged in different works to meet basic necessities.

Gender Discrimination: The perceived inferiority of women and girls is deeply embedded in Bangladeshi society. Many families still do not support educating their female child and many girls are married at very young ages, eliminating any chance of receiving an education beyond the primary level. Especially in rural areas, girls are also frequently kept at home to work and to take care of younger siblings. The same holds true, although to a lesser extent in urban areas. In both urban and rural areas, the problem is worst for girls of poor families.

The Quality Issues: Disparities in the quality of education are by far the biggest problem Bangladesh faces in the secondary and tertiary education sector. The principle reasons for this are the following:

- **Low Status of Schools:** These are general problems under the current economic standard of the country and there is no need to emphasize the importance of quality of education provided in schools.
- **Inappropriateness of Curricula and Pedagogy:** The curricula and related pedagogy are usually inappropriate or at least inadequate for the set goals in many disciplines.
- **Capacity of Teachers:** The teachers in many of the institutions are not trained and are not competent enough to provide moral and educational support to the students.
- **Multiplicity of Educational Systems:** There are many systems working in the educational system of Bangladesh, resulting in not synergy but social division and conflict. For example, there are English medium schools, Bangla medium schools and Madrasas and in higher education there are public and private universities.

SFYP GOALS AND OBJECTIVES FOR EDUCATION SECTOR

The political pledge of the government is reflected in Vision 2021 and Education Policy 2010. Within this framework, the objectives, priorities and strategies for education sector in the Sixth plan are determined. Important objectives delineated in Vision 2021 are: to achieve universal

primary education, followed by extending this stage to grade 8 for creating a society free of illiteracy. Other goals include creating a new generation equipped with technical skills and scientific knowledge; better remunerations for teachers; and overall improvement of quality and equity in education are key education goals of Vision 2021. Other related targets pertinent to education are, building Digital Bangladesh, empowering local government as the engine for delivering services and carrying out development activities, ensuring equal status for women in all spheres of society and state, and creating gainful employment for at least 90 million young people. The SFYP also recognizes the importance of wider application of Bengali language all different spheres of education.

The SFYP specifically emphasizes the importance of educational quality at all stages of education and will take necessary strategies to take care of the problem of poor quality of education. There is no denying the fact that, it is not the mere knowledge gained through a number of courses taught at different stages of education, rather it is the quality of that education which actually matters in building up the human resource base of a country. In this context, upgradation of curricula, training of teachers, improving incentive structure of teachers, close monitoring of the curricula of higher educational institutions, bridging the gap in the quality of educational institutes at rural and urban areas, introduction of courses on mathematics and science at madrasa level, strengthening knowledge of English and mathematics at primary and secondary level are the crucial issues to consider.

The critical needs and important issues related to Secondary and Higher Education in the country shall be addressed in the SFYP on a two pronged basis: a quantitative goal and a qualitative goal, to be pursued in an integrated manner.

The Quantitative Goal

With a view to attain this goal, infrastructural development in most of the cases of education deserves priority. The major actions to be taken to improve Secondary and Higher Education, in this area are:

- To improve infrastructure. In this context, the goal is to construct/upgrade classrooms and labs to facilitate admission of more students.
- Ensure sufficient number of teachers at all levels including for pre-primary
- Recruitment and training of female teachers at all levels to fulfill the existing quotas.
- To provide stipend and other financial support to the poor and especially to the female students to encourage enrollment and to avoid dropout.
- To provide teaching and learning aids and other facilities to increase pupil's interest over education and to modernize the education environment.

- To provide computers to make the students competent with the modern world of ICT and to make them fit for the present job market.
- To establish technical schools at upazila levels
- To establish science and technology universities at greater district levels.

The Qualitative Goal

In order to improve quality of education at all levels some steps need to be considered are:

- To modernize curricula, texts, pedagogy and examination techniques. In this regard, need to give more importance to science subjects and mathematics at the secondary level. Science and mathematics are the foundation on which acquisition of other skills depends.
- To introduce ICT and Technical education at all levels of education.
- To improve capacity of teachers to promote quality teaching. It needs also to provide computer trained teachers and subject based teachers especially for science and mathematics.
- To modernize Madrasa Education and to reduce the gap of existing facilities for secondary education between General Education and Madrasa Education.
- To enhance quality of university education through improvement of pedagogy and educational environment.
- Strengthening gender and region based monitoring, analysis and reporting.
- Based on sex-disaggregated data collection, introduce follow-up mechanism to identify pockets of disparity (such as girls' participation from ethnic minority groups, rural girls' school attendance, or female teachers in rural areas) and accordingly develop capacity to adjust policies and strategies based on information received.
- To modernize education system in rural areas, especially at the secondary level. In this regard, increased use of ICT, distribution of modern curricula through electronic and computerized manner will be done.
- To provide laptops and multimedia to improve teaching learning system.

The current status and targets under SFYP for Primary & Mass Education is shown in Table 7.1.

Table 7.1: Indicators of Performance of Primary and Mass Education

		Current Status	Projection
<i>Indicators</i>	<i>Sub-indicators</i>	<i>2009</i>	<i>2014</i>
Indicators of Intake	a) Gross Intake rate	115%	116%
	b) Net intake rate	99%	100%
Indicators of Participation	a) Gross enrollment rate	103.5%	116%
	b) Net enrollment rate	93.5%	100%
Indicators of	a) Repetition rate	12.0%	<5% (each class)

		Current Status	Projection
<i>Indicators</i>	<i>Sub-indicators</i>	<i>2009</i>	<i>2014</i>
Internal Efficiency	b) Completion rate	55%	100%
	c) Survival rate	59.7%	100%
	d) Student absenteeism	18%	3%
Indicators of Quality	a) Student Teachers ratio	1:48	1:30
	b) Classroom size	40	25
	c) Percentage of trained teacher	70.39%	100%
Indicators of Educational Expenditure	a) Public expenditure on primary education as % of total education public expenditure	45.36%	50%
	b) Public current expenditure on education as % of GDP	2%	4%

Source: Ministry of Primary and Mass Education

The Government has also defined a number of indicators to assess the progress with secondary and higher education. These are shown in Table 7.2

Table 7.2: Indicators of Performance of Secondary and Higher Education (SFYP: 2011-2015)

<i>Goals</i>	<i>Input indicators</i>	<i>Output indicators</i>
Quantitative increment and equity of students at Secondary and Higher levels of education	a) Stipend	a) Students' and their parents' interest in schooling
	b) Financial support	b) Students' support for education expenses
	c) Better environment	c) Students' interest in schooling
	d) Female stipend	d) Girls' and their parents' interest in schooling
	e) Inclusion	e) Education for the disables
	f) Awareness	f) Peoples understanding of the importance of education
Qualitative improvement of Secondary and Higher levels of education.	a) New institutions.	a) More room for admission
	b) Up to date education facilities.	b) Better education environment
	c) Books and Teaching-learning materials.	c) Wide range of knowledge disseminations
	d) Modern equipments.	d) Up to date Practical education
	e) Capacity Building for teachers	e) Capable teachers
	f) Teachers training.	f) Quality teachers
	g) Organizational development &	g) Quality education management
	h) Modern curricula.	h) Modern education
	i) Modern system of examination.	i) Better evaluation of students
	j) ICT	j) Access to ICT
	k) Life-skill based education.	k) Students with life-skills
	l) Modern education system in Madrasa	l) Better outcome of religious education

Source: Ministry of Education

SFYP EDUCATION SECTOR STRATEGIES AND POLICIES

Strengthening Educational Inputs

Teachers: The system cannot achieve its goals with the current number of teachers, methods of preparation and professional development, and the level of salary and incentives. New ways of thinking about *teachers and pedagogy* are needed, e.g., enabling selected and properly equipped degree colleges to train primary teachers as part of the regular degree program, turning PTIs into in-service training centers, and commensurate salaries and status for highly qualified teachers.

The quality and content of initial training in PTIs, continuing in-service training, the effectiveness of activities at URCs and the capacity of NAPE to support and lead teacher development – all need to be strengthened and in many cases redesigned, which have been emphasized in the education policy. All of these measures, however, are actions for improvements within the current structure of teacher recruitment, remunerations, professional support and supervision.

An approach to induct academically competent people to teaching in primary schools (as well as extended compulsory grades and secondary schools) and to keep them in the profession would be to introduce education courses in the general education degree program and to offer education as a subject in at least one well-equipped degree colleges in each district. Candidates can be attracted competitively by offering stipends to selected ones with an undertaking from them that they would serve in a primary school for at least five years. To attract and keep the right people in the profession, these new teachers have to be placed at a salary level competitive with other civil servants of similar educational credentials. Currently employed teachers may be offered this salary level if they meet specified criteria including the graduation requirements and with an academic career without any third division/class results. It would be essential to support the selected degree colleges to meet appropriate infrastructure and academic standards. The PTIs in this scenario can gradually become in-service training institutions for the large teacher population anticipated in the next decade.

Because of the large numbers involved and the complexity of the tasks, a primary education teacher service commission should be given consideration. It would make more sense to have one such commission for government and government-assisted schools rather than separate commissions or mechanisms for the two, proposed in the Education Policy.

Effective Instructional Contact: Effective instructional time for students, an essential condition for quality in instruction, is one of the lowest in Bangladesh by international standards. NGO schools have addressed this problem to some extent by keeping class sizes around 33 students, enforcing instruction planning and routine, maintaining close supervision, and having parents keep in close contact with the small neighborhood school.

Curriculum and learning materials development: PEDP II funding supports the provision

of free textbooks, which is reported to have helped marginalized students. While there is some increased provision of supplementary materials under PEDP II, few schools are fully equipped. Teacher's guide and supplementary materials prepared in the form of "learning packages" by IED on the basis of NCTB curriculum and textbooks for classes I to III and offered to DPE to be tried out in primary schools have so far not been accepted for trial; apparently because the necessary approval and review by authorities including NCTB for a trial could not be undertaken. Meanwhile, teachers and students were left without the essential tools for improving instruction – the central goal of PEDP II.

Producing millions of textbooks and distributing these throughout the country have become a major annual operational and logistical challenge for NCTB. Expert views favor a separation of the functions of textbook production and distribution and development and approval of curriculum and learning materials. The curriculum development process should also be linked with assessment of learning so that the learning objectives are realized and defined competencies are acquired by learners. There are various models at the state level in India and in other countries of state corporations or private publishers or a combination handling the production and distribution of books, which can relieve NCTB of its burden and permit it to concentrate on the essential and critical task of curriculum and learning materials development and assessment of learning related to curriculum content and objectives.

Given the need of increased globalization, the SFYP emphasizes the importance of introducing a 'third language' at the secondary level in addition to the mother tongue Bengali and second language English.

Physical infrastructure: A large share of external development assistance goes to physical infrastructure development in primary education. This will require further investments to meet the minimum acceptable criteria for appropriate learning environment for achieving the quality with equity goals. Schools that are Girl- friendly environment including separate wash room facilities will ensure for female students' attendance to school. Special attention has to be given to some 2000 villages identified by the Ministry of Primary and Mass Education as lacking a primary school. These villages are generally in areas with difficult communication and dispersed habitations such as *haors*, *chars*, coastal areas and hills where schools built according to standard criteria of population still leave these inaccessible to small children. The plan for extending universal education to grade 8 also will require an assessment of existing school facilities in each Upazila and need for making additional provisions.

Improving Education Service Delivery through Better Governance and Management

Human resource management: All of the national education commission reports have lamented the lack of professional skills of teachers, absence of motivation and enthusiasm for work, and failure of the system to attract competent people to teach and to give them adequate incentive. Teachers have to be supported by administrators, supervisors, and various types of specialists.

A recruitment process with an effort to apply criteria and standards are followed for government institutions. Even though criteria and standards for personnel recruitment in non-government primary, secondary and tertiary institutions have been indicated, there is laxity in applying these standards by respective managing bodies. Measures have been taken to improve transparency and fairness in primary education recruitment under the PEDP II program. At the secondary level, teacher certification based on a qualifying examination has been introduced recently in an attempt to identify and recruit capable teachers. Various education commissions and committees have recommended measures for fair recruitment of education personnel. These include: (a) an independent commission for testing and preparation of Upazila-based panels of qualified primary school teacher candidates, from which teachers should be recruited as vacancies arise; (b) a similar independent body for selection of qualified candidates for secondary school teachers, both for government and nongovernment institutions; (c) a special education service recruiting commission for colleges and administrative and specialized jobs for government and non-government institutions, separate from the public service commission which is unable to handle the large load of education recruitment. The new Education Policy (2010) also has recommended similar measures.

The key challenges of education sector are related to professional development, professionalization of specialized tasks in education and a career ladder for personnel within each sub-sector of education, which demand different skills and training. At present, although inadequate, there is a system of teacher training for primary and secondary level teachers, none for tertiary education, and only very *ad hoc* and limited professional skill development opportunities for other specialized tasks - such as curriculum and learning materials development, educational assessment, planning and management-under externally-assisted development projects.

At the level of specialized professional tasks in the education hierarchy, the present recruitment, placement and deployment rules and practices do not encourage or facilitate acquiring of professional skills, staying on the job in the same field and being promoted and rewarded for working in one's specialty. Seniority is the basic criteria for placing people at higher levels of responsibility. As a result, there is no opportunity to develop specialized professional skills and to use these in one's job. The need for professionalization of specialized tasks and building a career path from primary school teaching to senior positions in the Directorate of Primary Education has been recognized in the PEDP II plan. A separate primary education cadre has been under discussion for a long time. PEDP II plan calls for its implementation. NEP 2000 and the new Education Policy (2010) have endorsed this idea. Similar career ladder and recruitment under common standards for both government and non-government schools at primary and secondary levels have been recommended in NEP 2000 and the new policy (2010). The SFYP considers the strategy of providing incentive to the teachers through the introduction of performance based contract scheme.

Remuneration of teachers across the board is regarded as low, not commensurate with their

responsibility and due status in society. With this end in view, remuneration structure can be designed to allow for more differentiation in teaching positions (for example, assistant teachers, teachers, senior teachers, team leaders/master teachers, assistant headmaster and headmaster in the primary school system), with promotion and salary raise tied to clearly established and enforced performance criteria. Some special rewards or bonuses can be tied to group performance at the institution.

The reward and incentive structure for primary and secondary education teachers and the absence of a career path have become a serious obstacle to attracting and retaining academically and intellectually talented people to teaching. Shortage of teachers of science, mathematics and English has become a serious problem, especially in rural areas. Graduates of colleges under the National University, rather than the main universities, generally come into teaching. In this context, ways have to be found to improve the quality of the degree colleges and to attract capable people to teach with proper incentives.

Coordination: An important systemic concern is how the education system as a whole and its sub-sectors function to make their contribution to meet key social goals, including fighting poverty. It is a question of vertical and horizontal linkages and articulation within and among sub-sectors of education and the possibility of taking a systemic view of the organizational structures and function of the system and sub-systems.

The overall organization and management of education show critical disjunctions and discontinuities. For example, at the primary level, the four major streams - the government and non-government registered schools, the Madrasa, non-formal primary schools run by NGOs, and the proprietary English medium schools- operate with differing learning objectives and academic standards, with little opportunity for horizontal movement of students, and no interaction among organizational authorities running these different streams. The same applies to the secondary level, with parallel streams in general secondary education, Madrasas, proprietary schools and post-primary vocational and technical education. The Education Policy (2010) recommends a strategy of adopting core curriculum, learning objectives and learning materials, which would be common to all streams, and would be implemented in all institutions by applying common quality standards. At the tertiary level, a system-wide view - embracing colleges, universities, professional and specialized education under public and private management and the potential for specialized training by professional bodies still does not exist.

Notwithstanding the good intentions behind the separation of primary and mass education from the Ministry of Education, various problems of articulation have arisen. Issues in primary education regarding curriculum development, training of teachers and management personnel, and transition from primary to secondary education cannot be resolved in isolation. All of the concerns about horizontal and vertical links among subsystems point to the need for rethinking about organizational structures, functions, and roles in the education system. The system view will have to address broader human resource development issues, going beyond the parochial

concerns of education subsectors. The new Education Policy (2010) has two crucial recommendations regarding system governance and coordination: a) establishing a permanent national education commission to review policy implementation and guide policy review and modification as needed, and b) adopting an overall education law to serve as the legal framework for fulfilling the constitutional obligations and state commitments regarding education and human resource development.

Effective governance and management: This is an essential condition at both central and school level for ensuring quality improvement. Structural and procedural changes will be required to involve local government bodies, giving greater financial authorities to schools and the local level, and encouraging the involvement of community. As a national task, primary education should involve *participation* and consultation by all major stakeholders—parents, NGOs, academic institutions, and other institutions of civil society—in developing the program, maintaining an oversight over its implementation, and contributing to the provision of primary education. It is the obligation of the government to ensure that this multi-faceted participation of stakeholders take place effectively.

Improving education financing: Several important features of education financing in Bangladesh - mobilization of resources and their use – deserve attention from the point of view of a strategy for education that serves the goal of quality with equity.

A low-cost and low-yield system: Bangladesh has one of the lowest cost education systems, even compared to other least developed countries (per student primary education expenditure is about \$13 and for non-government secondary education it is \$16). The low per capita and total cost is no reason for satisfaction, because, educational quality - measured in terms of learning outcome, the pedagogic process and essential inputs – is clearly the victim of this situation.

Dominance of public financing: Educational financing is heavily dependent on public sector allocations. In primary education, which account for almost half of total education expenditure, the government has *de facto* stopped establishing new institutions for a decade and has relied on expansion in the non-government sector to meet the goal of universal access to primary education. However, major part of teachers' salaries in registered non-government schools are paid by the government and are *ad hoc* grants for school building construction and repair. Students of these schools receive free textbooks, with the important exclusion of NGO non-formal programs.

Large majority of the institutions at the secondary school and degree college levels are non-government, but again these are beneficiaries of substantial government subventions for teachers' salary. Only in respect of private universities and private vocational-technical training institutions, the subvention system does not apply. In principle, the generous system of subvention should be an important leverage for maintaining and enforcing quality standards in the non-government institutions. In practice, it fails to work this way because of the weak

capacity of the regulatory and supervisory organizations in the government, the way these bodies perceive their role, and intrusion of partisan politics in educational management. Nonetheless, the potential of the subvention system as a policy leverage exists; how this leverage can be used effectively for educational development remains an important challenge.

In order to expand the coverage of education services, the Prime Minister has instructed to establish a Trust Fund to offer degree education to poor and meritorious students at free of cost. In addition, the SFYP will include greater number of pupils within national stipend program.

Household contribution and financing strategy: Despite the heavy reliance on government for educational financing, there is a substantial private direct cost borne by beneficiaries, which is not taken into account in considering educational finance policy options. Household expenditures amount to about the same as per student government recurring expenditure in primary education. At the secondary level, non-government expenditure is of the order of two-thirds of the total national expenditure. In the case of degree colleges, which mostly are privately managed with government salary subvention, non-government contributions surpass government expenditure. Only in the highly subsidized public universities, government expenditure exceeds private costs. In the case of private universities, which are financed fully from tuition and fees, households cover the costs. In the case of relatively small sub-sector of public vocational and technical education, high government subsidy reduces private contribution to total costs. The picture, however, would change if the extensive informal apprenticeship and on-the-job training activities were taken into account and monetized, although reliable quantification of the size and costs of these efforts are not available.

The size of household expenditures in different sub-sectors of education points to several policy implications regarding mobilization and effective use of resources. These include the potential of mobilizing non-government resources, the need for developing resource mobilization and utilization strategies, keeping in view the potential of non-government sources; combining public and other resources to promote equity in education; and promoting public-private partnerships on policy and program development and in providing educational services.

Mismatch of financing and objectives: Total national education expenditure, especially public budget allocation, has to increase substantially in the medium term to meet national goals and priorities regarding expansion and quality improvement. Achieving universal elementary education up to eighth grade and participation of 50 percent of the eligible age-group in secondary education by 2008 will require public allocation to education to be raised to 4 percent of GDP from current 2.3 percent of GDP.

Quality improvement, desperately needed at all levels of education and will require additional resources. It is in this context that professional circles raised the demand to increase the share of GDP for education allocated in the government budget to 5 percent in the next five to six years, with commensurate increase in the education share of the government budget from

current 14% to 18%.

Budget Planning and Management

Increased expenditure is not enough: A truism that needs to be underscored is that the availability of additional resources alone will not yield the expected gains, especially in respect of quality, unless existing weaknesses both in educational management and the teaching-learning process are seriously addressed and remedied. Along with effective management of resources, decision-making and implementation of decisions regarding learning objectives and priorities, the pedagogic process and establishing accountability, and performance standards at all levels have to be improved.

Incremental budgeting based on precedence: The standard practice of making financial allocations in the recurrent budget is to do it on an incremental basis, i.e., taking the current status as the baseline and adding annual increments in the budget. Given widespread inefficiencies and questions about external effectiveness of programs and institutions, it is necessary to require justification of what exists and assess alternatives and options in budget decisions. It is necessary to establish performance criteria and apply them so that managers of the respective component have incentives to perform and prevent wastes and inefficiency.

Dominance of staff compensation: Staff compensation accounted for 97 percent of the recurrent budget in FY98 for primary education, which represents the normal pattern. This included salary in government schools and salary subvention for non-government primary schools. Government grant, available for salary subvention, to non-government institutions have the effect of maintaining the pattern of school costs dominated heavily by staff salaries with little funding for other quality inputs. This pattern in the operating budget has serious adverse consequences on the quality of education and learning outcomes.

Medium-term budgetary framework: As a part of overall budget management improvement, development and application of a medium-term (five-year) budgetary framework has been initiated in some of the sectors including education. A medium-term budgeting framework combining both development and recurring expenditure with year-to-year rolling adjustments would still be a useful mechanism for budgetary discipline and optimizing utilization of resources.

Managing high share of incentive expenditures: Development expenditure in primary education is dominated by the incentive payment in the form of stipends both at primary and secondary levels. In both cases, it is offered only in rural areas; at the primary level it is paid to 40 percent of the students in the school; in the latter case, stipends are paid only to girls and are complemented by a tuition waiver. Stipends at the primary level amount to two thirds of the estimated development budget from the government's own resources for the next five years and half of the total primary sector development program (PEDP II) other than stipends. Similarly, expenditures for stipends in both primary schools and for girls in secondary schools and free tuition for girls add up to one-third of total development expenditure in the education

sector.

A number of questions arise about the large share of the development expenditure in primary and secondary education being spent on stipends. Clearly, a key question is whether this starves out essential quality inputs for education programs. Questions have been raised about the efficacy of the incentive expenditures on three contexts: (a) whether they are sustainable as the claim on them rises backed by political pressures, (b) whether they can be administered efficiently and without being distorted by corruption, and (c) whether the benefits in terms of participation, equity and quality improvement would not be better achieved by spending directly on improving inputs and performance in school.

Equity and educational financing: Education finance arrangements reinforce the pattern of inequity in the education system. A World Bank public expenditure review (1996) in the education sector concluded that the share of benefits for households from public spending in education rises with income levels of households at all stages of education, but especially in secondary and tertiary education. The same review found that poor households received 15 percent of public spending on higher education, while 85 percent went to non-poor households. In primary education, the benefits roughly corresponded with income distribution of the population. But this means that primary education is not able to contribute to tackling existing economic disparities and disadvantages. Inequality arising from the present pattern of higher education participation and benefits is exacerbated by very low cost recovery in the highly subsidized public university system. Tuition fees in public universities cover less than 1 percent of the university budget. Cost-sharing and cost recovery as approaches for promoting equity in the system have to be considered in programs where both private benefits and public subsidies are relatively high, such as in most tertiary level institutions and some vocational and technical education programs.

Paucity of systematic research and analysis in education finance, including tracking of expenditures, is a major obstacle to effective educational planning and management. There is a need for research, particularly, in the form of micro-economic studies at the level of households, schools and communities; tracking expenditure from central level to institutions and learners; analysis of private costs and expenditures; and probing internal efficiency of different types of institutions in the same sub-sector.

Public-Private Partnership in Education

Public-Private Partnership building for mobilizing resources, but more importantly for improving performance of educational programs and their responsiveness to specific conditions and circumstances, is much in discussion. Non-formal primary education of NGOs serve eight percent of the children who are particularly disadvantaged and offer a second chance opportunity to those who have not enrolled in school or have dropped out. It is necessary to recognize the mutual complementarity of formal and non-formal primary education, make the latter a part of the national strategy for improving access and quality in

primary education, and incorporate its flexibility and community involvement in formal education.

Need for collaboration with and contribution from private sector in public sector training is recognized; how this will happen and what incentives there may be for the private sector have to be specified. The evidence of effective programs by NGOs such as UCEP and the private sector response to the demand for IT training suggest new possibilities. Similarly, an appreciation of the potential of private universities and a comprehensive strategy for higher education development with complementarily and cooperation between public and private provisions are needed. As a whole, private-public partnership in the context of investment, employment, service delivery etc. should be specifically considered.

EDUCATION SUB-SECTORAL PERFORMANCE AND STRATEGIES

PRIMARY AND EARLY CHILDHOOD EDUCATION

Performance and Development in Primary Education Sector

Progress has been made in increasing equitable access, reduction of dropout, improvement in completion of the cycle, and implementation of a number of quality enhancement measures in primary education. Access to primary education has increased steadily over the past two decades. The contribution of government-run and government supported formal primary schools, which accounted for 85 percent of the primary school children, were complemented by Ibtedayee Madrasas, which also receive substantial government subventions, and non-formal primary schools managed by NGOs, largely funded by external donors. In 2008, the gross enrolment rate of primary education reached 97.6 percent, though net enrolment is estimated at about 91.9 percent. The growth of net and gross enrollments however appear to have slowed down in recent years. The rate of completion of the five-year primary stage by those enrolled is reported to be low, with about half of the students dropping out before completing the five year primary education course. Gender gap in enrolment has already been achieved.

A compulsory primary education law was adopted in 1990 and the compulsory primary education program was extended nationwide in 1993. Incentives for all children to attend primary school have been introduced through distribution of textbooks and provision of a stipend of Taka 100 for a child and Taka 125 for more than one child in school per family, targeted at 45-90 percent of the students in a school identified as poor. The cash stipend was introduced in 2002 which replaced "food for education" in the form of a monthly grain ration targeted at poor children initiated in 1993. The Department of Social Services under the Ministry of Social Welfare has started a stipend program for the students with disabilities, which is encouraging the students with disabilities to enroll in the general educational institutions.

Quality improvement measures in primary education have been taken through various

development programs supported by external assistance. Curriculum and textbooks have been modified. Upazila Resource Centers (URCs) have been established and school-cluster based in-service training for teachers have been initiated. Training for head teachers and Upazila primary education staff in management and academic supervision has been introduced.

PEDP II progress and constraints: The Second Primary Education Development Program (PEDP II) for the years 2003/4 to 2009/10 (now extended to June 2011) has been undertaken as a sub-sectoral program to improve primary education quality and expand access to primary education. Initial targets were set for raising gross enrollment rate to 107 percent and net enrollment rate to 88 percent. The latter target appears to have been already achieved as noted above. Beneficiaries of PEDP II support were the government and registered non-government primary schools (RNGPS), with Madrasas and non-formal primary education left out, although it was given the label of a sector wide or program approach. The program, nonetheless, stated as its aim to introduce quality standards for primary education which all schools should meet and to make significant progress towards building a truly inclusive primary education system.

The Directorate of Primary Education has summarized progress of PEDP II in the following manner:

Objectives Likely to be Achieved

Both the gross and net enrolment rates will be achieved. It is noted that this is partly a function of a decrease in the projected population of the primary school age group; geographical disparities, however, remain, and there is “some concern regarding the reliability of the basic demographic information.”

- The number of student receiving stipends is targeted to be at least maintained at or to rise above the 2005 baseline level (of 78,15,000 students).
- The target for reducing pupil absenteeism in the types of schools supported by PEDP II from 22% in 2005 to 18% in 2009 (with gender parity) would be achieved. This would still leave an unacceptable level of absenteeism even in PEDP II supported schools.
- The targeted transition rate from Primary to Secondary (from grade 5 to grade 6) is likely to be met, although about half of the children in primary school drop out by the time they reach grade 5.
- Planned additional teacher recruitment (a total of 35,000 under PEDP II) will be carried out. The impact on pupil teacher ratio will be small because of the number of teachers leaving the system during the same period.
- Target related to organizational development and capacity building, including producing the HRD plan and conducting institutional analyses, will be achieved, although necessary steps regarding government decisions and implementation will not be completed.
- EMIS will be “significantly enhanced.” DPE is hopeful in achieving universal coverage of School-Level Improvement Plans (SLIP) by the end of the Program, and additional attention is being given to their scope and quality. The decentralization of planning and management functions is proceeding – to the extent permitted by the pace of decision-

making that lies beyond DPE and MOPME. The issue of sending funds directly to schools, which is essential for the sustainability of the program, is still to be resolved.

- Textbooks are now being produced and distributed to all primary children on time. From the academic year 2010, all primary children will receive free textbooks (at present, 100 percent of the students of grade 3-5 are provided with free textbooks). However, the timely provision of teachers' guides and the improvement of the quality of textbooks remain major challenges.
- Quantitative training targets (for Teachers, Head Teachers, and SMC members) are likely to be met. However, the quality and outcomes of training have not yet been "systematically documented."
- Construction targets are likely to be met, as are the revised targets for better maintenance – although building sufficient classrooms to reduce class size to 46 will not be achieved during PEDP II. Ensuring that there are sufficient schools and classrooms to enable "Education for All" to be accomplished will require a more substantial and carefully planned building program – and "alternative construction and community involvement strategies will need to be considered."
- The 2009 target regarding safe (arsenic-free) water sources in GPS is very likely to be achieved on schedule.
- The issue of "Inclusive Education" is being pursued with "much commitment" but, the magnitude of the task was under-estimated. The current program addresses the needs of only those children with mild physical disabilities – meeting the needs of those with severe disabilities remains outside the scope of the primary education system. There are no specific targets for other excluded groups, such as linguistic minorities or children in extreme poverty.
- The target of 28% of schools running in single shift by 2009 (among PEDPII schools) is likely to be met, which will leave three quarters of GPS and RNGPS running in double shifts.
- In the primary level the ethnic people are given opportunity to study in their mother tongue and ethnic teachers are given priority in areas where ethnic people are residing.
- Education tools will be adapted to disadvantages peoples.

Targets that Require More Attention

- The rate for completion of primary education up to grade 5 will be well below target, although some children may complete grade 5 in schools outside PEDP II. Dropout Rates remain far higher than those targeted.
- Expenditure on education as a percentage of GNP and for expenditure on primary education as a proportion of total education is not on track to achieve the anticipated increase.
- Repetition rates have yet to improve significantly and, despite stipends and quality enhancement, the coefficient of efficiency target is unlikely to be achieved.
- The revision of the C-in-Ed program is occurring more slowly than anticipated. Even with

the reform of the course and its change into Diploma in Education, it will not address major issues regarding teachers for a system of primary education that meets criteria of quality and equity.

- Teachers' revised job descriptions with well-defined incentives, career paths and recruitment rules are not yet in place as government's policy consideration and decision-making (beyond the control of DPE and MoPME) remain slow.
- Filling of staff vacancies at all levels in PTIs, DPEOs, and UEOs has proved much more difficult and time-consuming than anticipated and remains a serious problem.
- Capacity development in NAPE and NCTB, two key institutions for improvement of quality in primary education, remain a challenge. Almost all the professional staff are 'deputies' (seconded on a temporary basis) from other departments who stay for uncertain and often short periods. Many of those trained for specific roles within NCTB and NAPE are no longer with these institutions.

The PEDP II goals are broadly consistent with the Second National Plan of Action (NPAII) for implementing the Education for All goals for 2015, derived from the Dakar Framework adopted in the World Education Forum in Dakar in 2000, to which Bangladesh is a party. This second NPA is intended to provide a longer term perspective of development priorities and objectives in basic and primary education, specifying intermediate targets and strategies for reaching the final destination. NPAII also set goals for literacy and adult education as a part of the effort to create eventually lifelong learning opportunities for all citizens.

Preschool and early childhood education: The Dakar Framework and NPAII recognized that early childhood development and preschool education have a strong positive influence on preparedness for school and later performance and achievement of children in school. Children from poor families, especially the first generation learners, can benefit greatly from early childhood programs. There is also a social demand for preschool education as the large number of community initiated pre-schools attached to primary schools (known as baby classes) indicate. The government, recognizing the value of pre-schools and the social demand for these, has encouraged NGOs and community organizations to set up and support pre-schools within the premises or near primary schools. Under the auspices of the Ministry of Women and Children Affairs, with overall management support from the Shishu Academy, preschools are also run in Chittagong Hill Tracts as well as a small number in other districts. The Ministry of Primary and Mass Education has also adopted an operational framework for preschool education and has plan for adding preschool classes in government primary schools. The Ministry of Children and Women Affairs has become engaged in a process of developing a policy framework for early childhood development spanning conception to transition into primary education. Various stakeholders including government and non-government bodies and the Bangladesh ECD Network, a forum of ECD-related organizations, are involved in this process.

A projection of the numbers in primary age group in the decade ahead and projection of enrollment based on current trends are shown in Annex. The projection of children in the age

group shows a slight decline in total numbers. The implication of this population trend is that resources and efforts can be directed more to quality improvement rather than expansion of the system to accommodate larger numbers. Since the enrollment projections are based on extrapolation of current trends, these have to be taken as indicative and will be sensitive to policy decisions taken regarding development of primary education.

Achievement deficits: One of ten children of the primary school age does not enroll in school and almost one of two of those enrolled does not complete primary education of five grades. This however does not take account of what is actually learned by those who complete primary education. Available studies suggest that a large proportion of children are virtually deprived of primary education, although they are enrolled in school. In spite of advances made, more need to be done regarding low average attendance of class by enrolled students, many crowded classrooms, lack of adequate learning materials, still untrained and often unenthusiastic teachers and short contact hours in schools which mostly operate in two shifts.

Inequity in opportunities: It is reasonable to conclude that children from poor families are the ones who either do not come to school or are very poor achievers mainly because their illiterate parents cannot help or guide them at home. Household surveys that have related economic status of families (measured by their food security status) with their children's primary school participation have shown a strong correlation. The commonsense view is that spending in primary education is pro-poor and the expansion of primary education benefits the poor. This is not so unless primary education maintains acceptable quality and operates in an inclusive way, without effectively leaving out the very poor and other disadvantaged groups, enrolling some of them nominally. However, it is important to recognize that mere enrollment, or even completion of primary schooling, for instance, without acquiring a functional level of literacy and numeracy skills, which is not uncommon, is clearly not effective access or participation in education. The concept of effective access, therefore, must embrace three elements: a) enrollment, b) continuation and completion without dropout, and c) and acquiring by students prescribed knowledge and competencies for the particular stage of education. Those who have their names on the school roll, but are disengaged from learning, thus failing to achieve a minimum level of competencies, are “virtually excluded” from education even if they stay on in school and receive a certificate of completion.

Access with equity and quality: Access to and participation in primary education, especially of the poor, is not just a matter of making provisions for schools within physical reach. In this context, the functioning of the school has to be responsive to the specific circumstances and needs of children in various ways. These include the daily time-table and annual calendar of the school, the learning materials and the pedagogic approach, how the teacher relates to the children, not burdening the family with the cash cost of exercise books and examination fees, rapport of the teacher with the parents, as well as the proximity of the school, especially for girls. Above all is the assurance to parents and the children themselves that the teacher is present every day on time and that the children indeed learn.

The quality of teaching-learning and school governance do influence effective access. Contrary to government expectations, parents usually have to bear unofficial payments of various kinds (for sports, transportation of government-supplied textbooks, terminal examination fees, etc.) in "free and compulsory" primary schools. The expenses parents have to incur for private tutoring outside the classroom are additional obstacles to the poor families.

It is very likely that there is an overlap between non-enrollees and non-completers and some 6.3 million children estimated to be engaged in harmful child labor. Because of their especially difficult circumstances, working children can be helped only with a combination of interventions addressing both school and family-related factors, which regular primary schools are not equipped to provide.

A mid-day meal is considered essential to ensure that students in primary school can maintain attention span for learning for a full school day. This is particularly important for children from poor families in Bangladesh, many of whom may come to school without a proper breakfast. Trial distribution of snacks with WFP assistance in selected locations has been found to have significant learning and nutritional outcomes.

The SFYP plan emphasizes the importance of a combination of healthy body and mind as the pre-requisite of acquiring knowledge and will take necessary actions to integrate physical education at primary and secondary level. In addition, students with disabilities and children of excluded societies will be specifically targeted to ensure equity in education.

Extending compulsory education up to Grade 8: The government pledge reflected in the Education Policy (2010) is to extend primary education, and provide for universal access, up to grade 8 by 2018. With five grades of primary education seen as insufficient preparation for citizens of an aspiring middle-income country, there is a strong case for *extending the basic education stage to grade 8* with a pragmatic and time-bound plan to move toward this goal.

In order to meet MDG Goal-2 of "ensuring primary education for all by year 2015" the ministry has taken several strategies through a number of projects. In addition, the ministry is going to implement program-3 (PEDP III) which aims at issues like increasing the completion rate of primary education, reducing the rate of drop outs, reducing the rate of repetition, improving the quality of primary education, resolving the problem of scarcity of teachers and teaching materials, implementation of unified primary education program etc. The government policy emphasizes on "extending primary education to grade 8" which directs the focus on *labeling education up to grade 8 as primary education*, rather than expanding access and improving quality beyond grade 5, regardless of where children are taught. The focus on changing the scope of primary education, rather than extending compulsory education, directs energy and resources to administrative reorganization, shifting responsibility from one Ministry to another and equipping present primary schools with additional classes and teachers. The suggested steps for implementing this recommendation and the indicated cost calculation in the draft policy also focus on extending *primary education* and seem to make

the job unnecessarily difficult. In fact, the likely diversion of energy and resources away from quality and content of teaching-learning can be a serious distraction from expanding and improving access to education up to grade 8.

Expansion of educational opportunities up to grade 8 and making it universal in the next decade, along with universalization of education up to grade 5, become much more achievable if it is recognized that : a) some 45 percent of the children of the present junior school age get enrolled in school, b) from the perspective of educational and learning objectives, it does not matter if MOPME, and c) what is critical is a coordination and cooperation between agencies under the two Ministries to ensure that there is a continuity in curriculum and that quality of teachers and teaching are given due attention.

NON-FORMAL EDUCATION AND ADULT LITERACY

Performance and Development in Non-formal Education and Adult Literacy

The commitment to battling the high adult illiteracy rate in Bangladesh prompted the Government to launch a major non-formal education program in the 1990s, focusing on basic literacy. Priority was given to achieving universal coverage of youth and young adults in the age range of 11 to 45 years. The literacy efforts as well as the expansion of primary education raised the level of literacy of the population, though the estimates of the literacy rates actually achieved remain a matter of debate. The rate of literacy for population age 15 years and above is estimated to be 58.3 percent (2007)- a significant improvement over a rate of around 35 percent in 1990. The political pledge of the government is to eliminate adult illiteracy by 2014. In the light of past experience in literacy programs, such as the Total Literacy Movement, there is concern among education researchers and other stakeholders that a mass campaign approach may not enable participants to acquire functionally useful and sustainable literacy skills that would prevent learners from relapsing into illiteracy. International experience and lessons suggest that simplistic quantitative targets (leading to declaring districts as “free of illiteracy”) are not very useful.

The EFA Global Monitoring Report, for example, recommends that literacy programs should be designed as an integral part of systematic continuing learning opportunities within the framework of a lifelong learning approach. Recognizing the need for post-literacy and continuing education programs in order to help learners consolidate basic skills and use these in improving their lives, projects on post-literacy and continuing education have been under implementation by the Bureau of Non-formal Education of the Ministry of Primary and Mass Education, targeting some 3 million adults. These donor-supported projects have been implemented through contractual arrangements with NGOs, with indifferent outcomes regarding skills actually acquired and applied in a meaningful way. Moreover, there was little contribution from these to building a sustainable institutional structure for lifelong learning.

A degree of diversity in non-formal education serving diverse learning needs of the population, especially the poor unable to participate in formal education has been maintained

through NGO initiatives. Non-formal primary education on a substantial scale, offering a second chance to children and youth for basic education, has been carried out by NGOs. Other activities by NGOs include basic education combined with skill training for adolescents and youth who have dropped out from school or have never enrolled as well as early childhood education activities. These, other than non-formal primary education, have been on a small scale compared to the potential demand.

Key issues ensuring quality and meaningful learning: The history of literacy programs initiated by the government including the mass literacy campaign in the 1980s and TLM and its predecessors in the 1990s shows that poor quality adult literacy programs discourage sustained participation of adults in literacy and ongoing adult education programs. Adult educators are typically low paid and poorly trained. Limited staff development opportunities and low compensation provide no incentives for sustained, quality teaching. Cost-per-learner assumptions are often extremely low, dependent on ‘volunteers’ and community contributions and on the logic that non-formal systems, particularly for adults, do not require infrastructure such as the buildings and other equipment and materials considered necessary for formal schooling. Literacy and post-literacy education curricula are often irrelevant to the highly diverse realities and contexts of learners, the contents are dull and the production quality is often very poor.

Ensuring functional and sustainable skills: While the value of lifelong learning gained momentum, especially in the developed countries, very few countries in the global South picked up this broader view of literacy integrated with continuing education. The Sixth World Conference on Adult Education aims at placing adult learning and literacy at the center of lifelong learning. This attempt at breaking down insular compartmentalization among literacy, numeracy, life skills and non-formal education leading to a holistic understanding of adult education is still to be taken as the framework for program design in many developing countries, especially in South Asia. In fact, the concept and scope of literacy efforts in Bangladesh suggest that these are still tied to the 50’s and 60’s understanding of literacy – with the symbolism of “reading a sentence” and “signing one’s name” given prominence and taken as an acceptable definition of literacy. This reductionist view of literacy seems to be reflected in the Education Policy (2010). The target of eliminating illiteracy by 2014 needs to be defined in terms of achieving functional and meaningful skills and as the first step for lifelong learning and for engaging in a process of enhancing one’s life prospects.

Basic education for working children and youth: Basic education for working children and youth, engaged in paid work to supplement their families’ income or for their own subsistence, calls for a different approach than the prevailing “second chance” non-formal primary education. Basic education opportunities for them need to be combined with social support, counseling, and employment-related skill training, which is beyond the capacity of a regular primary education institution. To address the complex problem of child labor and their deprivation from education, a basic education project for "hard-to-reach urban children" has been undertaken with UNICEF support. The administrative home of this project appropriately

lies with the Bureau of Non-Formal Education. A second phase of the Hard-to-Reach project has been underway since 2003. A project to serve 500,000 out-of school children in rural areas to be implemented with the help of NGOs and funded by IDA and SDC called Reaching Out-of-school Children (ROSC) project was launched in 2005. This is designed after NGO-operated NFPE projects and represents a first government initiative to undertake a complementary non-formal primary education project for rural out of school children.

The education policy mentions that the literacy rate in the population of over 15 years of age is 49 percent and proposes that the goal of adult education should be to “make all adult citizens literate” by 2014. Non-formal education is seen as complementary to formal education. Until 100 percent of the children are enrolled in primary education, those not enrolled and those who drop out should receive basic education and “some practical education” through NFE. Those who complete NFE may join formal education. Adult education will focus on literacy, “developing human qualities,” awareness-raising, and improving occupational skills. Those between ages 15 and 45 will be given priority in literacy programs. Continuing education opportunities will be created for maintaining competencies and skills acquired.

The education policy separates adult education and non-formal education activities, looking upon the former essentially as an adult literacy campaign and the latter as non-formal primary education for children. This is contrary to concepts and practices in adult learning and non-formal education and betrays a very limiting and restrictive view of adult and non-formal education and a disregard of the critical importance of the lifelong learning approach. The practicalities and implications of the proposed authority for continuing education and skill development and transformation of the Directorate of Primary Education and the Bureau of non-formal education need further consideration.

Currently, the main public-sector NFE activity under the Ministry of Primary and Mass Education is the Post-Literacy and Continuing Education project funded by donors including World Bank and ADB. It aimed to serve 3 million adults who went through the TLM course, hence the label “post-literacy,” though most potential participants had not acquired functional literacy skills. The content focused on consolidating literacy skills and a short training to teach income-earning skills.

A comprehensive program for non-formal education as a major component of the effort to build a learning society does not exist, although a policy framework adopted in 2006 to guide action anticipated such a program. A national task force on NFE and a working group under it worked for almost three years resulting in the adoption of a forward-looking policy framework for non-formal education in 2006. The task force agreed that NFE has a critical role in offering learning opportunities, building skills and capacities and broadening life options for the poor, if the education programs are designed and implemented effectively. It recognized that NFE must have an important place in a pro-poor education and human development strategy. The policy framework provided guidance regarding:

- Objectives and scope of NFE in the context of lifelong learning and making every community a learning community.
- Organization and management structures including issues of decentralization of and definition of responsibilities at different levels and of different actors, partnership-building, technical and professional support mechanism, and professionalization of management.
- Establishing quality standards and measures and assuring quality in programs - Sustainability and community ownership.

The Bureau of Non-formal Education was established with the responsibility to put into operation the policy framework. The Bureau, however, has been established as an office under the Ministry of Primary and Mass Education, staffed by seconded officials, rather than as an autonomous body with a core permanent staff of professional personnel and an appropriate remuneration structure to attract high level professionals, as recommended by the national working group. The Bureau lacks the mandate and the capacity to operationalize the broad vision of the NFE policy framework. This situation probably explains the persistence of a narrow vision of NFE, concentrating on a literacy campaign approach based on a traditional and limited definition of literacy.

The age for enrolling in non-formal education will be 8 to 14 years. Primary education curriculum will be the basis for preparing learning materials for non-formal education. A new organization known as Bangladesh Continuing Education and Skill Development Authority is proposed to be established, which will combine the functions of the Directorate of Primary Education and the Bureau of Non-formal Education. A legal framework for fulfilling the constitutional obligation regarding adult and non-formal education is recommended.

SECONDARY EDUCATION

Performance and Development in Secondary Education:

The secondary schooling system is a hybrid mix on Bangla medium schools, Madrasas and English medium schools. In terms of enrollment in secondary education, the ratio has increased from 30 percent in 1990 to 43 percent in 2008 and 49.1 percent in 2009. Despite this progress, the majority of children of the secondary school age group (11-17 years) remain out of school. Within the gross enrolment rate of 45 percent, there is substantial decline from the junior to the higher secondary level. The rate was estimated to be 54 percent at the junior level, 39 percent at the secondary level and 12 percent at the higher secondary level. This situation indicates a high level of wastage at this level – an average of 14% dropout out in each grade of junior secondary level, 37% in each grade of secondary level and 17% in each grade of higher secondary level. Roughly one in five students who enroll in grade six pass the Secondary School Certificate examination and one in ten obtain the Higher Secondary Certificate.

The low completion and pass rate lead to labeling the vast majority of the young people in

secondary education as "failures." The number of students taking the SSC examination (after 10 grades) increased 1.8 times from 1990 to 2010. Of them, 43.8% studied Humanities, 25.7% Science, and 30.4% Business Studies. During the same period, the number of dakhil examinees increased 3.5 folds- from 47 thousand to 162 thousand.

The number of examinees in HSC examination (after 12th grade) increased from 290,000 in 1990 to 580,623 in 2010. For Alim examination, it increased from 25,000 in 1990 to 73,790 in 2010.

The 7-year phase of secondary education, from grade 6 to 12, is provided through a collaboration of government and non-government providers within a regulatory framework established by the government. Of over 30,000 secondary level institutions (including over 9,000 Dakhil and Alim Madrasas offering secondary level instruction), over 98 percent are nongovernment, but they receive subvention for teachers' salary and occasional capital grants.

Education Engineering Department (EED) is entrusted with the responsibility of infrastructure development of educational institutions like schools, colleges, madrasahs, technical schools, polytechnic institute, engineering colleges and universities. EED plays a vital role in implementing the projects, which will subsequently upgrade the manpower, virtually which will help to earn foreign currency also increase the literacy rate of Bangladesh.

The National Academy for Educational Management (NAEM) is the first of its kind in Bangladesh, which has been contributing very significant and supportive role in the area of education management, training, research and planning. So as to ensure quality management of education at all levels of post primary education. To coop up with modern education management and training NAEM needs to strengthen in this plan period

BANBEIS is the agency that keeps all educational data management bank of Ministry of Education. In Sixth Five Year Plan period BANBEIS needs to be strengthened.

Scouting is a global program. It helps students for building up sound health, self dependent, patriots, and skill development. It helps to build a better world where people are self-fulfilled as individuals and play a constructive role in society. As a member of The World Association of Girl Guides Bangladesh Girl Guides provides girls and young women with fun and educational opportunities for developing life skills and leadership qualities, enabling them to become active members of their communities. Bangladesh National Cadet Corps (BNCC) is a Tri-Services Organisation comprising the Army, Navy and Air Force. Bangladesh National Cadet Corps is entrusted with the task of grooming the future leaders and finding the hidden potentials of youths. BNCC is an organization consisting of Defence services officers, Junior commissioned officers (JCOs) and Non commissioned officers (NCOs) civilian officers & staffs, teaching staffs and students from different educational institutions. A continuous improvement will be required for SCOUTS, Girl Guides and BNCC to self-help to fit themselves for 21st century.

The main areas of policy progress in secondary education include:

- More than 98% of secondary schools are non-government. But Government pays 100% of the teacher and staff salary of these institutions.
- Bangladesh has sustained increased government allocation in education sector from the 1990s.
- Government is currently providing subsidies to create demand for education in favor of the poor and girls.
- Government has initiated the decentralization of primary and secondary education management structure.
- Government has established an autonomous Nongovernmental Secondary Teachers Registration and Certification Authority in order to recruit qualified and trained teachers in secondary level institutions.
- A large project for the improvement of teaching quality at the secondary level institutions is underway.
- A separate entity named Independent Textbook Evaluation Committee (ITEC) has been established for designing transparent criteria under which individual textbook manuscripts will be evaluated.
- School based assessment (SBA) in secondary level education.
- Reform of existing examination systems in secondary level education.
- Re-organization of Managing Committee/Governing Body of the Non-Government Educational Institutions.
- Formation of Oversight Committee for Supervision of Teaching at Classrooms.
- Sanction of MPO on the basis of performance of educational institutions.
- Strengthening of teachers' training.
- Delivery of textbooks to the students on time.
- Development and modernization of Secondary, Technical and Madrasa Curricula.
- Retirement and Welfare Fund for Non-Government Teachers.
- Distribution of 20,500 computers in secondary level educational institutions.
- Training of secondary level teachers' in computer applications.
- Decentralization of Directorate of Secondary and Higher Education.
- Restructuring of Personnel of Boards of Intermediate and Secondary Educations in Dhaka, Rajshahi, Chittagong, Jessore, Barisal, Comilla and Sylhet and NCTB.
- Introduction of technical and vocational courses in the madrasa and general education.
- Introduction of science and technology curriculum in madrasa and general education. Increase the enrolment in technical education from the existing 6% to 25% within next 15 years
- Introduction of technical and vocational courses in secondary, higher secondary and Madrasa levels.
- Introduction of double shift in the existing technical schools, colleges and polytechnic institutes.

- Establishment of one technical school at each Upazilas.
- In order to include the students with disabilities in the mainstream education system, provision for sign language for the hearing impaired students, jaw computer, Braille books, electronic devices for visually impaired students, will be considered.
- Quality enhancement of teachers and officers
- Establishment of trust fund to provide stipend to the poor and meritorious students upto degree level.
- Improve infrastructural facility of educational institutes.
- Establish a strong ICT network among Ministry of Education, Directorate of Secondary and Higher Education, University Grant Commission, Education Engineering Department, Education Boards, Universities, Directorate of Technical Education, NAEM, BANBEIS, Education institutes and other allied institutes and Government Bodies.

Recent Developments in Technical Education

Various projects for quality enhancement and increased participation in secondary education have been undertaken. Secondary Education Sector Improvement Project (SESIP) was the main effort for secondary education development for the period 2000-2006. Equitable access of girls, textbook production, improvement of teacher education, examination system development and strengthening ministry level capacity were the areas for intervention under this project. The sub-sector support project also aimed to prepare the ground for future development and effective use of internal and external resources for this purpose. Particularly relevant from the perspective of poverty reduction is the project objective of equitable access to secondary education by building new schools and classrooms in underserved areas and providing stipends and tuition waivers to girls.

A major boost to female participation in the secondary level was given by various stipend projects for girls. There are five of these projects underway at present which provide stipends to over 4 million girls in more than 21,000 institutions in all rural Upazilas in the country. The girls were also exempted from tuition and the schools were compensated by the government for the loss of tuition.

Teaching Quality Improvement (TQI) Project in Secondary Education was planned to follow SESIP for the period 2005-2010. Improving the quality of teaching is the overall goal of this project. The project, at an estimated cost of US\$ 97 million, was funded by ADB and CIDA. The components of this project are : (a) Capacity Building : an improved teacher training system, strengthened capacity of DSHE and BANBEIS, creation of an incentive fund for teacher education institutions, and management training of personnel; (b) Improving in-service and preserves training: School-cluster in-service training and teachers' resource center, upgrading training institutions, accreditation of trainers, distance mode teacher training, preparation of teacher training materials, program communication and mobilization; (c) Improving Teacher Training Facilities: Renovation of training institutions and equipping Upazila Teacher Resource Centers; (d) Equitable access: access in remote rural areas,

internships for teachers in underserved areas, support for schools in disadvantaged areas and increasing the number of women teachers. In addition, a project worth 373,29,48 lac taka have recently (October, 2010) been approved for providing ICT training at primary, secondary and higher secondary level in 128 Upazilas.

One of the key problems of technical education is lack of qualified teaching staff in technical schools, polytechnic institutes and engineering colleges. A significant initiative for quality improvement was to set up a Registration, Certification and Training Authority (RCTA) for secondary school teachers. The aim is to have all teachers to acquire professional qualifications and be certified and registered as qualified for teaching by a certifying authority.

Projections of children in the secondary education age group and of enrollment in the decade ahead are shown in Annex 7.8 and 7.9. Growth in enrollment in the general stream and in the Madrasas is indicated on the basis of extrapolation of recent trends. These projections would be sensitive to policy decisions such as implementation of the policy to extend universal primary education up to grade 8 or decisions regarding balance between madrasa and the general stream in respect of government subvention. There is a trend of leveling off of the numbers in the age group of eligible population for junior, secondary and higher secondary education, because of the decline in population growth.

HIGHER EDUCATION

Performance and Development in Higher Education

The major components of tertiary education network in 2010 were 33 public general and specialized universities, 54 private universities, 1778 colleges of different kinds affiliated with the National University as well as the Bangladesh Open University. The University Grants Commission (UGC) is the regulatory body for university level institutions.

Historically, the University of Dhaka, and degree colleges in the old district centers of the eastern part of Bengal had earned a reputation for academic standards and as centers of intellectual pursuit. A massive expansion of the system and the demands of time have altered the character of higher education over the last half century. In numbers of institutions and enrolment, tertiary education has recorded over five-fold growth since the birth of Bangladesh in 1971. Yet participation of only 7 out of every 1000 persons in higher education in today's "knowledge economy" and "information society" has to be considered meager.

Students and teachers in higher education as reported by UGC in 2010 are shown below:

- Enrolment in 33 general and specialized public universities 1,382,216 (except National university and open university)
- Enrollment in Open University 290,000.
- Enrollment in 1778 degree colleges under the National University 1,119,275
- Teaching staff in 31 general specialized public universities 9241.
- Teaching staff in the Open University 97 (main campus).

- Teaching staff in the National University main campus 78.
- Teaching Staff in colleges under National University 67,953
- Enrolment in 51 private universities 213,872
- Teaching Staff in 54 Private Universities (Full-time) 5710
- Teaching Staff in 54 Private Universities (Part-time) 3, 630 and 1,461 were in study leave or absent for other reasons.

Bangladesh Open University (BOU), established in 1992, offers a variety of courses in the distance education mode including degree courses in business and education and diplomas and certificates in various fields. The Open University (as well as the Open School under BOU auspices that allows students to sit for SSC and HSC examinations) has contributed to broadening access to higher education and meet both social and market demand for it. In 2010, registered participants in various BOU courses were reported to be 290,000. Less than a quarter of those registered complete courses and take the examination and about half of them receive the diploma.

In response to social as well as market demand, the tertiary education system has grown. An expansionist approach has been followed, particularly in the sphere of degree colleges under the National University and in approving liberally the charters for private universities. Private Universities have grown in number and enrollment rapidly since the Private Universities Act was adopted in 1992. In 2009, the number of students has increased more than about 25 times from 8,700 to 213,872 surpassing enrolment in public universities other than National and Open Universities. The number of institutions has increased in 36 by 2009. The rapid growth in number and size of private universities and the absence of effective self-regulation or regulation by the UGC have, however, raised concerns about their quality and protecting consumers from unscrupulous "entrepreneurship." UGC has a new law with regards to establishment and operation of Private University of Bangladesh which was approved in the Bangladesh National Parliament in 2010. This law will replace the 1992 Act and require stronger self-regulation, specify the responsibilities of various parties involved in establishing and managing the institutions, and the formation of an accreditation council for maintaining academic and instructional standards.

The number of students passing HSC examination who then would be eligible for tertiary education has varied considerably from year to year. There are problems with both the examination system and how quality standards are applied in institutions and in the examination process. The institutions under the National University have an intake capacity of about 300,000 students in affiliated degree colleges and a small number of specialized professional colleges. The public and private universities can admit about 40,000 in each category. The Open University offers another avenue for tertiary education to those who do not want to or cannot be full-time students. There appears to be enough overall tertiary education intake capacity at present for students who are eligible and interested in pursuing higher education. At the same time, fewer than 5 percent participation in the tertiary education

age group is low by even developing country standards.

In higher education, the policy initiatives include:

- Expansion of Agriculture universities.
- Establishment of science and technology university one each at greater districts.
- Steps to free the higher education institutes from terrorism, politicization and session backlogs.
- Improve the quality and relevance of the teaching and learning environment in higher education institutes
- Undertake higher education quality enhancement project.
- An Accreditation Council is being established which would function as a watchdog over the private universities in order to monitor the teaching standard of universities.
- Private University Act with a view to enhancing quality of education and transparency of the management of the Private Universities.
- Training program for the teachers.
- Modernization and renovation of existing infrastructure facility of Universities.

Challenges in Higher Education Sub Sector

Dilemma of expansion and quality: The dilemma in higher education is that the overall participation and outputs of graduates in higher education are still low compared to other developing countries. In addition, low quality of education in most institutions and inadequacy of resources necessary to maintain quality put into question the value of the growth and further growth along the same line. A strategic planning exercise undertaken by UGC in 2006 projected that 12 new public universities have to be established by 2026, if 10 percent of the HSC graduates compared to (4 percent at present) are to be admitted to university. The expansion of privately provided higher education although has contributed towards meeting the high demand which the public universities have been unable to meet, there is increasing concern over the quality of education provided in those institutions. This concern is particularly relevant for the recently established small scale private universities, which lack both physical infrastructure as well as academic competency.

Demand for public university access: The problem regarding access to higher education arises from the fact that there is intense competition for the limited places in public universities and a few prestigious colleges and for fields which are seen to have a high market value. While private universities have widened the door of higher education, high tuition charges to make them self-financing also makes them out-of-reach of the poor or even the middle-class. Moreover, the quality of instruction in most of them is regarded at best as uncertain.

The main issues regarding access to tertiary education, therefore, are two-fold: (a) equity of access to universities and prestigious institutions leading to potentially high private return from higher education, and (b) the balance of enrollment in different fields. The culling-out

process in secondary education that allows a very small proportion of students to complete the secondary stage and the diversion of a large majority of higher education aspirants, often the ones from poor and lower middle class families in rural areas, to generally low quality degree colleges, make for a highly inequitable system of higher education. Selectivity based on merit is not the issue; the problem arises when general colleges become an expedient way of meeting social and political pressures rather than offering a credible education program.

Inequality and gender disparity: Inequality is compounded by high public subsidy for higher education. The ability to compete on the basis of equal opportunities at the basic education stage is not ensured; this inequality is multiplied progressively through higher stages of education, reflected in selectivity which favors urban residents and the wealthier strata of society. In this context, the SFYP considers the importance of establishing special technical university/ICT university for the students with disabilities. Gender disparity in higher education persists, despite progress at the primary and the secondary level. About a third of the students in degree colleges are girls and under a quarter are girls in universities. The ratio of girls is lower in most specialized professional institutions.

Imbalance among disciplines: Balance among disciplines in tertiary education as a whole remains tilted towards humanities and social sciences at the cost of science, technology, and applied subjects. In degree colleges, where over 80 percent of higher education students go, the balance is even more skewed than in universities, mainly because of the lower costs for the humanities subjects and difficulty in recruiting teaching staff in areas other than humanities. Over 80 percent of the students in public universities were enrolled in general studies rather than in applied sciences and specialized professional courses. A hard formula cannot be prescribed for distribution among disciplines, but the present balance would be generally regarded as inappropriate.

ISSUES RELATED TO TRAINING

Performance and Challenges in the Context of Training

Based on the recent Labor Force Survey (2005-06), the working age population in Bangladesh is about 54 million (age 15 years and over). About half of this population, have not been subjected to any formal education, either at the primary level or lower. A little over half of the work force has an educational level beyond primary education. These numbers encapsulate the nature of the education and skill development task for the country. Half of the work force is without any education. Only one-third is with education at primary level. Such low level of educational attainments of the Bangladeshi work force limits the possibility of its competing in the global market. Moreover, the poor quality of education acquired restricts its ability to (a) further acquire advanced skill through development of training programs and (b) continuing upgrading and adaptation of workers to changing skill demands.

Most workers in Bangladesh are employed in the informal sector, with agriculture as the major sector of employment. The informal sector provides some 78 percent of total employment, of

which 48 percent is in agriculture. Overseas employment of poorly skilled workers has also become a significant source of employment. Every year, about 250,000 Bangladeshis migrate abroad. About three million people of Bangladeshi origin are living and working abroad presently.

The primary responsibility for overseeing the pre-employment training rests with two agencies: the Directorate of Technical Education (DTE) and the Bangladesh Technical Education Board (BTEB). The vocational and technical education (VTE) programs regulated by the Technical Education Board attached to the Ministry of Education offers courses of one to four years duration after the junior secondary level (grade eight). The courses are offered by vocational training institutes, polytechnics, commercial institutes, technical training centers and specialized institutes. Private sector institutions are increasing, especially in the IT sector and in response to opportunity for work abroad as skilled and semi-skilled workers.

Certificate level courses (post-class 8) in various trades and skills are offered in approximately 100 public sector institutions (under Ministry of Education and Ministry of Labor and Employment) and some 1,500 non-government institutions, other than secondary schools with vocational courses. The introduction of vocational courses as part of SSC and HSC and business course at the HSC level by the Directorate of Technical Education, (so far in approximately 1200 institutions at SSC level and 500 at both SSC and HSC levels) has helped to raise the share of post-primary student enrolment in VTE somewhat. But it is still only around 2 percent of enrollment after grade 8. In 2005, about 130,000 students were enrolled in these courses. This number was double the enrolment in the same categories in 1997-98.

Diploma level courses (post-grade 10) were offered in some 600 institutions, the large majority of them in the private sector, including the higher secondary schools or colleges. The Ministry of Labor and Employment offers skill training in the Institute of Marine Technology and 13 Technical Training Centers. Another 22 Centers are in the process of being established. The trades offered in TTC's, after junior secondary general education, are taught through two yearly modules. The first module qualifies the trainee for the National Skill Standard III (Semi-skilled worker) and the second module meets the requirements for National Skill Standard II (skilled worker). The Centers also can offer tailor-made basic trade courses of 360 hours' duration in various trades for students of schools and Madrasas or other interested groups. The Department of Youth Development in the Ministry of Youth and Sports run training of 1 to 6 months' duration on various trades with the aim of helping trainees engage in self-employment or paid employment. A 3-month long residential training course on livestock, poultry, and fish culture is offered in 53 training centers in 53 districts. Alongside these training centers, DYD conducts short training courses through its deputy director's offices located in the district head quarters. It also conducts training courses through a number of on-going and completed projects. Training of 6 month-duration on computer, electronics, electric house wiring, and refrigeration and air conditioning is offered in some of the centers. The Department also provides training for women on dress-making and block and batik printing in all districts. In addition short-duration mobile training courses are offered at the Upazilas

level. Ministry of Women's and Children's Affairs provides short courses for women in such areas as poultry, dairy, livestock, food processing, plumbing, and electronics, which have local demand. Other providers of these kinds of courses are the Ministry of Social Welfare, the Directorate of Ansar and the Village Development Party (VDP) under the Home Ministry and the Bangladesh Small and Cottage industries Corporation.

Despite these multitude efforts, the availability of trained labor remains a problem. Additionally, there is a mismatch between available jobs and required skills. The difference in remuneration for skilled and unskilled workers has narrowed, which is an indication that the training content and quality are not valued highly in the market. Those with training often remain unemployed or cannot find employment in their area of training – an evidence of mismatch and poor quality of training. The employers complain that the products from the vocational system are not meeting their needs. Instead, the system continues to produce graduates for old and marginal trades, which have no market demand, while skill needs for newer trades remain unmet.

Vocational and Technical Education

Out of the labor force aged 15 years and above, around 40% have no formal education. This encapsulates the nature of the education and skill development task for the country. With half of the work force without education and only one-third with education at primary level and beyond, they limit the possibility of skill development through training programs and continuing upgrading and adaptation of workers to changing skill demands.

The working age population (15-64) has grown by about 18 million since the mid 1990s to 2003, to 77 million and the labor force has also grown by about 10 million over the same time period. Women's participation in labor force remains low, but it has been growing at a faster pace lately. Over five million women have joined the labor force since 1996, thus raising this total to 10 million.

The Department of Youth Development in the Ministry of Youth and Sports run training of 1 to 6 months' duration on various trades aiming at helping trainees to engage in self employment or paid employment. A 3-month long residential training course on livestock, poultry, and fish culture is offered in 47 training centers in 47 districts. Training of 6 month duration on computer, electronics, electric house wiring, and refrigeration and air-conditioning is offered in some of the centers. The Department also provides training for women on dressmaking and block and batik printing in all districts. In addition short-duration mobile training courses are offered at the upazila level.

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training is also being offered for capacity enhancement.

Shortage and Mismatch in Training

The sub-sector is characterized by paradoxes. People with vocational/technical skills are in short supply, but there is evidence that there is a mismatch of jobs and skills; the difference in remuneration for skilled and unskilled workers has narrowed which is an indication that the training content and quality are not valued highly in the market. Those with training often remain unemployed or cannot find employment in their area of training – an evidence of mismatch and poor quality of training. It has been estimated that for every single person in the labor force with a technical/vocational qualification there are more than 104 others who have completed SSC or HSC; and 34 others who have gone onto a university degree or higher. At the same time, employers' perception is that the products from the vocational system are not meeting their needs; that the system continues to produce graduates for old and marginal trades, which have no market demand, while skill needs for newer trades remain unmet.

Informal Skill Development

Informal and traditional apprenticeship and on-the-job experience are the means for creating most of the skills that keep the bulk of the economy and production of the country running. A master craftsman, himself inheriting the skill from his father or another "master," training his assistants in exchange for free labor or a reduced wage, produces such skills as welding, turning, bricklaying, carpentry, furniture making, electrical maintenance, plumbing, bicycle repair, motor repair and so on. Not enough is known about the system and its strength and weaknesses. An attempt to bring the system under official regulation may not be a good idea. However, maintaining an overview of the system and considering how the more formal training programs of the government and the private sector can complement and supplement the informal system can enhance the effectiveness of the total nationwide skill generation capacity.

A wider clientele including the poor can be served to the extent that skill development activities adopt more non-formal, flexible and variable-duration approaches with eligibility criteria not strictly tied to formal education. There are many questions, as noted earlier, about internal efficiency and external effectiveness of programs and their actual contribution to poverty alleviation.

Training Strategies and Policies in the SFYP

The government policies and goals are to increase substantially the proportion of post-primary students enrolling in VTE. The equity effect of this expansion is dependent on three interconnected questions: (a) the extent the clientele of the programs is the disadvantaged and poor segments of the population, (b) how effective the programs are in imparting sellable skills, and (c) whether there is an impact of the training programs on increasing employment opportunities and raising income of the poor.

The impact of public sector VTE on poverty alleviation is undermined in two ways. It mainly serves the urban young males who have completed at least the eighth grade. The rural poor, who do not survive progression to grade 9, are mostly ruled out. The failure to diversify its clientele and to make the programs more flexible, adaptable and responsive to market needs and geared to the informal economy suggests that the VTE is failing to help the poor improve their employment and income opportunities.

To address these concerns the Government has established the National Skill Development Council (NSDC) as the apex body for policy formulation on skill development with representation from the government, employers, workers and civil society. A draft of a national skill development policy has been prepared in 2009 under the auspices of the Council. This policy attempts to address the issues raised above and proposes to strengthen the Bangladesh Technical Education Board as a quality assurance mechanism. The new Skill Development Council will also consider the following strategic approaches during the sixth plan:

- Re-thinking the role of public sector skill training in developing a strategy to expand and modernize VTE to meet market demands and extend greater benefits to the poor
- Ensure equal opportunity for boys and girls in vocational education
- Improving the link between training and job markets.
- Improving the positive effect on poverty reduction by targeting new clientele.
- Improving efficiency and quality of programs.
- Strengthening of the directorate of sports, so that it can effectively contribute to the development of sports and physical training all over the country.
- Compulsory introduction of physical education up to class VIII. Physical education teachers in primary and junior schools will be given special training through physical colleges and other classified training centers.
- Establishing sports schools and sports colleges.
- Strengthening BKSP with a view to convert it into a full fledged sports university. Sports curriculum in SSC and HSC. Regional BKSP will be transformed into sports school at all division.
- Eleven youth training centers will be established at 11 districts for skill development training.
- National sports complex at Mowa, near Dhaka and national football academy will be established during the plan period.
- Youth exchange program will be strengthened.
- Establishing women sports complex in remaining divisions.

The Sixth Plan aims at increasing numbers of skilled workers including those in information technology at different levels of skills to meet growing demands both in the domestic and international markets. Key strategies include:

- In all institutions including Madrasas, prevocational and IT education will be introduced in grades 6 to 8.
- Equivalencies will be established between formal vocational education after grade 8 and four grades of national skill standards. Tertiary technical education will be open to vocational graduates from formal courses as well o those who achieve required skill standards.
- Apprenticeship programs will be encouraged and the 1962 Act for this purpose will be updated.
- Teacher training will be improved and teachers will have attachment in industries as part of training. A Technical Education Teacher Recruitment and Development Commission has been proposed.
- A vocational training institution will be established in each upazila. The range of courses offered in secondary and technical institutions will be expanded.
- All vocational technical education and training institutions will be brought under the jurisdiction of the Directorate of Technical Education. Consideration may be given to transforming the Directorate into an autonomous IT, Technical and Vocation Education Council.
- Public-private partnership will be encouraged in establishing and managing new institutions. Non-government institutions will be supported with MPO funds and grants for equipment.
- Part-time courses and use of facilities in second shifts will be encouraged.
- To reintegrate transsexuals through education, livelihood oriented vocational education and accommodation

The policy recommendations regarding equivalency and apprenticeship, if implemented, will promote flexibility in the system through establishing equivalencies between formal courses and skill standards and by encouraging apprenticeship. Major efforts and investments in pre-vocational education is proposed, but international experience in this respect signal caution, because such investments within formal general education have generally not paid off. These ideas need careful consideration before these are formulated into operational plans for implementation.

SPORTS

Sports is considered as one of the crucial prerequisites for development of discipline, physical and mental health and moral character of individuals. It also helps to enhance sense of participation, self confidence and patriotism of citizeners.

Objectives under the SFYP

With the spirit of human resource development the objectives of the sports sub-sector during the Sixth plan are:

- To create physical facilities in sports at union and thana levels;
- To complete all on-going works of stadia and sports complexes at the divisional and districts levels;
- To encourage wider participation of women in sports activities;
- To provide adequate coaching and training facilities ;
- To popularize indigenous and less costly games in rural areas;
- To encourage different sporting activities among children in educational institutes;
- To encourage production of adequate sports equipment in the country;
- To emphasize sporting activities integral parts of educational curricula at all levels;
- To strengthen and modernize physical education facilities in the educational institutions;
- To support private sector's participation in promotion of sports and physical education.

Strategies under the SFYP

- Measures will be taken up for development of some selected indigenous and less costly games for wider participation rural areas;
- Strategies will be taken to encourage and ensure participation of women in all types of sports and games;
- More women sports centres in all divisional towns will be constructed to facilitate their participation;
- Steps will be taken to repair, renovate and expand existing facilities;
- Different national sports federations will be regularly hold national, zonal and regional competitions; private organisations will be encouraged for the purpose;
- Sports talents both male and female, from the younger groups will be identified and intensive training will be provided to them;
- Development of sports facilities at union and thana levels by developing at least one complex at every thana centres will be undertaken;
- Coaching programs will be organised through Bangladesh Krira Shikkha Protisthan to train players of national teams;
- Existing colleges of physical education will be strengthened and more colleges of physical education will be established;
- Participation in games and sports and attainment of a set standard in at least one recognised athletics or games will be required in all educational institutions at all levels;
- Local government bodies will be involved in sports activities to complement the national efforts.

CULTURE

The provision in the Constitution of Bangladesh in respect of cultural development is as follows:

Article 15: It shall be a fundamental responsibility of the State to attain, through planned economic growth, a constant increase of productive forces and a steady improvement in the material and cultural standard of living of the people.

Article 23: The State shall adopt measures to conserve the cultural tradition and heritage of the people and so to foster and improve the national language, literature and the arts that all sections of the people are afforded the opportunity to contribute towards and participate in the enrichment of the national culture.

Article 24: The state shall adopt measures for the protection against disfigurement, damage or removal of all monuments objects or places of special artistic or historic importance or interest.

The history, civilization, national character and identity of a nation are reflected through its culture. In line with the course of cultural progress in the world context, Ministry of Cultural Affairs is making relentless effort to develop, preserve, promote and extend the culture of Bangladesh through its different organizations.

Bangladesh Shilpakala Academy is engaged for preserving, developing, promoting and encouraging national culture through fine arts, drama, music etc. Bangla Academy, Public Library and National Book Center, National Archives and National Library are responsible for education, research, publishing books & journals and give support to all categories of readers. Folk Art and Crafts Foundation has been working for preservation and development of folk art and crafts. National Museum preserves and exhibits the cultural heritage of Bangladesh. The Copyright Office is to protect creative intellectual property rights from piracy. Department of Archaeology preserves historical sites and exhibits the antiques. In addition, there are seven tribal cultural centers. These Centers are also playing vital role in order to promote tribal cultural activities.

Review of Past Plans

During First Five Year Plan to Fifth Five Year Plan the importance of cultural development was recognized. Schemes were drawn up for development of Bengali language and literature. Board for Development of Bengali was amalgamated into the Bangla Academy and the Shilpakala Academy and the National Museum were set up. During the Second and third five year Plan periods, some infrastructural facilities were created for qualitative and quantitative expansion of cultural activities. The fifth five year plan also promoted a healthy growth of cultural activities throughout the country and a number of projects and programmes were taken at that time.

Goals & Objectives under the SFYP

The Government of Bangladesh has declared 4 following agendas with a view to promoting cultural sector.

- The State will provide necessary assistance for preservation of the secular and democratic tradition of Bengali culture as well as further improvement of Bengali language and literature, music, arts and all branches of creative works and fine arts.
- Creation of social awareness, scientific and liberal outlook will be emphasized with a view to resisting communalism and narrow vested interest.
- Create opportunity to improve Bangla language as well as languages of the tribal communities
- Due respect will be shown to the principle and values of all religion.
- The International Mother Language Institute Project has been reactivated.

Objectives: Cultural development sector during the Sixth Five Year Plan will aim to promote healthy growth of cultural activities throughout the country. In addition to promotion of literature and fine and performing arts, attention will be given to create and promote a culture attuned towards work, perseverance, confidence and creativity. The major objectives in this field are to:

- Develop Bengali language and literature and create facilities to develop Bengali as the medium of instruction;
- Help and promote production and publication of quality books and make them available to the masses at reasonable prices;
- undertake programs for implementation of the national book policy;
- carry out research on the lives and works of great men and women of our nation;
- flourish the perception of ‘Amar Ekushey’;
- establish and develop a library network system from the national to the rural level and introduce modern technology to this end;
- promote and foster cultural activities and citizen participation throughout the country reflecting values, hopes and aspirations of the people;

- develop infrastructural facilities for fine and performing arts including drama and theatre and explore private and voluntary involvement in this area;
- preserve and present national history, culture and heritage;
- review the existing laws on drama/theatre;
- cherish and cement national unity and consensus in a pluralistic democratic society;
- promote good citizenship through sensitization of rights, duties and responsibilities;
- preserve and promote arts and culture of tribal areas within the framework of national unity.
- Protect copy rights of intellectual property.

Strategies under the SFYP

- Programs for development of Bengali language and literature and reference books for higher education will be continued with greater emphasis;
- Programs will be undertaken for book development and development of reading habits;
- Nazrul institute will be involved with research on the life and works of our national poet Kazi Nazrul Islam. A memorial library and research center will be established at Comilla respectively;
- Research programs on lives and works of great people will be undertaken and memorial libraries and institutions will be established in respective areas;
- Legislation for national and public libraries will be adopted and programs will be undertaken to develop library network and services from national to the rural levels in order to meet the education, recreational, cultural and information need of people at all walks of life;
- National institutions like National Theatre, National Art Gallery and National Music Center will be strengthened and necessary physical and institutional facilities will be created for their proper development;
- Physical facilities of the Bangladesh Shilpakala Academy will be expanded and developed as per the master plan of the Academy for promotion of fine and performing arts from national to Upazila level;
- Regional and tribal cultures will be promoted and preserved through various programs;
- Programmes for development of folk arts and crafts village and miniature Bangladesh at Sonargaon will be undertaken;
- National survey on archeological sites will be carried out;
- Physical facilities for the department of archaeology will be developed;
- Historical monuments will be identified and preserved;
- Programmes for further development of Bangladesh National Museum and other museums under it will be taken up;
- Legislation for the protection of the relics and mementos connected with the Liberation Struggle of Bangladesh will be undertaken;

- Amendment to the Antiquities Act will be undertaken to strengthen protection of archaeological sites and historical monuments;
- Works of art of the Bengali painters will be procured and preserved for display in important public buildings and missions abroad;
- Fine arts like music, painting, arts & crafts, recitation, acting, dancing, theatrical performances would be introduced at primary & secondary level as per education policy;
- Private sector as well as the local government bodies will be encouraged to contribute their resources and efforts for cultural development.

To preserve and develop our tangible and intangible cultural heritage needs involvement of people at the grassroots level to ensure participatory planning. Many of the intangible cultural heritages like language literatures, arts, performing arts, music and other areas are at the verge of extinction. Careful attention needs to be given for their restoration, preservation and digitization. Institutional establishment as well as human resources development for such delicate works needs to be made carefully.

The Archeological sites are invaluable properties to our history. Most of the sites are yet to be explored, preserved and restored. Due to shortage of skill, human resources, funds and communities involvement it is greatly impaired. Proper perspective, short, medium and long-term plan needs to be carried out. As per new education policy school curriculum included subjects like art, music, dance theatre etc as an optional subject. Bangladesh Shilpakala Academy should be equipped to produce a huge numbers of subject oriented texts and teachers for matching with national needs.

RELIGIOUS AFFAIRS

Review of Past Policies, Strategies, Programs/Projects of the Sub-Sector

The major programs of the religious sub-sector of the Fifth Five Year Plan and the following years relating to pre-primary education program were taken up with the aim of raising the literacy rate, enrollment and reduction of the dropout rate. The mosque and temple based child and mass literacy projects were taken up which showed significant success in increasing enrolment and reducing dropout rate at pre-primary and primary level. Besides the trained religious leaders are playing a vital role to build up awareness among the people on reproductive health, early marriage, safe motherhood, dowry, family welfare, HIV/AIDS and other socio-economic activities. In the meantime the trained Imams are assisting and working for promoting religious values, universal brotherhood, good citizenship and establishing communal harmony in the society. A total of nine projects were taken up for implementation at a cost of Tk. 1585.88 million under the Fifth Five Year Plan. During the Plan period the Mosque based child and mass literacy program was implemented where 6,11,520 learners (children) were given education. Under the Imam training project 10,000 Imams and 795 officers and staff were trained. Besides 5000 mosque library were set up, 125 titles of books published, 160 books reprinted, translation and compilation of 152 books and 10 volumes of

encyclopedia of Prophet (sm) were published. Under the Involvement of Religious Leaders in HRD program 15,313 religious leaders were trained up. The construction work of Islamic Foundation Complex, Mujib Nagar Complex and Jamiatul Falah Masjid Complex were taken up for implementation and completed timely.

Goals & Objectives under SFYP

Goals

- Moral & ethical values will be promoted and fostered among the people and some kind of check and self restraint against corruption, dishonesty, terrorism, anti social activities and other social values will be established in the society.
- People (men and women) will get literacy and consciousness on religious and ethical values will be developed.
- Economic condition of poor people at union level will be up lifted and poverty will be reduced through Zakat and Ushar collection and distribution locally.

Objectives

- To promote and establish religious values in the society for promoting good citizenry knowledge society and providing check and self-restraints against corruption, terrorism, anti social activities, dishonesty and malpractice;
- To establish a well organized pre-primary stream for the children with a view to increasing enrolment and retention throughout the primary school cycle;
- To construct Islamic Foundation divisional and district office for effective management and coordination of various development activities at district level;
- To impart training program and to give credit facilities to 50,000 women and religious leaders in the remote area;
- To improve the monitoring and evaluation system of development activities being implemented under the Islamic Foundation and Hindu, Buddhist & Christian Religious Welfare Trust;
- To promote habit of savings and perseverance and other traits conforming tolerance and communal peace and harmony;
- To provide grants to all communities to repair and renovate their places of worship like mosques, churches, temples and pagodas;
- To create employment opportunity for the religious leaders & madrasa educated people;
- To preach and propagate Islamic dawah philosophy, enhancement moral and ethical education;

- To establish 20000 new libraries in religious institutions throughout the country;
- To run English, Arabic and other suitable language training courses and vocational training courses for madrasa educated people for creating employment opportunity.

Targets under the SFYP

- To provide literacy and religious education to 145500 rural women.
- To provide literacy and religious education to 9,00,000 adult people.
- To establish 40,000 new mosque libraries throughout the country.
- To run English, Arabic & other suitable language training courses and vocational training courses for all religion.
- To construct a 100 bedded modern hospital and provided Medicare facilities to the helpless people.
- The rate of zakat and ushar collection will be increased through involvement of Imam & muezzins and distribute it to the poor people.
- To establish 200000 pre-primary schools/centers for age group (4-5 years) at religious institutions within 2021.
- To impart training program and to give credit facilities to 60000 men and women in the remote areas.
- To publish 300 classics in English and other foreign languages from Bangla version.
- District & Islamic mission offices will be established with required physical infrastructure facilities.
- Establishment of 31 Islamic Mission hospital with required physical infrastructural facilities and provided Medicare facilities to the people of remote area.
- Near about 15000 Imams/muezzins/Shebait, Purahit, Priest and vikkhu/heads of pagoda will be involved in food processing packaging selling and any self-employment program through a developed marketing network.
- Near about 2,50,000 Imams & Muazzins/Shebait, Purahit, Priest and Vikkhu will be engaged in plantation program.
- 10,00,000.00 saplings will be planted in the mosque area and in other places.
- Islamic Foundation activities will be computerized and a digital archive will be established.
- About 1,500 officers and staffs will be trained in ICT and about 10,000 religious leaders will be trained in disaster and climate management.
- Establishment of Information Centers at Divisional level.

- Secondary school based ethical education to counter terrorism and antisocial activities.

Current and Future Challenges

Ministry of Religious Affairs wants to develop of Hajj management by involving the Hajj agencies as development partner in the development process of Hajj management. This ministry will take necessary steps to strengthen waqf administration for smooth management and functioning of the waqf office. Ministry of Religious Affairs is responsible for assisting centers (mosques, churches, temples, pagodas and related academies and institutes) in undertaking research and promoting religious values, universal brotherhood and good citizenship. Islamic foundation is the agency under the ministry which looks after implementation of the programs, relating to setting up mosque libraries, conducting religious institution based pre-primary and mass education and promoting studies/research in Islamic history, Islamic dawah philosophy and basic Islamic ideals. One of the responsibilities of the Islamic Foundation and HRWT and BRWT is to involve Imams/religious leaders in population development and family welfare and other socio-economic activities through proper training at the Imam Training Academy and district offices. A publicly supported trust serves to meet the religious needs of the Hindu, Buddhist and Christian communities.

Religious leaders of different religions are trained aiming to the development of human resources. Basic pre-primary and non-formal education has also been provided to the children up to age group 4-5 under the activities of Mosque and temple based program under the Ministry of Religious Affairs. Ministry of Religious Affairs has been working for the empowerment of religious leaders, madrasa educated people, religious minded women and to ensure improvement of the moral and ethical values of the people. To preach and propagate Islamic philosophy, enhancement moral and ethical education and measures will be taken against anti social activities, corruption and terrorism at national and international arena.

The Religious sub-sector of the Sixth Five Year Plans have been initiated phase wise involving people at the grass root level to ensure participatory planning. It will obviously take some time to determine the specific objectives, strategies and resources for implementing this future plan. Many of the programs and projects in the aria of human development, pre-primary education, poverty reduction, women empowerment and family welfare, employment opportunity and in other sectors will take us well and to achieve accelerated growth of the economy. So, these are generally the issues that the future plans will really have to be addressed. It is, therefore, visualized that the programs and projects of religious sub sector included in SFYP would be in conformity with the basic objectives and strategies of the country's future plan.

Strategies under the SFYP

- Existing Imam Training Academy will be functionally strengthened and reorganized and 10 more centers will be established including one in Gopalganj district.

- Mosques, temples, churches and pagodas will be encouraged to take up literacy and family planning drives and hold discourses aimed at raising social consciousness;
- Waqf and trust properties will be managed more effectively for increasing their welfare activities;
- The highest emphasis will be on pre-primary education; to bring all villages and mahallas under the cover of compulsory, uniform and free pre-primary child education;
- Massive and continuous training of teachers at pre-primary level and Maktab teachers within the country will be undertaken;
- Local government bodies will be increasingly involved in management of pre-primary (child education) centers;
- Education extension and management training for teachers and educational administration will be organized on strong footing;
- There will be a multi-directional approach to combat illiteracy. Child education will be expanded along with strengthening the government mass literacy centers;
- Monitoring, inspection and evaluation will be strengthened for ensuring quality.

ALLOCATION OF DEVELOPMENT RESOURCES IN THE SIXTH PLAN

The government aims at achieving universal primary education; eliminating illiteracy; ensuring gender equity in all spheres of society; and an overall improvement of quality and equity in education. In the sectors of religion promoting and fostering moral & ethical values in the society will be given prime importance. Bengali literature will be given greater emphasis in the sphere of culture. In the context of sports, emphasis has to be given for enhancing sense of participation, self confidence and patriotism of citizens. With a view to achieving the targets mentioned in the SFYP the planned development resource allocations in current and constant prices are shown in Table 7.3 and 7.4.

Table 7.3: Allocation of Development Resources for Education, Religious Affairs, Sports and Culture, and Labor and Manpower in the Sixth Plan
(crore taka; current price)

Ministry/Sector	FY2011	FY2012	FY2013	FY2014	FY2015
Ministry of Primary & Mass Education	3207	4034	4913	6203	7601
Ministry of Education	1686	2330	2763	3489	4275
Total Education	4893	6365	7676	9692	11876
Ministry of Labor & Employment	33	71	83	102	122
Ministry of Expatriates Welfare & Overseas Employment	85	89	93	112	130
Total Labor & Manpower	118	159	177	215	251

Ministry of Cultural Affairs	128	141	167	205	243
Ministry of Religious Affairs	137	195	359	418	476
Ministry of Youth & Sports	268	298	338	396	450
Total	5544	7158	8717	10925	13297

Table 7.4: Allocation of Development Expenditure for Education, Religious Affairs, Sports and Culture, and Labor and Manpower in the Sixth Plan
(crore taka; FY 2011 price)

Ministry/Sector	FY2011	FY2012	FY2013	FY2014	FY2015
Ministry of Primary & Mass Education	3207	3753	4271	5063	5853
Ministry of Education	1686	2168	2402	2848	3293
Total Education	4893	5921	6673	7912	9146
Ministry of Labor & Employment	33	66	73	84	94
Ministry of Expatriates' Welfare & Overseas Employment	85	83	81	92	100
Total Labor & Manpower	118	148	154	175	194
Ministry of Cultural Affairs	128	131	145	167	187
Ministry of Religious Affairs	137	182	312	342	367
Ministry of Youth & Sports	268	277	294	323	347
Total	5544	6659	7578	8918	10240

CHAPTER 8: HEALTH, POPULATION AND NUTRITION SECTOR DEVELOPMENT PROGRAMS

PAST PROGRESS AND CHALLENGES IN THE HPN SECTOR

Health is now universally regarded as an important index of human development. Poor health is both the cause and effect of poverty, illiteracy and ignorance. Policies of human development not only raise the income level of the people but also improve other components of their standard of living, such as life expectancy, health, literacy, knowledge and control over their destiny. Health is both a major pathway to human development as well as an end product of it. Health and development converge and contribute to each other.

Alma Ata conference in 1978 heralded the vision of a new and better future for all of the human family: Better health is one of the prime objectives of development. The interrelationship between health and general economic development is complex and poorly understood. The social components of a better quality of life are benefits in themselves, but more importantly, they can be used as instruments of change or as means of increasing productivity. Better health is both an objective of and an instrument for development. Poverty leads to hunger and malnutrition and resultant diseases – low birth – weight (LBW) babies', malnourished adolescents and malnourished mothers.

The ultimate focus of economic development is human development. The ultimate concern is what people are capable of doing or being. Human fulfillment is about whether people live or die, whether people eat well, are malnourished or starve, whether women lead healthy and tolerable lives or are burdened with annual child bearing, a high risk of maternal mortality; whether people have easy access to modern medicare. These are all aspects of standard of living. But in spite of sustained efforts to reduce poverty and high rates of morbidity and mortality and to improve nutritional status, a great deal remains to be done, especially for the poor in general, and women and children in particular.

The goal of the health, population and nutrition (HPN) sector is to achieve sustainable improvement in the health, nutrition, and reproductive health, including family planning, for the people, particularly of vulnerable groups, including women, children, the elderly, and the poor.

The HPN sector emphasizes reducing severe malnutrition, high mortality, and fertility, promoting healthy life styles, and reducing risk factors to human health from environmental, economic, social and behavioral causes with a sharp focus on improving the health of the poor. More specifically, with regard to MDG/PRSP in the health sector, the main emphasis is on the

human dimension of poverty, i.e. deprivation in health, deprivation in nutrition including water and sanitation, as well as related gender gaps. The major MDG/PRSP targets include the following: (i) reducing infant and under-five mortality by 65% and eliminate gender disparity in child mortality; (ii) reducing the proportion of malnourished children by 50% and eliminate gender disparity in child malnutrition; (iii) reducing MMR by 75% and ensure availability of reproductive health services to all; and (iv) reducing the burden of TB and other diseases.

Past Progress

Bangladesh has been implementing Sector-Wide Approach (SWAp) in HNP sector since 1998 and currently implementing health, nutrition and population sector program (HNPS) for 2003-2011, being the second SWAp, while the first one was health and population sector program (HPSP) for 1998-2003. Since Bangladesh was the first country in the world to implement SWAp, much of the learning was by doing. The major policy shift in development from project approach to program approach (SWAp) suffered from the problems like weak coordination, inadequate capacity and conflict with existing systems. Persistent procurement problems lowered the timeliness and efficiency of spending. Inadequate understanding of the procedures coupled with frequent change of key personnel in the program implementation constrained and the long time required settling the audit objections reduced program implementation. Changes in the policy level, delay and complicated fund release system, World Bank lengthy and complicated procurement process and poor retention of trained personnel contributed in this respect. Effective outputs in HPN sector depends upon inter and intra-subsector coordination among health, population and nutrition. Unfortunately not much progress could be achieved in inter sub-sectors coordination resulting duplication, wastage and missed opportunities. Similarly coordination and collaboration could not be effectively established and operationalized between HPN and other sectors, which affect HPN sector.

Despite these shortcomings some important results in terms of improved health outcomes were achieved, as evidenced by the findings of successive Bangladesh Demographic and Health Surveys:

- Total fertility rate declined to 2.7 in 2007 from 3.3 in 1996-1997.
- Percentage of children underweight for age declined to 41 in 2007 from 56.3 in 1996-1997.
- Percentage of children underweight for height declined from 17.7 in 1996-1997 to 17.4 in 2007.
- Percentage of children short for age was 54.6 in 1996-1997, which has reduced to 43.2 in 2007.
- Under-five mortality rate per 1000 live births declined to 65 in 2007 from 116 in 1996-1997.
- Infant mortality rate per 1000 live births declined to 52 in 2007 from 82 in 1996-1997.
- Percentage of children's vaccination has improved to 81.9 in 2007 from 54.1 in 1996-1997.

- Percentage of ante-natal check –ups by the trained providers has improved from 29 in 1996-1997 to 51.7 in 2007.
- Percentage of delivery by trained person also increased from 8 in 1996-1997 to 18 in 2007.

Nevertheless, the achievement of universal health coverage, the removal of rural-urban, rich-poor and other form of inequities and the provision of essential services for vast majority of the population continue to remain as major challenges for the health sector. More specifically, issues such as poverty related infectious diseases, mothers suffering from nutritional deficiency, children suffering from malnutrition, pregnant women not receiving delivery assistance by trained providers, poor maternal and child health, unmet need for family planning and the rise in STD infections constitute major challenges.

The lessons of experience suggest three major areas of weakness that needs to be corrected.

Weak implementation of the HNPSP initiative

The Government's flagship HNPSP initiative suffered from a number of problems that limited to effectiveness of the program. These include:

- Although HNPSP has been able to mobilize sufficient amount of resources, overall public spending on health has remained low. In FY 11 the activities under HNPSP suffered due to sudden withdraw of fund by DP's.
- HNPSP did have pro-poor essential service package (ESP) but lacked an effective M&E system to monitor health-related inequalities.
- Public resource allocation is based on historical norms for facilities, number of beds and staffing, rather than on indicators of individual and household health needs, taking into account the extent of poverty.
- While the ESP was directed towards rural areas by the MoHFW as the bulk of poverty is found there, this left major gap in primary health care coverage of urban areas by the MoLGRD, MOHFW was failed to cover urban primary health care under HNPSP. Urban poverty and health status remain as major concerns.
- Attempts at institutional unification and coordination under HNPSP did not work and contributed towards loss of momentum in family planning and fertility reduction. Deficiency in the approach of permanent and semi permanent method of family planning, high dropout rate of temporary methods also contributed in this respect.
- HNPSP could not able to alter substantially the structure of improved gender equity in health sector plans and programs. But implementation of policies and plans was limited due to weak institutional mechanism and lack of resources.
- Whilst HNPSP was formulated and initially planned using extensive consultative processes, it did not involve users and other key stakeholders fully in program implementation.
- Whilst HPSP/ HNPSP introduced some important budget reforms, the revenue and development budgets were planned and managed separately.

- HPSP/ HNPSP did not go beyond the bounds of the MOHFW to help shape policies in other sectors that produce health gains.
- Although decentralization was an important feature in HPSP, in reality centralized procurement of logistics for all programs in DGHS and DGFP by CMSD of DGHS and Logistics & Management Unit of DGFP resulted in delays in providing supplies and logistics. This kept the newly constructed hospitals from functioning and ultimately resulted in the low utilization of Project Aid.

Inadequate attention to gender dimension in health and nutrition.

Findings from various studies indicate that women and girl children are more vulnerable to death and disease compared to their male counterparts. Reproductive health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity in all matters relating to the reproductive system and its functions and processes. Reproductive health therefore implies that (a) people have the ability to reproduce as well as to regulate their fertility; (b) women are able to go through pregnancy and child-birth safely; (c) the outcome of pregnancy is successful in terms of maternal and infant survival and well-being and (d) couples should be able to have sexual relationships free of the fear of unwanted pregnancy and of contracting diseases.

While reproductive health programs should also address the needs, roles and responsibilities of men and young persons, the real thrust of reproductive health strategies and programs must ensure that women are able to fulfill their reproductive roles safely because, to a great extent, the burden of reproductive ill health is borne by women:

There is no denying the fact that the rights of men and women to be informed of and to have access to safe, effective, affordable and acceptable methods of family planning of their choice, and the right of access to appropriate health care services that will enable women to go safely through pregnancy and child birth and provide couples with the best chance of having a healthy infant.

The reproductive health status of Bangladesh women is very poor, poorer than that found in many developing countries in South Asia. However many deaths associated with pregnancy and childbirth can be avoided. In this context, safe motherhood requires action on three fronts simultaneously: (a) reducing the numbers of high-risk and unwanted pregnancies, (b) reducing the numbers of obstetric complications, and (c) reducing fatality rates in women with complications.

Inadequate attention to the link between poverty and health

At the preventive level the poor have inadequate ability to acquire a nutritious diet, better living and working conditions and other attendant factors that would prevent ill-health. The result is endemic occurrence of communicable diseases and diseases related to deficient nutrition. At the same time, health care services available to the poor in terms of physical

accessibility, monetary cost and effectiveness are minimal. Gender bias in nutrition and health care in childhood, early marriage and conception, lack of voluntary check on the family size and poor state of pre-natal and maternal health care services only intensify women's health problems.

Further, women's poor health status through various intervening variables affects their reproductive choice. Poor health leads, for example, to a high incidence of wasted pregnancies and secondary infertility. This is an important reason why women do not want to voluntarily limit their family size. Also, poor living conditions and other factors increase infant mortality rate (IMR), and wherever IMR is high, couples are reluctant to limit their family size. Poverty also leads to the belief that more mouths to feed also mean twice the number of hands to work. Thus, children are considered as economic assets and the greater the number of children greater the sense of security. Environmental degradation makes fuel wood gathering, livestock pasturing and water fetching more difficult. As these are tasks that children can do the value of children increases for parents. And these links are strongest where female fertility is already high. Poverty also indirectly denies access to contraceptive knowledge and methods to an impoverished woman even if she is inclined to limit her family.

Health, Population & Nutrition Sector Development Programs

The Government of Bangladesh (GOB) seeks to create conditions whereby its people have the opportunity to reach and maintain the highest attainable level of health as a fundamental human right and social justice. GOB has targeted to achieve MDG 4, 5, 6 and part of the MDG 1 and 8 and also part of the vision 2021 through the next health sector program. The HPNSDP is targeted towards this goal and sets out the sector's strategic priorities and explains how these will be addressed to a certain extent, taking into account the strengths, lessons learned and challenges of implementing the last two sector programs, the HPSP and the current HNPSP.

The key components of the HPNSDP are: (i) Improving Health Services and (ii) Strengthening Health Systems. The component one comprises of (a) improving health services and (b) improving service provisions. These two components are interdependent and mutually reinforcing. Responsibilities for improving and providing health services are shared among the Directorate General of Health Services (DGHS), the Directorate General of Family Planning (DGFP) and the Directorate of Nursing Services (DNS). Other Directorates like the Directorate General of Drug Administration (DGDA), Health Engineering Department (HED), National Institute of Preventive and Social Medicine (NIPSOM), Institute of Epidemiology, Disease Control and Research (IEDCR), Institute of Public Health and Nutrition (IPHN), Institute of Public Health (IPH), National Institute of Population Research and Training (NIPORT) and other relevant institutes share the responsibility of strengthening health systems.

Total Health Expenditure

In the Bangladesh National Health Accounts III, Total Health Expenditure is estimated at Taka 160.9 billion (\$2,331 million) in 2007, Taka 74.2 billion (\$1,375 million) in 2001, and Taka 48.7 billion (\$1,140 million) in 1997. In real terms, THE has continuously increased during 1997 to 2007, from Taka 74.4 billion in 1997 to Taka 160.9 billion in 2007, when measured in constant 2007 prices. Over the 1998–2007 periods the average annual total health expenditure growth rate was 12.7% in nominal terms and 8.1% in real terms.

The ratio of Bangladesh's health expenditure to Gross Domestic Product (GDP) provides an indication of the proportion of overall economic activity contributed by the health sector. Total health expenditure as a percent of GDP was 3.4% in 2007. Health expenditures as a ratio to GDP show a slow but steady increase over time— averaging 2.8% during 1998–2002 compared to an average of 3.2% during 2003–2007. In 2007, per capita spending on health was Taka 1,118 (\$16.2), which if adjusted for Purchasing Power Parity (PPP), becomes Taka 3,178 (\$46).

International Comparison

Within South Asia, Sri Lanka had the highest per capita expenditure on health in 2006 – \$57. Using the international comparable SHA definitions of total health expenditure, expenditure per capita in Bangladesh in 2007 was \$16 (SHA estimate). In 2006, Bangladesh had the lowest per capita expenditure at \$14.4, followed by Nepal (\$17). Total health expenditure as share of GDP constituted 3.3% for Bangladesh in 2006, whilst Pakistan had the lowest share at 2.6%. Public health expenditure as percentage of total health expenditure is highest in Sri Lanka (51%), whilst Bangladesh's and India's public expenditure ratios are similar, accounting for about one fourth of total health expenditure.

Table 8.1: International Comparison of Health spending in Bangladesh, 2006

Country	Per Capita Health Expenditure (\$)	Total Health Expenditure as % of GDP	Public Exp as % of total health expenditure	Public Exp as % of GDP
Bangladesh	14	3.3	27	0.9
India	29	3.6	25	0.9
Nepal	17	5.1	30	1.6
Pakistan	19	2.6	32	0.8
Sri Lanka	57	4.2	49	2.1

Source: Bangladesh National Health Accounts (BNHA III), 2010, Ministry of Health and Family Welfare

Challenges in the HPN Sector

- There are major differences in health conditions and health care consumption between different groups. Improvements in some areas are relatively more difficult to sustain while there are indications of stagnation in others.
- In order to reduce maternal mortality and neonatal mortality, Bangladesh's current challenge is to improve effective service delivery, to improve health sector governance (especially in primary and maternal health services), to increase the number of trained birth attendants and to make them available at the community level.
- Further sharp reduction in fertility supply of contraceptives especially to reduce unmet need, dropout rate, to overcome regional variation in contraceptive use, might demand new ways of interventions for which concerted inter and multisectoral efforts would be required.
- It is important to address "Population momentum effect", early child bearing and adolescent health.
- It is a challenge to reduce child mortality and to address district and regional variations.
- Popularize community clinic approach as a one stop community level information and service delivery point.
- Threats of HIV/AIDS, particularly from injectable drug users, pockets of malaria, kala-azar and filaria and multi-drug resistant TB are also emerging as challenges.
- Challenges remain in the context of decentralization, maintenance of electro-medical equipments, proper resource mobilization, and proper translation of HR strategy. Emerging and changing pattern of threats include arsenic related diseases, avian flu, childhood disabilities, mental health problems, road-railway-river accidents and violence (particularly against women).
- The challenge of reducing malnutrition essentially that of women and children needs coordinated multi-sectoral interventions on sustained basis.
- Meeting the health needs of the fast growing urban poor including the slum dwellers will continue to pose major challenge.
- Demographic and life-style changes give rise to emerging health threats: more youths, more females, more ageing population, and rise of non-communicable diseases. The inevitable effect of climate change over health poses additional challenges.
- With increasing dominance of technologies in health care, the requirement of human resources in health in appropriate number, skill-mix and make them available at the right place, will continue to remain another challenge.

- There is a challenge of coordinated activities across the different wings/different directorate of MoHFW to make the newly constructed or upgraded physical facilities fully functional.
- The development of appropriate strategies to handle the large number of informal semi or un-qualified health care providers (village doctors, drug sellers, kobiraj, totka, herbalist, faith healers, untrained traditional birth attendants etc.) catering to the needs of majority of the population particularly of poor and women poses some challenge.
- Centralized management system of the government health services and prevalent practices at the facility levels result in absenteeism of service providers. These are emerging as mal' or obstacles to effective and efficient utilization of the countrywide health care infrastructure network.
- Preparation of HR master plan including career plan incentive mechanism and deployment strategy seems to be difficult to address the absenteeism.
- Increase health expenditure and public sector (including Development Partners) contribution to health expenditure. This will require appropriate policy to mobilize resource and utilize local resources (such as user fees, community insurance etc.)

GOALS, OBJECTIVES AND TARGETS FOR HPN IN THE SFYP

The HPN and Millennium Development Goals

Within the broader context of Millennium Development Goals (MDG), the Government's vision for HPN sector is as follows:

The Government seeks to create conditions whereby the people of Bangladesh have the opportunity to reach and maintain the highest attainable level of health. It is a vision that recognizes health as a fundamental human right and, therefore, the need to promote health and to alleviate ill health and suffering in the spirit of social justice. This vision derives from a value framework that is based on the core values of access, equity, gender equality and ethical conduct.

By 2021, Govt. of Bangladesh (GoB) envisions a Bangladesh of middle income country, where poverty will be drastically reduced; citizens will be able to meet every basic need and development will be on fast track, with ever increasing rates of growth. Within this broad context, the vision for health sector is to create conditions whereby the people of Bangladesh have the opportunity to reach and maintain the highest attainable level of health. This vision also derives from the framework of Vision 2021, which is based on the core values of access equity, gender equity and ethical conduct.

Milestones for Vision 2021

To achieve the goals of vision 2021, the Government has set the following milestones:

- 2011: Supply of pure drinking water for the entire population.
- 2012: Self-sufficiency in food.
- 2013: Each house brought under hygienic sanitation.
- 2021: Poverty rate comes down to 15%.
- 2021: 85% of the population have standard nutritional food.
- 2021: Poor people ensured a minimum of 2122 kilo calories of food.
- 2021: All kinds of contagious diseases eliminated.
- 2021: Longevity increases to 70 years.
- 2021: Infant mortality comes down to 15 from 54 per thousand at present
- 2021: Maternal death rate reduced to 1.5% from 3.8%.
- 2021: Use of birth control methods increased to 80%.

The HPN sector emphasizes reducing severe malnutrition, high mortality (of children and women) and fertility, promoting healthy life styles, and reducing risk factors to human health from environmental, economic, social and behavioral causes with a sharp focus on improving the health of the poor. The main emphasis is on the human dimension of poverty, i.e. deprivation in health, deprivation in nutrition including water and sanitation, as well as related gender gaps.

Major Objectives

- To ensure access and utilization of HPN services for every citizen of the country, particularly elderly, women, children, poor, disadvantaged and those living in difficult areas
- To revitalize of community health care under an effective and integrated Upazila Health system with essential service package
- To reduce maternal mortality
- To reduce the rate of child mortality
- To control HIV/AIDS, TB, Leprosy, Malaria
- To reduce total fertility rate
- To ensure adolescent and reproductive health care

- To decentralize and to strengthen local level planning to obtain better results in implementation of programs
- To bring self-sufficiency in the production of medicines of international standard and to promote their export
- To ensure nutrition to children and women.
- To take effective measures to promote alternate medicines and to improve the quality of care
- To control/eliminate infectious diseases
- To meet challenges of emerging, re-emerging and non-communicable diseases, health hazards due to climate change and emergency response to catastrophe.
- To enhance national capacity for pre-service education (SBA/nursing, Paramedics, midwifery), provide in-service training and better management of Human Resources.
- To improve the quality hospitals and maternity services and to make these accessible especially to the women, children and poor.

Specific HPN Targets for the Sixth Plan

The HPN targets for the SFYP are listed in Table 8.2.

Table 8.2: HPN Targets for the Sixth Plan

SI	Indicators	Base value with Year	2014-15
	Impact/Outcome		
1	Life- Expectancy	66.6 (SVRS 2007)	70
2	Population Growth Rate	1.40 (SVRS 2007)	1.3
3	Maternal Mortality Ratio (MMR) (per 100,000 live births)	194 (BM MS 2010)	143
4	Neonatal Mortality Rate (per 1000 live births)	37 (BDHS 2007)	27
5	Infant Mortality Rate (per 1000 live births)	52 (BDHS 2007)	31
6	Under 5 Mortality Rate (per 1000 live births)	65 (BDHS 2007)	50
7	Malaria mortality-(per 100000 population)	4.4	2.2
8	Maintain low prevalence of HIV	<1%	<1%
9	Prevalence of Night blindness among pregnant women	2.90%	1%
10	Underweight of Under 5 children (6-59 months)	41% (BDHS 2007)	33%
11	Stunting of Under- 5 children 16-59 months)	43% (BDHS 2007)	25%
12	Total Fertility Rate (TFR)	2.7 (BDHS 2007)	2.2
	Output		
13	Contraceptive Prevalence Rate (CPR)	55.8% (BDHS 2007)	74%
14	Modern Method of Contraceptives	47.5 (BDHS 2007)	63%
15	Discontinuation rate of FP methods	56.5% (BDHS 2007)	20%
16	Unmet need for Family Planning	17.1% (BDHS 2007)	7.60%
17	Contraceptives use rate of married adolescent	37.6% (BDHS 2007)	50%
18	Permanent & Long acting FP (of CPR)	7.3% (BDHS 2007)	20%
19	TB case detection rate	73% (NTP 2008)	75%
20	TB cure rate from	92% (NTP 2008)	95%
21	Provide effective malaria prevention to 100% population at risk	5 districts	5 districts
22	Proportion of h/h own at least 1 Insecticide Treated Net (ITN)	64%	80%

SI	Indicators	Base value with Year	2014-15
	Impact/Outcome		
23	Under 5 children sleep under (ITN)	70%	80%
24	Births attended by skilled health personnel	26.5% (UESD 2010)	50%
25	Facility level delivery	15% (BDHS 2007)	40%
26	ANC coverage (4 visits)	20.6% (BDHS 2007)	50%
27	PNC coverage (Mother)	21.3% (BDHS 2007)	50%
28	PNC coverage (children)	21.9% (BDHS 2007)	50%
29	Met need for EOC services	22.43% (BDHS 2007)	80%
30	TT coverage (children protected at birth from Tetanus)	93% (CES, 2008)	95%
31	Valid coverage of full Immunized children	75.2% (CES, 2008)	90%
32	Immunization of 1- year old children against Measles	83% (CES, 2008)	100%
33	VAC coverage (6 m-6 y)	98%- 100%	98%- 100%
34	Postnatal VAC supplementation	29%	80%
35	Severe anemia (Children)	64%	50%
36	Severe anemia (Pregnant women)	46%	40%
37	Exclusive breast feeding of children (less than 6 months)	42%	80%

Source: BDHS (2007) Bangladesh Demographic and Health Survey, National Institute of Population Research and Training, NIPORT, 2007; BMMS (2010) Bangladesh Maternal Mortality Survey, National Institute of Population Research and Training, NIPORT CES (2006) EPI Coverage Evaluation Survey, Directorate General of Health Services, Ministry of Health and Family Welfare, 2006 ; National Tuberculosis Control Program -NTCP (2007); Tuberculosis Program in Bangladesh, Annual Report, 2007 SVRS (2007) Sample Vital Registration Survey, Bangladesh Bureau of Statistics (BBS), Ministry of Planning

Health, Population & Nutrition Sector Development Programs

To achieve the Vision 2021 and Sixth Plan targets, the Government has adopted a comprehensive health, population and Nutrition Sector Development Programs (HPNSDP). The HNSDP seeks to create conditions whereby people have the opportunity to reach and maintain the highest attainable level of health as a fundamental human right and social justice. It targets to achieve MDGs 4, 5, 6 and part of the MDG 1 and 8 and also part of the vision 2021 through the next health sector program.

The key components of the HPNSDP are: (i) Improving Health Services and (ii) Strengthening Health Systems. The component one comprises of (a) improving health services and (b) improving service provisions. These two components are interdependent and mutually reinforcing. Responsibilities for improving and providing health services are shared among the Directorate General of Health Services (DGHS), the Directorate General of Family Planning (DGFP) and the Directorate of Nursing Services (DNS). Other Directorates like the Directorate General of Drug Administration (DGDA), Health Engineering Department (HED), National Institute of Preventive and Social Medicine (NIPSOM), Institute of Epidemiology, Disease Control and Research (IEDCR), Institute of Public Health and Nutrition (IPHN), Institute of Public Health (IPH), National Institute of Population Research and Training (NIPORT) and other relevant institutes share the responsibility of strengthening health systems.

HEALTH SECTOR STRATEGIES AND POLICIES IN THE SFYP

The strategies and policies for realizing the Vision 2021 and achieving the targets of the Sixth Plan for the health subsector build on the lessons of experience of the implementation of the past health policies. It takes a comprehensive approach to improving the health sector service delivery including stronger partnership with private sector. The main elements of the health sector strategy adopted in the HPNSDP are elaborated below.

(a) *Public Health Service Delivery Strategy*

Improving health system linkages: Theoretically, Bangladesh seems to have a health system of some sophistication. There is a network of hospitals, health centers and dispensaries, thousands of staffs and extensive training centers. This network, now in its advanced stage of development, comprises of 402 health complexes at the Upazila level (UHCs), about 4000 health and family welfare centers (HFWCs) at the union level and several thousand community clinics (13,500) at the ward level.

The roles of the Upazila health complexes and union health and family welfare centers are of key importance to the delivery of primary health care in rural areas. It has been recognized that proper and effective curative care greatly influences the process of the people's acceptance of preventive and promotive health care. Without active support of the former, the latter cannot be geared up to a significant extent, particularly in the existing socio-economic conditions of rural Bangladesh. What is primarily needed is effective curative care with adequate provision of preventive, promotive services with health education.

The country's health system is hierarchically structured and can be compared to a five layer pyramid. First, at the base of the pyramid, there is the ward level health facility (CC), consisting of a health assistant and a family welfare assistant. At the next level is the union health and family welfare center (HFWC) staffed by a medical assistant, one family welfare visitor and one pharmacist, which concentrates on the provision of maternal and child health care and provides only limited curative care. Third, there is the Upazila Health Complex (UHC) with nine doctors, two medical assistants, one pharmacist and one radiographer and EPI technician. The UHC is responsible for inpatient and outpatient care, maternal and child health services and disease control. Operation theatre is also functioning in the UHCs especially in the 50 bedded UHCs. Fourth, the district hospital is the first layer of the health care pyramid to have theatre facilities, but some selected UHCs have got EOC facilities. Finally, the medical colleges and post-graduate institutes form the top of the health services pyramid offering a wide range of specialty services.

Under the recently introduced Sector Program (HPNSDP) efforts are being made to achieve "health for all" within the shortest possible time and to ensure equity of access for all Bangladeshi citizens, especially those who live in rural areas and in urban slums. The health centers that need most attention in order to achieve better health outcomes for the population

at large are the community clinics and the Upazila health complex.

Community Clinic: Re-commissioning of the community clinic, established during the earlier tenure of the present government on the principle of one for 6,000 rural population to bring the services to the door step, has already been started by mobilizing appropriate human resources, drugs and equipments. Community clinics is expected to deliver one stop integrated health, population and nutrition services to the respective communities and will be first point of contact of the rural community with the public sector health services. In addition to thorough repair of 10,723 community clinics established earlier, another 2,777 are planned for construction, of which 700 at coastal belt will be double storied for the provision of using as shelter in case of emergencies. In addition to service providers (health assistant and family welfare assistant), a new post of community health organizers have been created in each of 13,500 community clinics, which will not only strengthen service delivery but also employment opportunities to rural women. For demand creation effective information dissemination (IEC) programs will be planned.

With the re-vitalization of the community clinic management groups, community participation in community clinics will be ensured and this is expected to be the model of community driven primary health care delivery. Community clinics are also expected to be foundation of a strengthened, improved and effective Upazila health system catering the need of the rural population.

Upazila Health System: Functioning of the Upazila health complexes, union health and family welfare centers/sub-centers will be strengthened and further consolidated through providing adequate human resources, drugs and other medical aids. The provision of essential services package (ESP) delivery through Upazila health system will be strengthened and popularized. Up-gradation of 31 bed Upazila health complex in 50 beds with the provision of more specialist service (like orthopedics, ophthalmology, cardiology, pediatrics and ear-nose-throat) will continue. So also the up-gradation of the union health and family welfare centers. 31 bed hospital and 20 bed hospitals will be established as when needed. Involvement of the local government institutions and non-government organizations will be explored for demand creation, effective service delivery and appropriate utilization, particularly by the poor, women, elderly, marginalized and vulnerable. The current commitment of spending at least 60 per cent of total budgetary allocation of the health, nutrition and population sectors at Upazila and below level will continue to be pursued to improve the quality of primary health care and make it accessible and acceptable to the people.

Urban Health: The services offered by secondary and tertiary hospitals will, depending on bed capacity, be standardized along with human resource needs and table of equipments (TOE) linked to the services. Appropriate human resources development and management structure will be developed for the existing hospitals. New branches of sub-specialization will be created in all medical college hospitals, so that patients do not need to rush to the capital city. Hospital autonomy will be introduced initially for the tertiary level specialized hospitals and

gradually extended to medical college and district hospitals. Management Committees at hospitals will be strengthened for better monitoring and vigilance team for hospitals will be further strengthened and its jurisdiction will be expanded. Government will establish new specialized hospitals under its private public partnership initiative. Accountability and quality of care will be ensured and death audit will be introduced as part of such initiative.

The existing practices of providing urban primary health care (UPHC) services through contracted NGOs for the city corporations and selected municipalities under the LG Division will continue to be pursued. In addition, MOHFW will continue to provide PHC services in urban areas not covered by the UPHC project. Similarly, it will also continue to provide secondary and tertiary level health care in urban areas and try to improve both coverage and quality in response to demand. A priority objective for improving urban health services will be to facilitate access and effective use of available essential services packages (ESP) delivery services by urban poor and slum dwellers. To this end, an urban health strategy in collaboration with LG Division will be developed with a view to streamlining urban primary health care services and establishing strong institutional linkage and ensuring primary health care, family planning, reproductive health and nutrition services for the urban poor. Existing linkage with LG Division will also be strengthened for urban disease surveillance and monitoring including management information system, capacity development and quality assurance, etc. Moreover, MOHFW will strengthen its policy directive and stewardship roles in providing effective urban health care services including ensuring adequate doctors and medicines.

Maternal and Newborn Health: Several critical issues hamper progress in maternal and newborn health. A very high percent (about 80%) of childbirths occur in the home with traditionally trained and unqualified birth attendants – a scenario that restricts the potential to improve maternal and newborn health. According to the Survey of Maternal Mortality 2010, for every 1 lac live birth, the rate of maternal mortality is 194. Capacity will be improved to provide care of adequate quality particularly for the poor for normal childbirth (basic essential obstetrics care) through trained (community) skilled birth attendants, community clinics, union health and family welfare centers, Upazila health complexes and facilities at and above districts including maternal and child welfare centers, and for the prevention and management of complications (comprehensive essential obstetrics care) by expanding services in more Upazila health complexes and ensuring the same through all maternal and child welfare centers and district hospitals and facilities above. A midwifery plan and category according to international standard will be formulated inclusive of participation from non-public sectors. Existing family welfare visitors training institutes (FWVTI) will start family welfare training courses as pre-service and will also provide (community) skilled birth attendants (C-SBA) training. Through developing guidelines FWV and C-SBA training will also be open for non-public sectors to provide. In addition, existing nursing institutes will be strengthened. Possibilities will also be explored to utilize nurse-midwives for providing maternity services. These initiatives are expected to produce significant numbers of skilled service providers to

care for normal childbirths. Efforts will be strengthened for more Upazila health complexes to provide comprehensive and emergency essential obstetrical care by training and placement of requisite human resources and providing required instruments and supplies. Governance will be ensured through improved monitoring in providing comprehensive and emergency essential obstetrical care in designated facilities. To improve maternity services in urban areas, particularly for the poor, delegating nurse-midwives for performing midwifery functions in public sector facilities and engagement of non-public actors to provide required services will be explored. The maternal health strategy will be updated with the formulation of maternal and newborn health strategy. The ongoing maternal voucher scheme (demand side financing) will be evaluated and based on findings a revised program will be launched in coordination with the maternal allowances provided by the ministry of women and children affairs. Initiatives will be explored to utilize community support groups for awareness raising and supporting to utilize maternity services through removing social, economic and other barriers. Coordination between health and family planning department will be strengthened, so that patient gets a well coordinated continuum of care crossing the boundaries of the departments and not constrained with silo of the departments. Coordination and monitoring will be improved to get best possible outcomes from the on-going/upcoming multiple development partners supported maternal and newborn services. In order to reduce maternal mortality, media participation and education on reproductive health will be given special emphasis.

Antenatal Care: WHO recommends a minimum of four antenatal visits during pregnancy with care provided by skilled health personnel. In Bangladesh, skilled health personnel include doctors, nurses/midwives, FWV, community skilled birth attendants (CSBA), medical assistants/SACMO and paramedic. Prenatal care should include immunization against tetanus, iron and foliate tablets supplementation, hookworm treatment and management of STIs and RTIs. Besides, educating women on danger signs of pregnancy complications, performing screening tests including urine and blood tests, and measuring weight gain, height and blood pressure are essential components of ANC. It can be inferred that ANC visits to skilled health personnel prevent complications that would arise due to anemia, infection and other preventable causes.

The proportion of pregnant mothers seeking at least one antenatal care visit by skilled health personnel has increased from 26% in 1991-93 to 52% in 2002-06 (Table 8.3). Only 21% of women made four or more antenatal visits in 2007, far below the target of universal coverage. The UN Joint Maternal and Neonatal Health (MNH) Program has set a target of 60% ANC coverage (four visits) for 2011. ANC coverage from a medically trained provider increased by 18 per cent between 1999/2000 and 2007 BDHS. The increase in coverage was significantly higher in rural areas than in urban areas.

Table 8.3: Percentage of Women who Received ANC from a Medically Trained Provider

Characteristics	BDHS 1999-00* (1995-99)	BDHS 2004 (1999-03)	BDHS 2007 (2002-06)
Residence			
Urban	58.6	71.0	71.3
Rural	28.0	43.0	46.4
Division			
Barisal	33.8	39.5	43.7
Chittagong	30.6	47.4	52.4
Dhaka	32.5	48.7	48.2
Khulna	43.7	54.8	62.6
Rajshahi	33.5	51.2	55.0
Sylhet	27.0	43.8	46.9
Wealth Quintile			
Lowest		24.9	30.8
Second		38.6	36.3
Middle		48.8	48.0
Fourth		60.6	65.5
Highest		81.1	83.6
All	33.3	48.4	51.7

* Wealth Quintile data of 1999-2000 are not available

Source: BDHS various years

Hard to reach populations and the disadvantaged: It is estimated that there are 2.5 million people in Bangladesh, who are members of ‘ethnic populations’. Majority of them (42%) live in three hill districts of the Chittagong Hill Tracts (CHT), while others are scattered in northern hilly regions and some coastal districts. They belong to 45 different communities with a very low level of literacy and nutritional status. These communities are particularly poorly served by health facilities. As they live in remote areas, it is difficult to attract health workers to stay in the area. These communities have specific needs in their cultural settings which necessitates special measures and adjustment in delivery mechanisms. Collaboration with MOCHTA and the CHT Board would be strengthened with a view to increase support of the health sector, in partnership with NGOs.

People with disabilities (PWD): Many of the disabilities linked to poverty are preventable, such as through actions on low birth-weight, malnutrition, iodine deficiency, eye care, injury prevention and skilled management of complications. Disabled girls face multifaceted problems, e.g., sexual abuse, unwanted pregnancies, marginalization in the family and society. They have limited access to health services due to physical, psychological, social and economic barriers. Both infrastructure and services will need to adequately address their needs such as accessibility and human resources development that addresses issues of attitudes and behavior of service

providers towards them. Inter-sectoral coordination is important in this area, as various other government ministries are also involved, such as the Ministry of Social Welfare (MOSW).

Elderly: People > 60 years of age constitute 8% of the total population of Bangladesh and are likely to increase the numbers as life expectancy increases. Widowhood and poverty affect the elderly women more socially and economically. The main aim for geriatric care is to promote health, well being and independence of the elderly. The specific program objectives are to create awareness for geriatric care management, train the geriatric caregivers and increase service facilities for elderly at all levels. The MOSW has introduced a Hospital Social Service Program (HSSP) in both government and non-government hospitals, where the needs of elderly patients are emphasized. This program needs to be reviewed and scaled up along with encouraging the private initiatives in this area.

Geographically excluded population: Difficulties in accessing different geographic locations have left some areas of the country isolated from the mainstream public services. These include the chars, the haor areas and the remote coastal areas. Particularly in the rainy season, access to these areas is difficult for government staff and access to government facilities is difficult for inhabitant of these areas. While government initiatives in infrastructural development are improving access, this is still insufficient. Alternative methods of increasing access of health service would be further explored and expanded including initiation of mobile clinic units and involvement of the NGOs, private and individual social institutions.

Professionally marginalized and socially excluded groups: Various professional groups are socially marginalized and excluded because of their professions. These include sweepers and sex workers who are also impoverished. They are often unaware of the health consequences of their professional activities, unable to take the necessary preventive or curative measures and are unable to switch occupations due to various social constraints. The health services providers are often unwilling to treat or advise such patients and also not always capable of dealing with their specific needs. In order to ensure equity in access for all, both the clients and the service providers have to be motivated to use the health services available and to enable these groups to access health services.

Priority interventions to address hard to reach populations and the disadvantaged will include:

- Preparing a map of the hard to reach areas of Bangladesh and ensuring need based provision of HPN services for the hard to reach population through the GOB network where available. Motivating the service providers through counseling for giving adequate care to the marginalized and socially excluded group of population.
- Strengthening collaboration with the MOSW, MOCHTA, the CHT Board, the NGOs and the private sector to address the health service of the hard to reach population and the disadvantaged.

- Engaging locally available private individuals, social clubs, CBOs and NGOs by MOHFW for stimulating informed demand of the hard to reach population and ensuring quality health services and appropriate utilization.
- Providing essential service packages with support from NGOs/CBOs, due to shortage of public sector human resources, through agreed arrangements, in the hard to reach areas.

Institutional deliveries: The proportion of births delivered at a health facility increased from 4 per cent in 1989-93 to 15% in 2002-06. The recent increase in institutional deliveries is mainly due to increase in deliveries at private facilities. However, there are high rural-urban, regional, educational, and wealth status disparities. Women in urban areas are three times as likely as women in rural areas to give birth in a health facility. Institutional deliveries of uneducated mothers is 3% compared to 43% for secondary and higher educated mothers. Similarly, women from the top wealth quintile are nearly ten times more likely to deliver at a health facility than women in the bottom quintile. Institutional deliveries are the highest in Khulna division (22%), while Sylhet division has the lowest percentage (8%) of institutional deliveries.

Facility deliveries increased moderately from 9% in 2004 to 15% in 2007 partly due to the introduction of Maternal Voucher Scheme in 33 selected Upazilas with a view to increasing access to poor women to maternal health services. Under this scheme, eligible pregnant women are entitled to receive 3 ANC, safe delivery including c-section, complication management and one PNC. In addition, cash benefits are provided for transport, nutritious food and other items and for referral. With the increase in facility deliveries, deliveries in NGO and private sector facilities increased from 3% in 2004 to 8% in 2007. NGO and private sectors are performing double the number of C-sections as the public sector.

Births attended by skilled health personnel: Assistance by medically trained personnel during delivery is a key intervention for reducing both maternal and neonatal mortality. Assistance during delivery by medically trained providers was only 5% in 1990 which increased to 18% in 2007. Additionally, trained traditional birth attendants (TBA) assist 11% of deliveries. However, more than 60% of births in Bangladesh are assisted by dais or untrained traditional birth attendants. Medically assisted births have increased from 12% in 1999-2000 13% in 2004 and further to 18% in 2007. Births in Khulna (27%) are more likely to be assisted by medically trained personnel than births occurring in other divisions. However, the highest differential in delivery assisted by a medically trained provider was by wealth quintile: the proportion of medically assisted births in 2007 among women from the richest quintile was 51%, while the poorest quintile had the lowest proportion (4.8%) (Table 8.4). The SFYP will conduct 3 month training program for the midwives for improving their skill level and equip them with necessary medical kit boxes for smooth and effective service delivery. Training Centers for Safe Birth Attendant will be developed in every district.

Table 8.4: Percentage of Delivery Assisted by Medically Trained Provider

Characteristics	BDHS 1999-00 (1995-99)*	BDHS 2004 (1999-03)	BDHS 2007 (2002-06)
Residence			
Urban	33.0	29.4	36.6
Rural	8.0	9.2	13.2
Division			
Barisal	10.5	11.4	13.4
Chittagong	11.8	11.7	18.5
Dhaka	12.3	14.9	19.8
Khulna	19.2	21.2	26.6
Rajshahi	10.3	10.6	15.4
Sylhet	9.3	11.1	10.9
Wealth Quintile			
Lowest		3.4	4.8
Second		4.5	6.7
Middle		10.5	12.1
Fourth		17.4	22.5
Highest		39.6	50.9
Total	12.1	13.2	18.0
<ul style="list-style-type: none"> • Wealth Quintile data of 1999-2000 are not available • <i>Source: BDHS various years</i> 			

The percentage of births by caesarean section is sometimes considered to be a proxy indicator of women's access to skilled care for maternal complication. In 2007, 8 percent of babies born were delivered by caesarean section, an increase of 4 percentage points from 2004. Caesarean sections are more common among first births (13%), births in urban areas (16%), among women with secondary or higher education (26%), and among women in the highest wealth quintile (26%).

Postnatal care: Maternal mortality can occur during postnatal period due to maternal complications. Postnatal care provides an opportunity to assess and treat delivery complications and to counsel mothers on how to care for themselves and their children. A large proportion of maternal and neonatal deaths occur during the 24 hours following birth. In Bangladesh, about 30% women received postnatal care following their last birth, among them 22% received care from a medically trained provider.

Child health: Reducing childhood deaths, Bangladesh is on track to achieve MDG 4 with impressive declines in infant and under-five mortality rates. Most of the effective health interventions (like immunization, vitamin A, oral rehydration etc.) has taken care of equity issues – gender and economic. Build on the success already achieved, efforts will be strengthened for maintenance and achieving further. Integrated management of childhood illness will be further expanded, particularly of community component to cover the entire country. Alternate strategies will be explored to train informal and semi/un-qualified providers. Efforts will be made to include more children (already achieved 85%) to have suffered diarrhea

provided with appropriate oral rehydration. Similarly efforts will be undertaken to increase the proportion of children suffering from acute respiratory illness who went to a trained providers. Number of the vaccines in the routine immunization program will be further expanded. Existing excellent quality surveillance will be maintained for well and prompt investigations of outbreaks. Special activities will be undertaken for maintenance of zero polio status, measles catch-up and neonatal tetanus campaigns.

Reproductive health: The life-cycle approach will be undertaken to address the need of women for general reproductive health and to ensure reproductive health in phases. The vast network of state facilities will be further strengthened for appropriate women, adolescents and reproductive health. The demand for services will be created through strengthened health production involving community and different stakeholders.

Referral system: As far as possible, outdoor treatment will be encouraged. All medical college and tertiary hospitals will accept referred patients. A network of well-worked out referral system will be developed so that patients are assured of receiving treatment from health facilities and that patient load at the higher levels is not needlessly burdened by those who can be treated at the local level. In addition, structured two ways referral system linked to ESP services will be established for creating an opportunity for a patient attending at the lowest service delivery level to have the opportunity to get the treatment at the highest level. Support of tele-medicine and e-health will be used to make specialist services available to all people irrespective of their geographical locations at low cost. At least equal opportunity will be provided to women for recruitment in telemedicine and e-health. Number of women recruited for these services should be sufficient to respond to the demand from women for these services.

Health education and promotion: A major strategy to ensure better health would be to promote public health through health education within MOHFW and channels outside it. The existing institutions of MOHFW will be strengthened for providing effective health messages. Coalition will be built with mass media for providing health education to the population on a continuing basis regarding methods of preventing communicable and non-communicable diseases, caring practice for children, adolescents, physically and mentally challenged and the old aged, and creating awareness on nutrition, personal hygiene, use of safe water and proper sanitation. Effective health education through educational curriculum, mass media etc. on disciplined life style and healthy food habit will certainly reduce the risk of different diseases. Steps will also be taken to reach basic health and reproductive health information through school curricula and utilize NGOs and different religious centers to influence health behavior of the people. Moreover, activities of existing school health clinics will be reviewed and based on learnt lessons, school health program will be scaled up through developing a strategy in collaboration with Ministry of Education, Ministry of Primary and Mass Education, Girl's Guides, Boy's Scouts, etc. The strategy will also include training of Primary School Teachers on Primary Health Care.

Communicable diseases: The existing programs along with focus will further be expanded and strengthened to intensify prevention and control of communicable diseases, such as, acute respiratory infection, diarrhea, dengue, etc. In order to control water borne diseases, emphasis will be given to improve the existing sanitation facilities, especially those in urban slums. *Malaria* is a disease that cannot be eliminated, but it can be kept at a low and manageable level by well-organized early case detection and treatment and by protection against the vector, which requires a close and permanent relationship with the affected communities. The affected communities live in 13 eastern districts, with 3 hill tract districts accounting for 80% of all cases. The National Malaria Control Program pursues the achievement of the MDG targets aligned with the targets set in the Strategic Plan (2007-2015). The program envisions a 60% reduction of malaria deaths by 2015. In line with these programs, several strategies have been undertaken under the SFYP e.g. bed net availability and use will be expanded with indoor residual spraying will also be expanded. Diagnostic and treatment facilities will also be expanded. Case finding, treatment and vector control will be strengthened. Gradually existing responsibilities of contracted NGOs vertical workers will be shifted to the government health workers. Cooperation of private sector will also be strengthened. *Filariasis* is endemic in 34 districts, with a population of approximately 70 million people. Filariasis can be eradicated if the total population in an area has received mass drug administration with two types of drugs once a year during 5 years. Efforts will be undertaken to appropriately motivate volunteers administering mass drugs and to motivate all people to take the drugs as prescribed to increase coverage at appropriate level. Vector control (e.g. with bed nets) will also be explored. Elimination is being defined as a microfilariaemia rate of less than 1 % among people at risk. Elimination is aimed by the program.

Tuberculosis control is one of the successful public health programs. The National TB Control strategy focuses on the role of the health sector in controlling TB. As TB is a poverty-related disease, any contribution in the area of improving overall living conditions, increasing household income, improving nutrition, etc. has also an impact on reducing the burden of TB. The National Strategic Plan to Control TB (2011-2015) aims at halving the prevalence and mortality and begin to reduce the incidence through the following strategies: (i) pursue quality Directly Observed Treatment Short Course expansion and enhancement; (ii) establish interventions to address HIV associated TB and drug-resistant TB; (iii) contribute to health system strengthening; (iv) forge partnerships to ensure equitable access to an Essential Standard of Care to all TB Patients; (v) engage people with TB, and affected communities; and (vi) promote operational research. Several national guidelines, manuals and policies/strategies to guide specific intervention areas of the three programs have been developed. Under the SFYP, measures will be undertaken for the sustainability of the success achieved: more involvement of government workers in the detection and treatment of tuberculosis including private providers and urban PHC providers, finding out additional technical staff - district program organizers and control assistants, improved and additional laboratory facilities.

Kala-azar occurs in about half of the country, with a higher prevalence in 10-12 districts and with the single district of Mymensingh accounting for more than half of all cases. Case detection, surveillance, confirmation of diagnosis and treatment will be strengthened along with vector control measures. Elimination is being defined as a prevalence of less than 1 case per 10,000 populations in an Upazila. Program will be geared to the goal of elimination.

Leprosy is eliminated (as defined with prevalence of less than 1 per 10,000 populations) nationally in 1998. However, it was still over 1/1 0,000 in 4 districts and 5,251 new cases of leprosy detected in 2008. Training of health care staff, awareness programs among the population, treatment of the patients and assistance to cured but deformed patients will be continued. MOHFW will strengthen its linkage with LG Division and other appropriate ministries in improving facilities for safe drinking water and sanitary latrines (including same arrangements in all riverine transports and railway) and making the environment clean with a view to combating communicable diseases.

HIV/AIDS: In order to achieve the MDG (Goal 6) the target is to (i) have halted by 2015 and begun to reverse the spread of HIV/AIDS and (ii) achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it. The prevalence of HIV/AIDS in Bangladesh is currently less than 0.1% and thus still below an epidemic level. However, in Bangladesh, behavioral factors among most at risk populations (MARPs), explored in several rounds of Behavioral Surveillance Survey shows a trend that could fuel the spread of HIV from MARPs to the general population. HIV Voluntary Counseling and Testing (VCT) services and the uptake of VCT remain limited. Thus, many people who are infected with HIV may not be aware of their HIV status. The 8th round national serological surveillance (2007) found a HIV prevalence rate of 7% overall and 11% in one of the neighborhoods of Dhaka. The HIV prevalence among sex workers overall is below 1%, but at hilly areas the prevalence was 2.7% among casual sex workers. Such concentrated prevalence has potentially far reaching implications on HIV transmission to other vulnerable segments.

The Bangladesh National HIV/AIDS Strategic Plan (2006-2010) is focused on five key areas: (i) to provide support and services for priority groups; (ii) to prevent vulnerability to HIV infection; (iii) promote safe practices in the health care system; (iv) to provide care and treatment services to people living with HIV; and (v) to minimize the impact of the HIV/AIDS epidemic. Under the SFYP, interventions with high-risk groups will continue to implement with enhanced monitoring and supervision. Capacity of the national AIDS/STD program (NASP) will be strengthened - both in management and in HIV / AIDS technical, for providing stewardship in the program, including setting-up permanent structures in revenue budget. A new comprehensive national strategic plan for HIV / AIDS prevention and control will also be formulated.

Non-communicable diseases: Reduction of morbidity and premature mortality due to non-communicable diseases (NCDs) will require appropriate actions at all levels from primary prevention to treatment and rehabilitation in an integrated manner. The government will, in

partnership with local government administration and private sector create greater awareness of, and provide services for the control of unhealthy diet and lifestyle related major NCDs like-- cardio-vascular diseases, cancer, diabetes, mental illness, etc. It will also take steps to combat common NCDs, such as, hypertension, asthma, blindness, etc., which particularly afflict the poor. Existing preventive and curative measures with respect to all NCDs will further be expanded and strengthened to increase access of all for health care services. Capacity to plan and implement NCD programs will be developed. Initiatives will be taken to obtain reliable base-line data on the epidemiology of NCD and their risk factors. Population screening for risk factors such as hypertension or cancer screening will not be undertaken as unrealistic.

(b) Strategy for Strengthening Health Inputs

Promotion of public awareness: A major strategy to ensure better health would be to promote public health through better health public awareness of health hazards. The existing institution will be strengthened and partnership will be built with mass media for providing health education to the population on a continuing bases regarding methods of preventing communicable and non-communicable diseases, caring practice for children, adolescents, physically and mentally challenged and the old aged, and creating awareness on nutrition, personal hygiene, use of safe water and proper sanitation. Steps will also be taken to reach basic health and reproductive health information through school curricula and utilize NGOs and different religious centers to influence health behavior of the people. Moreover, activities of existing school health clinics will be reviewed and based on lessons learnt, school health program will be scaled up through a strategy developed in collaboration with the various educational institutions

Nursing: Nursing and midwifery services is planned to strengthen in public sector by creating adequate posts and filling-up the same, so that existing mismatch of physicians-nurses and nurses-patients ratios can be improved substantially. Nursing and midwifery services is also planned to expand to cover specialist nursing services like cardiology, orthopedic, neurology etc. Nursing and midwifery education will be expanded for training more nurses both in public and non-public sectors covering diploma and bachelor courses. Quality of nursing and midwifery education is planned to be improved at international leveling addition, to meet the domestic requirement and also to export manpower abroad. Up-gradation of Directorate of Nursing services to Directorate General Nursing services, appropriate career and human resources planning in the nursing services/ teaching profession is the demand of the time to ensure the quality of health services for the people.

Drugs: Initiatives have been taken to revise the existing drug policy to ensure easy access to essential drugs at fair prices and to supply quality drugs and also to bring self-sufficiency in the production of medicines of international standard along with promotion of their export. Directorate of Drug Administration is planned to strengthen, expand and modernize to improve its regulatory capacities. Increased attention will be given to popularize rational use

of drugs by educating both the prescribers and users on appropriate prescription practices and use of appropriate drugs with dosages. Both the existing drug testing laboratories at Dhaka and Chittagong are planned for modernization. In addition, another drug testing laboratory of international standard is planned to be established.

Medical education: Proper medical education system is very crucial for effective HPN service delivery. Measures will be taken for the production of appropriate skill-mixed workforce (super-specialist physicians and surgeons, specialist physicians and surgeons, general duty doctors, specialist nurses, general duty nurses, mid-wives, nutritionist, dieticians, paramedics, technologists, electro-medical engineers/ technicians etc.) in both public and private sectors. Private sector participation in medical education has expanded over the past few years. Maintaining the quality of medical education has since become crucial. The MOHFW will reexamine the current accreditation arrangements for pre-service educational institutions of both public and non-public health professionals and will consider the need for a uniform accreditation body to coordinate and regulate all types of medical education. Client's satisfaction is an important outcome of quality of care combined with the perception of provider's behavior. Awareness of the importance of this issue needs to be inculcated during pre-service education. To this end, steps will be taken to provide community exposure and patient-friendly orientation in medical education and training. Bangabandhu Sheikh Mujib Medical University will be made as center of excellence. Bio-engineering education has always been a neglected area and in this regard emphasis will be given to encourage such education and to develop skilled people in this area. During the period of internship, a mandatory time (e.g. 6 months) should be spent in Upazila Health Complex for improving the health service provided at the upazila level.

Food quality: The problem of major health hazards stems from unsafe drinking water and consuming unhygienic and low quality food. Definitive food standards will be established to serve as benchmark for evaluating and maintaining standards. Initiatives will be undertaken for reviewing all existing food safety laws and upgrading laboratories with clear assignment of responsibilities for different entities within public and private sectors. The government will examine the need for an authority for food (independently or integrate with existing drug administration) to take necessary follow-up action with the aim of removing threat to health of the citizens from substandard and/or adulterated food. By removing food deficit, nutrition needs of 85 percent of the population will be ensured.

Emergency preparedness response: The level of readiness at all tiers of the health system will be strengthened for emergency response and capacity of the sector will be increased for coordinated post-disaster management. Standard national guidelines for mass casualty management as well as manual for local level health response will be issued and necessary training will be conducted. Standardization of emergency health supplies and their stockpiling will be part of the readiness program. Partnership will also be forged with disaster management agencies, groups and individuals for improving emergency preparedness, prevention and mitigation.

Climate change and health protection: A concerted effort will have to be made to protect health from adverse effects of climate change. To this end, a national program outline will be developed in order to reduce the burden of diseases due to climate change. Public health services will be strengthened as part of central component of adaptation to climate change. The existing health research agenda will include the adverse effect of climate change on health, and field surveys and studies will be conducted to identify the short, medium, and long term effects of climate change on health. Various steps will be taken to raise public awareness through coordinated efforts and sharing of research findings with all concerned actors. An advanced preparedness plan will be developed to face the consequences of climate change. Moreover, climate change being a global challenge, calls for an unprecedented degree of partnership. An effective response will require actions across the society and from global community, in order to safeguard and enhance national as well as global public health security.

Alternate medical care: Homeopathy, ayurvedic and unani are included in alternate medical care (AMC). Necessary actions will be taken for improvement of the standard of alternate medicine, increase the demand for quality care and thereby reduce unsound practices. Capacity building of the AMC providers and proper monitoring and evaluation of the AMC provider will be undertaken. AMC education and AMC provision in public sector facilities will be further expanded.

Affordable health care services: Existing system of affordable health care services will be further expanded and consolidated ensuring proper safety net for the poor. Facilities providing health care outside the public sector (but receiving government fund) will ensure that at least 30 per cent of their all types of services are kept for free treatment for those who cannot pay. Necessary fund will be mobilized through user fees, government allotment, social organizations, private contributions, corporate social responsibility, community financing schemes, and social insurance. Fees for providing medical advice or diagnostic service will be reviewed and regulated as necessary. The government will also encourage establishment of network of evenly spread specialist and super-specialist services through private investment for patients who can pay.

Surveillance of diseases: The existing disease surveillance system will be reviewed for its updating to incorporate NCDs along with CDs and keeping in view the international health regulation system. Disease information monitoring and management system will be strengthened not only to issue public alert and increase availability of adequate information concerning the incidence and prevalence of diseases at regional and national levels, but also to establish a network with the global disease information system. Maps of all major diseases, on the basis of their incidence and prevalence, will be constructed for each district.

Medical waste management: The government has recently introduced waste management initiative for hospitals at the Upazila and below to ensure safe, environment friendly and cost-effective management of sharps and other hospital wastes derived from curative, diagnostic,

immunization and other services both in public and private sector. The on-going efforts of hospital waste management at all levels will be strengthened further and expanded all over the country. The government has already decided that in house medical waste management should be the responsibility of MOH&FW and out house management should be the responsibility of MOLGRD. A coordinated mechanism along with committees at different levels will be established involving hospital authorities, city corporations and municipalities, and Ministry of Environment (MOE) for management of both in-and-out house hospital wastes. This will require direct involvement of, and increased investment by, both the public and private sectors. Steps will also be taken to improve the capacity of DGHS for inspection and monitoring of medical waste management. In addition, NGOs and private sector's engagement for the out-house management will also be encouraged.

Physical facilities: Need based repair/renovation and up-gradation of the existing facilities (community clinics, union health and family welfare centers, Upazila health complexes, maternity and child welfare centers, district hospitals, medical college hospitals, tertiary level specialized hospitals and other installations) will continue along side of setting up new facilities and installations. Capacity of Public Works Division (PWD) and Health Engineering Department (HED) will be strengthened.

Telemedicine and e-HPN: In order to contribute to the vision of Digital Bangladesh, HPN sector will connect all its facilities and installation with computerized network. Data /information will be continuously used for making management decisions, policy formulation, program design, monitoring and evaluation. Moreover audio-video conferencing and mobile phone services will be used to provide need based services to the people. Moreover all the training institutes under MOHFW will include computer training in all of its courses. Public hospitals and MCWCs will be gradually brought under functional e-health as smooth operational and management tool. Support of tele-medicine and e-health will be used to make specialist services available to all people irrespective of their geographical locations at low cost

Strengthening research and training: Research will emphasize on priority areas of biomedical, public health, family planning, epidemiological, HPN systems and policy, social and behavioral, and operational issues. National HPN research system will play a stewardship role in identifying priority and engaging research institutions and researchers including non-public for generating reliable evidences. It will also play a vital role in advocating research findings for policy and programmatic adoption, as well as for raising citizen's awareness. The capacity of various research institutions and individuals will be augmented to achieve the above stated goals. Bangladesh Medical Research Council (BMRC) and National Institute of Population Research and Training (NIPORT) will be strengthened after reviewing its mandate and structure for assuming strategic stewardship and governance roles for HPN related research. NIPORT's training institutes will be strengthened to produce more pre-service FWV, midwives and Community SBA personnel to cope with need. Recently constructed "National Institute of Health Management" will be responsible for capacity development of the service

providers under DGHS. In addition to that, IST (TTU) of DGHS, NIPSOM, IEDCR, ICMH, BSMMU, Medical colleges and specialized institutes are also contributing significantly in strengthening research and training.

(c) Strengthening Public Service Delivery Capacity and Accountability:

Health sector management/governance: Governance is an important element of health system performance linked with improved quality of care and efficient utilization of scarce human, infrastructural and financial resources. There are a number of problems in the public health service provision, which contributes to poor governance. These include inefficiency in service delivery, (medicine, logistics), inefficiency in managing health personnel, poor quality of services and negative perception about type of services available. The poor quality of services is indicated by staff absenteeism, inadequate attention given by doctors, non-availability of medicines and supplies, long waiting time, poor maintenance of equipment and unhygienic conditions.

Another problem is inadequate supply of medicines from the hospital. Only 12% of the outpatients and 1% of inpatients received the full course of medicine from the hospital. Government facilities are the last resort for the hapless poor who cannot afford to consult a private qualified doctor. But the findings from the same study show that doctors do not pay adequate attention to the patients who visit hospitals for obtaining services.

There is a widespread absenteeism either in the form of staff actually not being present or mental absenteeism in the form of indifference with the clientele or strong preferential treatment of patients. Regarding staff absenteeism, there are two problems to confront. One problem is that many posts at the public hospitals do not get filled at all, that is these posts are lying vacant. The other important problem is that even when filled, the doctor may not be there to attend to the patients i.e. the doctor is 'absent' from duty.

It is found that hospital doctors, especially senior doctors (Professors/Associate Professors) spend most of their time attending private patients either in the facility when they are present in the hospital or in their private chambers/clinics during afternoon. Thus, the "effective" number of public doctors in hospitals is much less than the filled in positions (or government norms) would imply. It is found that the total time spent by doctors at the District Hospitals, patient care accounts for 49% as against 45% of unproductive/idle time, while administrative works (5.2%) and time spent in meeting/health promotion activities are a very small proportion of doctor's time at the district hospital. Similar picture also emerges for UHCs and the situation is even worse at the HFWCs.

The findings suggest that many health centers are not fully utilized and most staff have slack time. It is clear that available resources can be used more efficiently freeing up resources for expanding activities. There is an urgent need to take appropriate steps to ensure more efficient use of time by service providers.

The findings from the same survey show that staffing costs comprise a significant share of total costs of a health facility. Personnel costs account for as much as 76% of total recurrent costs at the UHC, followed by 70% at the HFWC and 62% at the district hospital. Again, spending on drugs and MSR accounts for 29% of total costs at the HFWC, which decreases to 19% at the DH and only 10% at the UHC.

Results from an exit survey indicate that the majority of the service users are dissatisfied with the existing level of quality of care of public health care institutions. They are found to be dissatisfied with such aspects of care as waiting time, cleanliness and privacy of treatment, and expressed serious concern about the quality of inpatient food, availability of prescribed drugs and medical supplies at the health centers. Outdoor patients were found to be relatively more satisfied than the indoor patients on almost all dimensions of care. Further, females appeared to be disadvantaged than males in receiving inpatient care.

About 75% of the inpatients reported that they bought medicines for their treatment in hospitals. This figure was lowest in case of UHC (64%) and was highest for district hospitals (78%). Poor governance in the management of drugs becomes apparent as there seems to be higher levels of supply to facilities than to patients. Several measures will be taken to improve the governance and management of the health care system. Important reforms include:

Improved management: MOHFW will continue to pursue sector-wide approach in its development planning and implementation of HPN program. It is expected to result better government ownership and leadership; improved partnership with the DPs; an agreed sector policy framework and strategies based on shared vision and priorities; common sector program/expenditure framework; better coordination and alignment of resources; and strengthened harmonized implementation mechanisms and use of local systems and procedures.

Capacity development particularly in the areas of planning, monitoring, procurement and financial management are extremely crucial for improving implementation capacity of the public sector program. All the officials in key positions like line directors, program managers and deputy program managers will be trained in above areas with follow-up support on the job. Trained people in key positions need to be retained to get the benefit of investment. In this regard, MOHFW, in addition to practice retention seriously by itself, will engage with other ministries like establishment, planning and finance for compliance of retention of trained human resources in key positions. In order to enhance the capacity for the implementation, geographical distribution of available Human Resource (HR), appropriate utilization of them through revising job description will be critical. Filling up of all vacant positions is very important to ensure proper implementation of the program. In addition to current move of recruitment of doctors, nurses and other positions, efforts in future will aim to continue recruitment regularly to avoid such huge vacancies as experienced recently.

Coordination among planning, hospitals and administration wings with physical facilities construction agencies need to ensure timely securing of equipments (by placing orders at appropriate advance time) and placement of human resources (by initiating post creation move at appropriate advance time) as soon as the construction of facilities have been finished so that these can be made functional immediately. Fund release procedures need to be streamlined so that first quarter can be released soon the financial years starts, without wasting time as prevailing. MOHFW in consultation with the Ministry of Finance will work out alternate procedure for timely release of fund for second and onward quarters as currently obstructed for the requirement of evidence of expenditure of 75% of funds in the previous quarters, which has the limitation due to existing practice of central procurement. More delegation of financial and administrative power, procurement, repair and maintenance will be explored and exercised to strengthen district and below level service delivery facilities.

Better governance: Good governance in the health sector will be strengthened through prudent staff deployment, preventing all sorts of mal practices, prohibiting strike and creating a more customer friendly health service delivery system in the public facilities in partnership with all stakeholders. The stewardship capacity of public sector will be improved for monitoring quality of care and safety of patients in both public and private sectors.

The on-going collaborations between the state and the non-state actors in strengthening family planning, nutrition, EPI, TB and leprosy, HIV / AIDS etc. activities have been found encouraging through active involvement of the communities. Therefore, these initiatives will be scaled up as necessary and lessons from these experiences will be replicated in other areas of concern. The community-based organizations will be involved in monitoring the quality and coverage of services.

Expansion of private sector's health service provision will continue to be encouraged, so that private sector can support and complement the government activities. But, the private sector will also be kept under constant review to ensure proper treatment of patients and make them more transparent and accountable to the citizens. The existing regulations relating to the operation of the private clinics and diagnostic centers would be strictly enforced.

The Citizen's Charter for health service delivery has been put in practice in the public hospitals and health complexes. Practicing of the said charter will be monitored and strict adherence to its implementation will be ensured.

With the recent renewed commitment of strengthening the local government administration and institutions at different levels, opportunities have cropped up for exploring devolution of health programs and utilization of fund through different levels of local government institutions. Adaptation of such approach will enable need based allocation of resources and close supervision through the locally elected representatives.

Focus on improvement of public health services through better planning, reallocation of existing resources as well as increasing resources, establishing transparency and accountability, reducing wastage and improving efficiency by better management practices will be continued.

Transparency, accountability and stakeholder participation: Management committees along with government service associations, and professional organizations like Bangladesh Medical Association (BMA), Bangladesh Private Practitioners Association (BPPA), etc., as key stakeholders can play a more effective role in achieving good governance and ensuring transparency and accountability in health sector. The stakeholders, including non-state actors, media and civil societies will be involved in formulating policies and included in managing committees of hospitals. They will also be consulted on major issues of health sector's development in order to increase participation, transparency and accountability.

Sectoral reforms: The ongoing health sector reforms will be carried out under the ongoing HNPS and upcoming next sector program. The on-going reform measures need to be closely monitored and reviewed for their successful implementation. Efforts are on to reestablish functioning of the Bangladesh Medical and Dental Council through an amendment of the concerned law. Gradually other laws relating to regulatory bodies will be reviewed and strengthened to make them functional and effective. Both administrative and financial authority, as far as possible, will be decentralized with a view to increasing accountability and establishing quality health care services at all levels. A system of collection, retention and utilization of "user fees" at all public health facilities (ensuring adequate safety net for the poor) will be established and for this a set of guidelines developed.

Stewardship role of the Ministry of Health and Family Welfare: The government has been emphasizing on wider involvement of the private sector including non-state institutions for enhancing effective health service delivery. To this end, the stewardship role of the MOHFW has to be strengthened. The following are some of the important areas where effective regulatory mechanism of the government will be established.

1. MOHFW will gradually assume strategic stewardship and governance roles for policy management in the following and related areas.

- Setting up a coordinating system for synergistic, effective and efficient contribution from public and non-public including private sector and health related NGOs for extending and improving health services.
- Necessary steps will be taken for formulation, implementation, review and periodic updating of a comprehensive (i) Maternal, Neonatal and Child Health Strategy, (ii) Population Strategy by updating the existing NPP, (iii) Infant and Young Child Feeding Strategy, (iv) Strategy for Combating HIV/AIDS, (v) Strategy to reduce the burden of TB, Malaria, Kalazar and Filariasis, (vi) Urban Health Strategy, (vii) Non-Communicable Diseases Strategy, (viii) Emergency Preparedness and Response Strategy, (ix) Accident and

Violence Management Strategy, (x) Occupational Health Strategy, (xi) Mental Health and Drug Addiction Strategy, (xii) Tribal Health Strategy, and (xiii) Food Safety and Drug Strategy.

II. MOHFW strengthens its regulatory and supervisory roles

- Regulatory bodies (Bangladesh Medical and Dental Council (BMDC), State Medical Faculty (SMF), Bangladesh Nursing Council (BNC), Bangladesh Pharmacy Council (BPC), and Ayurvedic, Homeopathy and Unani Board will be made more effective and functional through revising their mandate, structure and capacity building for enforcement of standards.
- The existing structure and capacity of DOHS will be reviewed and strengthened for increasing supervisory performance and enhancing institutional capacity.
- Professional medical ethics and code of conduct will be established among the service providers through enforcement of regulatory framework in consultation with the professional associations.
- The need for separate regulatory body for effective service delivery system for both the public and private sectors will be reviewed.

III. Public sector notably MOHFW will increasingly focus on ensuring proper safety net for the poor, vulnerable and marginalized.

- Existing health delivery system in both public and private sectors will be further expanded and strengthened, ensuring proper safety net for the poor, vulnerable and marginalized. Individuals receiving old age stipends from the government will get full free treatment in all public hospitals.
- Alternative health delivery systems will be explored leading to an eventually self managed system with community participation in managing the facilities on pilot basis and then scaled-up, based on lessons learnt.
- Public-private partnership in health delivery system will be further expanded and strengthened with an effective monitoring and regulatory mechanism.

IV. MOHFW assumes responsibilities for proper information generation, collection and effective management feeding into policy formulation and planning.

- Develop comprehensive plan including performance indicators for monitoring and evaluation of health interventions and HPN facilities with sound demographic and socio-economic data including those on burden of disease, inequality and gender disparity.
- Improve existing communicable disease surveillance system to support a more rapid response to tackle disease outbreaks. Surveillance of major non-communicable diseases will also be integrated with communicable disease surveillance.
- Formulation, implementation and periodic review of comprehensive behavior change communication strategy for stimulating informed demand for health services.

- Formulation of an improved planning and budget through pilot introduction of local level planning (decentralized at district and Upazila level) supported with resource allocation.

Strengthening human resources: The comprehensive human resources strategy under preparation by MOHFW will address the issues of shortages, mal distribution of personnel, skill-mix imbalance, negative work environment and weak knowledge base. Steps will be devised for improving the quality of existing workforce in both the formal and the informal sectors. Measures will also be taken for production of additional workforce (doctors, nurses, paramedics, technologists, etc.) in the public sector and the private sector, based on need assessment. Moreover, the following are some of the important areas of focus for HPN sector's human resources development (HRD).

- The public sector HRD strategy will, among other things, involve establishing career plans for specific lines of specialization, based on competence and experience, and clear principles for promotions, posting and transfers.
- The marked imbalance in the skill-mix of service providers needs to be addressed on an urgent basis. Priority will be given to the pre-service education, recruitment and training of additional nurses, midwives, technicians and C-SBAs to meet existing shortage and improve service delivery. Efforts will be taken to recruit a number of female doctors, nurses and Family Welfare Visitors to provide health care services to women in Community Clinics, Union Health Complexes, District Hospitals and Urban Health Centers
- Personnel management procedures will be reviewed and updated as required. The updates will include introduction of incentives for service providers working in remote and hard-to-reach areas and modifications of the transfer-posting practices for field level managers.
- Performance management (supervision and annual performance evaluations) of individual staff will be strengthened through individual performance, performance management. This will include application of merit-based incentives as well as disciplinary measures in response to absenteeism or misuse of public-sector resources for private gain.
- The large and critical role of the informal health care providers will have to be recognized and appropriate strategies developed with a view to managing and improving their practices to minimum levels of acceptable care. They will be given need based short training of different durations at both public and non-state facilities, particularly on appropriate drug use and prevention of drug resistance, routine curative care management and referral of complex cases to the appropriate facility.
- Bangladesh needs to take more initiatives to accelerate the reduction of infant and maternal mortality. To this end, in addition to strengthening SBA training programs, the untrained TBAs will be given appropriate training of short duration on maternal and neo-natal care and safe delivery. A system of supervision will be established to regulate the quality of their service.

Improving supply management: The MOHFW has continuously been monitoring and reviewing the process of procurement for developing a need based, efficient and cost-effective system. The new contracting-out system is already in place keeping provision for repair and maintenance for ten years by the supplier for certain electro-medical equipment. This system along with functioning of the National Electro-Medical Equipment Workshop (NEMEW) will be further reviewed for strengthening the repair and maintenance of electro medical equipment for their proper functioning. Further emphasize will be provided on improvement in Central Medical Stores Depot's capacity, staff training, storage and distribution, Computerized Inventory Control System (CICS) and Logistics Management Information System (LMIS). The scope for further expansion of decentralized procurement will be explored to achieve greater timeliness in procurement of supplies.

(d) Strengthening Access to and Utilization of Public Health Services for the Poor and Needy

Primary health care services can be characterized by their availability, accessibility, utilization, coverage, quality, and impact. Of particular concern in a country like Bangladesh is ensuring that high-quality primary health care services reach those most in need, namely the poorest, least educated, and geographically most isolated members of the society. The three aspects of health, viz. status, access and utilization, are distinct though interrelated. Indicators of health status (e.g. mortality and morbidity rates) can reflect whether health services have had any impact on the health of the population. A greater availability of health services is obviously intended to improve health status and to reduce inequity in the distribution of health services. However, it is important to consider the actual utilization of available health facilities since equity and access are likely to have an impact on health status only if these facilities are actually utilized.

Access to health services can be defined in terms of (a) access of available health facilities to rural and urban areas and different social classes and (b) their actual utilization, which would determine the level of satisfaction of health needs. The factors determining access and utilization are diverse. Income is only one factor that might explain access to health services in developing countries. It is necessary but not sufficient – other factors such as the nature of government policies and their effectiveness, income distribution and institutional and non-economic factors (such as cultural and social constraints) play an equally important role in determining access to health services and their utilization.

To be effective, health services should be available, accessible and affordable. But mere availability of health facilities does not result in their utilization. Accessibility has a number of dimensions, which include:

- Physical Accessibility (distance, travel time and travel costs);
- Economic Accessibility (cost of medicine, cost of consultation, cost of hospitalization, cost incurred with respect to tests/investigations);

- Social and cultural context (Gender) affecting accessibility;
- Perceived quality of services: (i) availability of doctors; (ii) availability of medicine; and (iii) attitudes of doctors/nurses.

Physical accessibility: The three main aspects of physical accessibility are distance from the health facility, travel time and travel cost to arrive at the facility. Physical accessibility is not a major barrier in the sense that patients do not have to travel a long distance to reach health facilities at the Upazila level and below. Once patients arrive at the facilities, they do not have to wait for a long time to get to the services as well. However, patients visiting higher-level facilities have to wait much longer to see the doctor. However, physical access is a barrier to maternal and child health services in particular. In the 1999-2000 DHS, 79% of women reported that the lack of a health facility nearby was a constraint to consumption. In the same survey, 50% of women responded that getting to the health facility was a problem to them. There is significant negative association between both distance to the provider and travel time and the use of health services. If the travel time was 40 minutes or greater compared with travel time of 15 minutes or less a child is less likely to be taken to a qualified allopathic provider or a traditional practitioner than a village doctor, . Other research has shown that a majority (74%) of sick children in a rural area of Bangladesh are taken less than two miles for treatment; and that a majority of those children are seen by private practitioners. In contrast, children who are taken more than two miles for treatment received health care from qualified allopathic providers.

Social and cultural context – utilization by age and gender: The social and cultural context has an important impact on the utilization of health services in Bangladesh. Social and cultural factors particularly affect the role of gender and the participation of women in household decision-making. Women are less likely to utilize health services, the DHS (Demographic and Health Survey) data show that 44% of women reported difficulty in getting permission to go to a health provider as a constraint to health service consumption .In addition, 49% of women reported that finding someone to accompany them was a problem. It is found that men who were sick were more likely than women to utilize modern qualified providers in rural Bangladesh. The gender bias may reflect beliefs that it may not be appropriate for women to be seen by a male provider. In addition to the long-standing cultural biases against women, the fact that the health providers available in rural Bangladesh are predominantly male suggests that the problem of women's access to care will not be easily solved.

Findings from various studies have shown that in Bangladesh, females generally do not get proper treatment during their childhood as well as during their reproductive age span. There is considerable evidence that in rural Bangladesh females have less access to food, health care and other resources than males within the same household. Utilization patterns of health facilities for females are inversely related to the levels of care i.e. female utilization decreases as one goes up along the levels of care (from HFWC to UHC to DH). The findings suggest that males dominate utilization of government facilities, at all age groups except for the reproductive one. The gender differential in utilization rate was particularly striking for under-

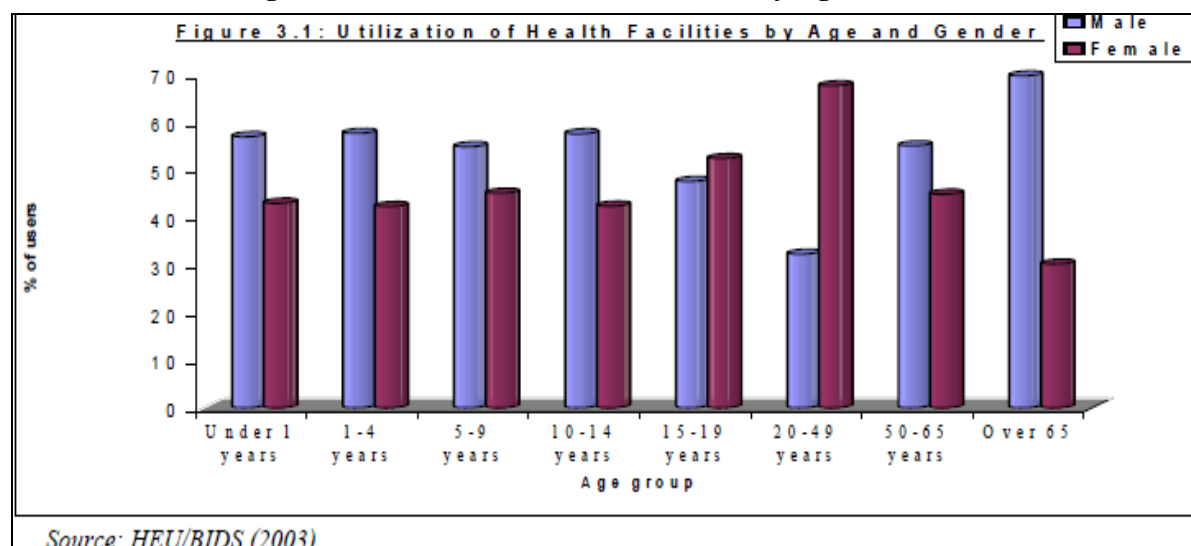
five children and also for women in the age group 65 years and above.

- For young infants, utilization of inpatient facilities was 62 per cent for males compared to 38 per cent for females, indicating that the younger the child – the higher the disparity.
- For older persons aged 65 years and above, utilization of outpatient facilities was only 30 per cent for females as against 70 per cent for males. This indicates that in terms of receiving care and treatment during old age females are much more disadvantaged compared to their male counterparts.

These findings imply that despite nearly comparable incidence of diseases for males and females, male children are brought to the health facilities by their guardians far more frequently than female children. While less is known about the incidence of diseases by gender, findings from Matlab (ICDDR, B) data do not show any sex differential up to 5 years of age in terms of exposure to infections. Thus, one can assume that the probability of being sick is more or less the same for male and female children. But the frequency of hospitalization of male children (< 5 years) has been found to be much higher than among cases involving females (60% males as against 40% females), which clearly indicate that in terms of receiving health care, female children are especially disadvantaged compared to their male counterparts.

Reproductive age bracket (15-49 years) is the only age group where female utilization exceeds that of males. This can be explained by the fact that compared to their male counterparts, females in the age group 15-49 years are more vulnerable to death and disease because of pregnancy and associated health risks during and after delivery.

Figure 8.1: Utilization of Health facilities by Age and Gender



Economic accessibility: From an economic perspective, healthcare utilization decisions depend on the relative magnitude of costs and benefits involved from the standpoint of persons who make these decisions to use healthcare for themselves or for others. The costs of seeking care typically include financial expenses and income losses that may be incurred as a result. Income losses can be high if considerable time is spent in commuting or standing in queues to obtain medical care.

For the same reason, the amounts paid for healthcare services, such as consultancy fees and hospital charges are also likely to be an important determinant of health care utilization. There are other factors that influence healthcare utilization behavior. For people with higher education, the perceived benefits from effective treatment and/or preventive care may be higher than for the rest of the population. Benefits could be higher for individuals whose health is considered intrinsically more important in certain cultural settings, as for people belonging to higher socio-economic classes and for males. The perceived need for medical care would depend both on the availability of healthcare facilities and the capacity to pay for health services.

The cost of health care can be a strong determining factor of health care utilization, as well as a cause of poverty. Ability to pay is a particularly important determinant of access when a high proportion of health care is financed privately, and without any type of financial risk protection from health insurance. In Bangladesh, 60% of total health expenditure in 2000 was in the form of out-of-pocket payments by individuals (64% of total health expenditure was from private sources), so that households' ability to pay for care is important. There is essentially no social security or private health insurance, although public hospitals are intended to provide a form of insurance in case of serious illness.

Impact of treatment cost on household consumption: Expenditure incurred for health care has some adverse impact on household consumption. The data as presented in Tables 8.5 and 8.6 shows the type of inconvenience households face in meeting their outpatient and inpatient needs. Findings show that expenditure on health resulted in withholding of other subsistence resources. Treatment costs have had adverse effect on other household consumption items for 70 per cent of inpatients and 12 per cent of outpatients. Among the inpatients who were adversely affected because of hospitalization, food consumption was reduced or there was inadequate food in 68 per cent of the households; expenditure had to be curtailed on other essential household items for inpatients and 12 per cent of outpatients. Among the inpatients who were adversely affected because of hospitalization, food consumption was reduced or there was inadequate food in 68 per cent of the households; expenditure had to be curtailed on other essential household items for another 64 per cent cases because of treatment cost, while 13 per cent households had to face problems in financing their children's education. Illness requiring treatment and hospitalization has significant adverse implications for the economic well-being of affected households and individuals, particularly for poor households.

Table 8.5: Problems Faced by Households Due to Health Expenditure: by Income Groups

Monthly Income (Tk)	Outpatients			Inpatients		
	All Cases	Cases having problem		All Cases	Cases having problem	
No.		%	No.		%	
up to 1000	354	51	14.40	105	81	77.14
1001-1500	639	92	14.40	148	116	78.37
1501-2000	642	92	14.33	143	119	83.21
2001-3000	1030	137	13.30	236	186	78.21
3001-5000	1104	136	12.31	235	152	64.68
5001-7500	487	33	6.78	123	72	58.53
7501-10,000	214	18	8.41	43	19	44.18
10001+	196	7	3.57	53	15	28.30
All	4666	566	12.13	1086	760	69.98

Source: BIDS/HEU, 2003

One way by which this occurs is in the form of out-of-pocket health expenditures for diseases that are relatively expensive to treat or require hospitalization. Another way in which illness can influence the economic well-being of affected households arises from incomes foregone on account of the morbidity of affected members, or taking time off from work to care for the sick. A single episode of hospitalization can account for 30 to 50 per cent of annual per capita income, with the proportion being even higher for poorer groups. This can lead to tremendous financial burden on poor households and indebtedness, sometimes resulting in liquidation of their assets/property. This would certainly indicate that episodes of illness affect the economic position of the households rather badly.

Table 8.6: Type of Problems Faced by Households due to Expenditures Incurred for Treatment Purposes

Type of Problems Faced	Outpatients		Inpatients	
	No.	%	No.	%
Insufficient food for the family	272	48.06	516	67.89
Children's education affected	29	5.12	98	12.89
Essential purchases affected	311	54.95	488	64.21
Others	15	2.65	24	3.16
All	566	-	760	-

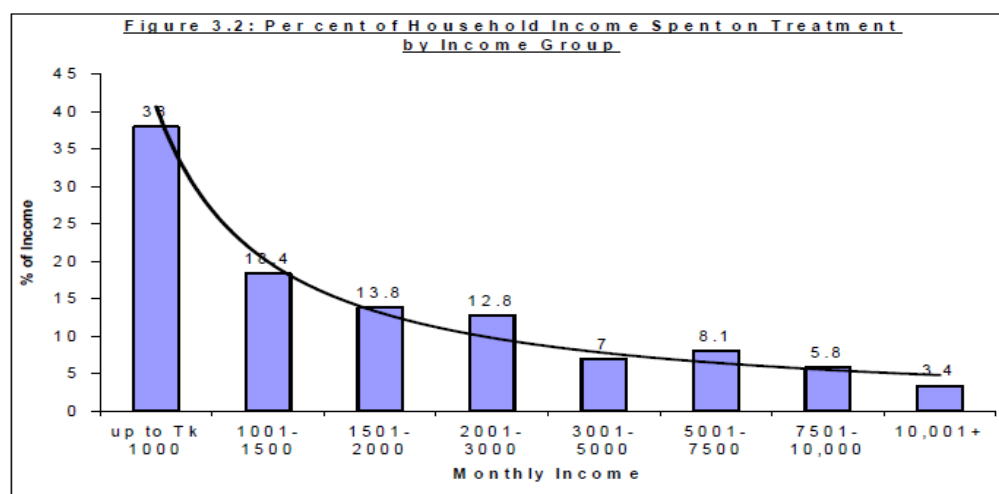
Source: BIDS/HEU, 2003

Disease burden on the poor: The poor bear a disproportionate share of the burden of ill health and suffering. On the whole, 8.8 per cent of monthly household income was spent on illness treatment. But the poorest households had to spend about 38 per cent of household income to meet the treatment cost of illness episodes, which is a heavy burden by any reckoning. On the other hand, the richest households spent only 3.4 per cent of household income for treatment of illness episode. Again, the poorest households spent much less in absolute sense for treatment purposes compared to the richest households (Tk 283 vs. Tk 572). This is primarily because of the fact that due to very low income of the poorest group, most of their income is spent on purchasing food and other daily necessities of life leaving very little scope for spending on health care. The findings clearly indicate that members from the poorer households have less access to resources available for health care and that they undergo a lot of economic pressure to finance their treatment cost/medical needs. Thus, for low-income households there is a real risk of indebtedness in times of illness requiring treatment.

The situation becomes really precarious for patients who need hospitalization. In the case of inpatient treatment in a government facility, especially if surgical intervention is required, the households have to incur a huge amount as out-of-pocket expenditures on medicines, diagnostic tests and other related items. To meet the hospitalization expenses many households have to borrow money and even liquidate their assets.

Any hospitalization in the household involves huge expenditure; both medical and non-medical expenses and this can very badly affect the household budget. This brings us to the question of providing financial protection to the poor households against such contingencies. Insurance schemes to cover the poor and/or low-income households who are mostly in the informal or unorganized sector can be devised. Also, even if the government hospitals want to levy user charges, people below a certain income level should be exempt from paying such charges and this could be achieved through proper targeting.

Figure 8.2: Percent of Household Income spent on treatment by Income



Source: BIDS/HEU, 2003

(e) Ensuring Gender Equality

Efforts will focus on (i) ensuring rights of women for a better physical and mental health at all stages of their life cycle, (ii) strengthening PHC for women with emphasis on reducing MMR and IMR, (iii) strengthening reproductive rights and reproductive health of women at all stages of population planning and implementation, (iv) addressing nutritional needs of women, specially of lactating mothers and the adolescents girls, (v) preventing women from HIV/AIDS and STD through awareness raising, and (vi) creating women-friendly physical facilities at all public health complexes and improving access to health services for women and girls. Moreover, efforts will continue to (i) communicate the importance of ANC, delivery care and PNC to all household heads at the grass root level, (ii) give special training to service providers at the community and higher levels on gender equity and (iii) include topics on the health needs of both males and females and their impact on gender disparities in school curricula. At present, DGHS is implementing women friendly hospital initiative activities for promoting gender equality. Further steps will be undertaken for improving gender equality in HPN in close cooperation of Ministry of Women and Children's Affairs. The existing Gender Equality Strategy of the MOHFW will also be reviewed and revised appropriately.

(f) Budget and Financing

The share of budgetary allocation to the HPN sectors needs an upward rise year by year. It is, therefore, imperative to adequately raise the share of HPN allocation to national budget in phases, and gradually raise it to 12 per cent by 2015 from the present level of around 7 per cent. Efforts will be taken to make the HPN allocation sex disaggregated. A significant part of the increased budget will be devoted to improving supply of drugs in public hospitals, especially for providing PHC services, with provision for strict monitoring of its utilization. HPN Sector's financing by the government alone is insufficient to ensure improved health care for all in Bangladesh. Expansion of private sector investment will help to bridge the gap in needed resources for extending and improving the services. The government may consider providing incentives (e.g., land at a lower price, bank loan, tax exemption for import of electro-medical equipment, training to health professionals and workers, lump sum grant, etc.) through a set of guidelines to the private sector engaged in health care service provision. In rural areas HPN sector's financing will be raised through cost-sharing by well-to-do patients' when they are treated in public hospitals. Moreover, the government (through a set of guidelines) will encourage promotion of health insurance pilots at different levels. There is substantial involvement of external funding in the health sector, e.g., project aid funds, global funds, social business funds, etc. The government will welcome increase in such funding in a harmonized way and well aligned with the national system.

(g) Public Private Partnership (PPP) in Health Sector

Role of private sector and public-private provision: The private health care sector constitutes an important part of health care delivery system. Through a wide network of health care facilities providing services in different systems of medicine, this sector caters to the

growing demand for health care in both urban and rural areas.

In the private sector, providers can be grouped into three main categories: first, the organized private sector which includes qualified practitioners of different systems of medicine; second, the not-for-profit NGOs; and third, the private informal sector which consists of providers not having any formal qualifications, such as untrained allopath, homeopaths and kobiraj etc. known as Alternative Private Providers (APPs).

Most of the private hospital facilities are concentrated in urban areas and small in size in terms of hospital beds. However, private clinics show lower lengths of stay and higher occupancy rates than public facilities of comparable size. This indicates a greater degree of resource efficiency in the private sector. However there is a lack of sensitivity to local needs in providing service-mix, which is mostly guided by profit motive.

Evidence also shows that the doctors practicing in private sector prescribe excessive, expensive and more risky drugs and often excessive diagnostic tests. Private health providers operate in non-competitive market conditions that tend to exhibit oligopolistic behavior. This allows them to maintain high prices and gaining higher profits. Therefore, efforts need to be undertaken to regulate the provision of private health services in an appropriate manner through regulation of service charges, quality of care, location and distribution.

The Sixth Plan will seek to develop effective partnership with the private sector by focusing on the relative strengths of the two sectors and strengthening collaboration and coordination. A major strength of the private sector is that private providers are more diverse in terms of the services offered, training level of the medical staff, legal organizational status, and system for medicine use. Private providers range from NGOs, mainly offering promotional and family planning services, for-profit providers (both very small practices and large modern health facilities) to traditional healers and homeopathic providers as well as licensed pharmacists and unlicensed drug sellers. If PPPs are processed correctly, wide-ranging benefits may be derived for all stakeholders. Benefits include efficiency gains; output focus; economies generated from integrating the design, building, financing and operation of assets; innovative use of assets; managerial expertise; and better project identification.

The following factors are important to consider as one proceeds along the challenging road of PPP:

- For government departments, PPPs must be an accessible, relevant, viable and beneficial service delivery option.
- The government's focus should shift from managing the inputs to managing the outcomes, i.e. becoming a contract manager rather than a resource manager.
- There should be coherence and consistency in government policy and legislation when introducing legislation and policies pertaining to PPPs.
- For the users of public services, PPPs must result in accessible, affordable and safe health services that meet acceptable quality standards leading to improved efficiency and

accountability to the public.

- For private parties, PPPs should be sufficiently rewarding in relation to the investment required and the risks undertaken.
- Private sector bidders should be allowed and prompted to respond with imagination and innovation.
- For society, PPPs must promote goals such as social equity, economic empowerment, efficient utilization of scarce resources, and protection of the environment.

Public private partnership for ESP in Bangladesh: With the introduction of Essential Services Package (ESP), the Government of Bangladesh, Ministry of Health and Family Welfare, has laid down the range of promotive, preventive and curative health services to be made available to all. As already mentioned the ESP includes established services for Reproductive and Child Health Services and Control of Communicable Diseases as well as services for Prevention and Management of Non-Communicable Diseases and Injuries.

Promotive health services are integrated in all ESP components as a cross-cutting element. They incorporate the approaches of IEC (Information, Education and Communication) and BCCC (Behavioral Change Communication), but reach towards the more comprehensive vision of Health Promotion. Essential promotive services are defined at three levels: (a) Healthy lifestyles/self-management of health problems, (b) health and health related service seeking behavior and equity of access, (c) advocacy for relevant regulatory and voluntary standards regarding environmental and occupational health and product safety.

Four areas may be identified for private sector involvement in ESP services: (1) Inclusion of private providers in capacity assessment and capacity development; (2) Contractual arrangements for defined services—e.g., ambulance services, laboratory services, out-contracting of Sub-Centers and Primary Health Care Centers; (3) Joint initiatives and contributions—e.g. government (project) support to improve health and sanitation services for vulnerable groups; (4) Promotion and support of social responsibility in business and corporate activities; e.g. concerning food safety, pollution control, occupational health and work place policies. In this context, it is worth mentioning that, out contracting of sub-centers and primary health care center needs consultation among the policy makers, service delivery providers and professional bodies. Repair and maintenance of electro medical equipment and out house management of medical waste will be considered for the private sector.

Informal private sector: It is well known that APPs provide the majority of health care in Bangladesh, especially in rural areas. The majority of the APPs do not have any formal education in their system of medicine, though a significant proportion has received some semi-formal training. They charge a very small consultation fees, and a greater share of their income comes from selling medicines. Poor people at a large proportion seek medical care from the APPs. The results indicate a very low quality of care among the APPs. However, the allopathic drug vendors usually perform better than the homeopaths and traditional providers in case of common ailments.

Private informal sector, therefore, mobilizes a considerable portion of out-of-pocket expenditure from households that is largely ineffective. It is estimated that 40% bottom poorest households contribute 40% of total health expenditure, which may otherwise be mobilized through community health insurance program for the poor.

(h) Health Care Services through NGOs

Voluntarism in Bangladesh has its roots in her social, religious and economic conditions. Individualized and ad-hoc voluntary activities in the form of giving money or food are quite common so is helping someone from one's village or distantly related. There are also organized group-oriented voluntary activities spread across Bangladesh.

Compared to voluntary organizations, NGOs are associations of persons, who comes together through the initiative of one or more dedicated persons. NGOs are run in a professional manner. Their staffs are hired for their professional skills and expertise. NGOs ability to reach poor and vulnerable groups and emphasis on participatory mode has been appreciated.

NGO sector: In health care delivery, many NGOs have displayed innovativeness and cost-effectiveness. The collaborations between the MOHFW and NGOs in strengthening family planning, EPI, TB and leprosy activities have been effective through active involvement of the communities. Community health workers can also motivate communities to better utilize government health services. These workers through increasing contacts with the local population could expand the coverage of health and family planning services while reducing the dependence on government employees. Therefore, such contacts should continue to play an important role in the provision of services to under-served and disadvantaged sections of the community.

Recently, the Government has been increasing NGO involvement in providing primary and community-based health care and nutrition services. There has been noteworthy collaboration with NGOs, in BINP, social marketing of contraceptives and urban primary health care. These initiatives require further scaling up and lessons from these experiences may be replicated in other areas of concern. The community-based organizations can be involved in monitoring the quality and coverage of services.

NGO services in the health sector have largely been confined to consultations and raising awareness, as major treatments need huge investment. Collaboration between government and the private sector is observed in health care delivery. However, collaboration of the public sector with private sector has not been satisfactory. The range and extent of public sector collaboration with the private sector in the area of health, nutrition and population (HNP) is incongruent with their importance. The major interactions were in terms of regulations of private clinics and hospitals. Informal (or less formal) providers such as non-allopathic practitioners, traditional birth attendants, drug vendors have had very little interaction with government. Thus, the public-private collaboration failed to include agents who are most important for the poor. Appropriate public policies are needed to raise the effectiveness of the

private sector's contribution to public health goals.

In health and family welfare sectors NGOs have been contributing significantly. NGOs were given the responsibility to run family welfare centers, in terms of reaching the eligible couple at door steps, which saw increase in contraceptive usages. NGOs are playing a significant role in providing urban primary health care in four largest cities in Bangladesh – Dhaka, Chittagong, Khulna and Rajshahi. In addition, some hospitals are run by NGOs and these also provide highly subsidized curative care to urban poor and others.

POPULATION PLANNING AND WELFARE

Recent trends in fertility: An examination of trend of fertility by looking at the estimates of TFR over the past three decades shows that it declined by 57 per cent during the period 1975-2004, at the rate of 1.8 per cent per year (Table 8.7). The pace of decline was steeper during the 1980s and early 1990s and since then it remained stalled until 1999. But the decline started again in 2001 and continued till 2006.

A comparison between age-specific fertility rates of 1975 and 2007 indicates that compared to 1975 age-specific fertility rates in 2007 fell steeply in all age-groups and particularly among older age groups, with the exception of the 15-19 age group which increased by 16%. The age pattern of fertility has shifted towards early childbearing and fertility of older women has reduced sharply over the years.

An examination of the decline in cumulative fertility by age cohort for selected survey years shows a consistent pattern of declining trend in fertility, which fell from a mean number of ever born children of 3.8 in 1975 to 2.3 in 2007, a decline of 40 per cent. The cumulative fertility declined in all age groups including 15-19 age groups. The reduction of fertility is steeper with the increase in age of women, it declined by nearly three children in the 35-39 age groups. A comparison of completed cohort fertility (4.9) with current fertility (2.7) demonstrates that fertility level has fallen substantially during the recent past. A comparison of completed fertility between 1975 and 2007 shows that it declined by less than two children or 27% between these periods. A drawback of the cohort measure is that it is primarily affected by childbearing levels in the past. However, completed fertility level has the advantage that it is the real measure of fertility, while TFR is a hypothetical measure and is subject to various biases.

Table 8.7: Trends in Current Fertility Rates

Age group	Survey and approximate time period						
	1995 BFS	1993-1994 BDHS	1999-2000 BDHS	2004 BDHS	2007 BDHS	1975-2007	1999-2000- 2007
	1971- 1975	1991-1993	1994-1996	2001- 2003	2004-2006		
15-19	109	140	144	135	126	15.6%	-12.5%
20-24	289	196	188	192	173	-40.1%	-8.0%
25-29	291	158	165	135	127	-56.4%	-23.0%
30-34	250	105	99	83	70	-72.0%	-29.3%
35-39	185	56	44	41	34	-81.6%	-22.7%
40-44	107	19	18	16	10	-90.7%	-44.4%
45-49	35	14	3	3	1	-97.1%	-66.7%
TFR 15-49	6.3	3.4	3.3	3.0	2.7	-57.1%	-18.2%

Source: BDHS, various years

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Effects of population momentum: Achieving faster reduction of population growth will require attaining replacement level fertility as well as addressing the effects of population momentum. Even if replacement level fertility is achieved in the near future, the population of Bangladesh will continue to grow due to the effects of population momentum as the proportion of women in the reproductive age group will continue to grow until the population stabilizes. However, the eventual size of the stable population hinges on the time of attaining

replacement level. The age composition of the population undergoes changes with the progress in demographic transition. The proportion of population under age 15 has declined from 46.7% in 1981 to 39.1% in 2001 due to reduction in fertility. On the other hand, the proportion of population in the economically active age group has marked an increase from 47.7% in 1981 to 54.4% in 2001, while there is a slight increase in the proportion of older population (>60).

The changes in the age distribution of the population have many socio-economic implications. First, the age-dependency ratio of the population has declined from 109 in 1981 to 83 in 2001. Second, it has resulted in an increase in the young and working age population which can create a virtual cycle of growth, known as demographic dividend. Third, the higher size of women in the reproductive age group will mean that the population will continue to grow until population stabilization takes place, say by the year 2050. The level of fertility will remain high at the initial stage due to tempo effect caused by the downward shift in mean age at childbearing. Hence, the effect of momentum can be reduced by delaying the first birth as well as widening birth spacing.

Population Management Strategies and Policies in the Sixth Plan

Recognizing the significance of the population problem, the government has initiated updating of the population policy to reflect recent realities and ensure effective delivery of population control and reproductive health services. Population as number one problem will be re-emphasized with undertaking of appropriate multi-sectoral programs to address the problem. It is expected that TFR will be reduced to 2.2 in 2015 from current 2.7 (2007) to attain replacement level fertility. To address the "Population momentum effect", measures will be undertaken to increase retention of girls in secondary schools and provide employment opportunities to young women, delay in marriage and childbearing, encourage spacing and limit family size. Mobilizing high political commitment, the entire nation is planned to energize to contribute to this effort.

The re-commissioned community clinics will address the challenges in the population sector with renewed thrust. Target-oriented population planning programs will be strengthened to achieve the goal. The large geographic variations in fertility and related factors and in use of contraception indicate the need for differential strategies both for information and motivational efforts and for service delivery. For example, in Sylhet and Chittagong age at marriage is higher than the national average, but fertility was also higher indicating a need to focus on lowering fertility within marriage. And high 'unmet need' (17.1%) indicates that service delivery in these districts needs to be strengthened. District specific strategies will be undertaken to address local constraints such as, poor access to services during certain parts of the year.

To achieve contraceptive prevalence rate of 74%, dropout will be reduced through door step service delivery, supportive supervision and motivational works with information on side

effect. Service delivery will be enhanced to the hard to reach areas, hilly and riverine areas as well as low performing areas. Quality services delivery will be ensured to the target groups by segmenting the client on the basis of sexual, educational, geographical location, socioeconomic status, age of parity and particularly the ultra poor and illiterate clients. Besides these, proper counseling and motivation will be continued to increase the age of marriage and child bearing and also to cover the unmet needs of the couples with GO-NGO collaboration along with local leaders' involvement. The major impact on fertility reduction could be achieved by rising age at marriage and by bringing the couples into contraceptive uses those have unmet needs for family planning services. These will push up both age at first birth and CPR and thereby again trigger a tempo effect to bring fertility down. Bangladesh has great scope to reduce early marriage, where at present 50 percent of teenage girls (15-19 years) are married compared to other developing countries. Moreover 17.1% couples have unmet-Needs for FP services of which 6.8% for spacing purposes and 10.8% for limiting their births. They are the potential couples to adopt longer acting and permanent FP methods. If all of those women having unmet need to space or limit their births, are to use FP methods the CPR would rise to 74 percent with the share of longer acting and permanent methods which is about to the desired level of CPR for achieving replacement level of fertility.

Emphasis will be given on delaying age at marriage for which coordinated inter-sectoral efforts will be needed. Thus each district and in some cases groups of Upazilas require specific strategies on which to develop action plans. In this context, special attention should be given to Sylhet and Chittagong division as the TFR of these two divisions are higher than the national average. Contraceptives along with FP services will continue to be made widely available and further expanded to the poor and the marginalized population in both rural and urban areas and different regions and to meet the un-met need. Procurement and logistics supply management will be strengthened to avoid stock-out of contraceptives. Alternate methods of public sector distribution of contraceptive commodities will be explored. Efforts are underway to popularize the slogan of having one child per couple. The existing FP program will be expanded and strengthened involving both men and women, and will be popularized through an intensive motivational campaign under the BCC program. Long Acting and Permanent Method (LAPM) playing vital role to achieve national target replacement level of fertility of 2.2 per woman by the year 2015. To achieve CPR 74% method-mix proportion of all modern contraceptive methods has to be made with giving special emphasis on LAPM. However through method mix of different family planning methods, TFR of 2.2 can be achieved even if the CPR is below 74%. Low use effectiveness of oral pills, condoms and injectables and their discontinuation rates are major constraints in declining of fertility though the use rates of those methods are highest. It is expected that by performing long acting and permanent method that is VSC, IUD, Implant with 20% share in method mix CPR the replacement level TFR of 2.2 per woman could be achieved with in 2015. The SFYP emphasizes on the availability of family planning services and to make such services and materials available to the general mass at an affordable price. Achievement of replacement level of fertility could only be possible by regaining the momentum of the robust

FP-MCH program supported by public information and motivation campaign to bring about overall changes in attitude and awareness creation among all stake-holders; and also requires cross-sectoral efforts for raising quality female education and employment.

Reproductive health problem remain the leading cause of ill health and death for women of childbearing age. Impoverished women, especially the marginalized rural populations suffer disproportionately from maternal death and disability, sexually transmitted infections, unintended pregnancy and nutritional deficiencies.

United Nations through its Millennium Development Goals (MDG) call for a 75% reduction in maternal mortality between 1990 and 2015. A three-pronged strategy is key to the accomplishment of the goal:

- All pregnant women have access to skilled care at the time of birth
- All those with complications have timely access to quality emergency obstetric care
- All women have the access to the contraception to avoid the unintended pregnancies

Under MDG, child mortality will have to be reduced by two thirds between 1990 and 2015. To achieve the MDG 4 & 5 and also vision 2021 goals and targets under SFYP require new infrastructure development, recruitment of adequate doctors and paramedics and changes in supply of drugs and other MSR.

Comprehensive EOC services and other Reproductive Health (RH) services through Mother and Child Welfare Center (MCWC) at district, Upazila and also in some selected union level are satisfactory in rendering the quality of care. To meet the future need, MCWCs require to be expanded with more beds and trained manpower. One Consultant (Obs/Gyn) along with one Consultant (Anesthesia) and one Medical Officer (trained in Paediatrics) supported by Four Diploma nurses with existing manpower can able to bring tangible changes in maternal mortality, morbidity and other RH indicators.

To increase the institutional delivery, Union Health and Family Welfare Centers (UH&FWC) need to be upgraded with the provision of trained midwifery nurses. This should be considered as the first line referral center bridging the services between Community Clinics and Upazila Health Complex and district level hospital MCWCs.

Adolescent Reproductive Health Strategy should be implemented in the form of services in the community. It is estimated that the Adolescent are in the state of population momentum in the population pyramid and need to be addressed vigilantly. In addition, emphasis will be given on treating various diseases like that of breast cancer ovarian cancer, cervical cancer etc. Many new activities are to be incorporated in line with the budgetary allocations.

A comprehensive digitalization of information system can able to identify the gaps in service delivery and also ensure effective monitoring and supervision. Mapping of all the service facilities with extensive networking may able to bring major changes in maternal mortality and morbidity.

Government has strong commitment to supply essential drugs through primary care unit to every citizen of the country. At each service delivery center, essential drugs through DDS kit need to increase in quantity every year keeping pace with the increasing number of population. Beside this, there are drugs for RTI/STD case management. Also there are provisions of drugs for under five child care in the DDS kit. Adequate supply of Mounimix to the children can reduce the prevalence of childhood anemia.

In order to provide information and services on FP-MCH catering specially to the needs of the rural poor, community clinics are being constructed for every 6,000 population throughout the country. Out of 13,500 community clinics already 8,464 community clinics are functioning and 2876 more community clinics will be constructed within a short span time. To aware the people about the services available in these clinics and to involve the communities, proper IEC activities should have taken.

The National Communication Strategy for Family Planning and Reproductive Health has been developed and accordingly IEC activities for the year 2010-2015 have been considered. This will promote MCH-FP based services as well as provide need based IEC support and increase community participation in the ongoing family planning program. So major thrust has been given to some of the main issues as follows:

- To promote reproductive health care by strengthening IEC support at all levels with the emphasis on Adolescent Reproductive Health Care,
- To promote Family Planning through strong advocacy programs,
- To improve nutritional status (calorie intake) of the people through IEC interventions,
- To promote services offered by Community Clinics
- To increase IEC Knowledge among the service providers and develop the community groups through IEC advocacy workshop in support of "The Sixth Five Year Plan". In this regard some strategic components are incorporated in this program which will facilitate the process of implementation of "The Sixth Five Year Plan". These events are as follows:
 - a) Audience Survey (IEC program)
 - b) Providers ownership
 - c) Social ownership,
 - d) Involvement of Print media, Population, Health & Nutrition Cell of Bangladesh Betar, Private Radio channels, BTV, and all Private TV channels.

Efforts will be undertaken to have required human resources for the effective delivery of the program. Moreover through appropriate coordination with the health department and through their support of trained human resources, issue of lack of skilled providers will be resolved and all opportunities to offer permanent and long term methods will be utilized. Opportunities will also be explored to optimize and expand partnerships with the social marketing network particularly in urban and peri-urban areas that are relatively underserved.

NUTRITION ISSUES AND MANAGEMENT IN THE SIXTH PLAN

Overall Nutritional Status and Challenges

There is no denying the fact that malnutrition has multitude of linkages to poverty. Chronic energy deficiency is directly related to the inability of involvement in income generation activities and learning capacity. Malnutrition is an underlying cause of childhood illness and maternal mortality. Therefore, strategies targeted towards improving nutrition have positive impact towards eradication of poverty.

Despite several natural calamities and high food prices, Bangladesh has achieved a slow but sustained reduction in prevalence of underweight and stunting. However prevalence of malnutrition is still alarming and it is even higher than countries like, Nepal, Cambodia, Ethiopia and Uganda. Bangladesh is placed in the bottom 25% of the Global Hunger Index and that signifies its vulnerability in the context of recent food price hikes.

Chronic energy deficiency, protein-energy malnutrition, low birth weight, micronutrient deficiency are critical issues faced by Bangladesh. Although it affects people of all ages, the children, women and female adolescents are mostly affected. Of the various micronutrient deficiencies, vitamin A, iodine deficiency disorders, iron deficiency anemia are major concerns, imparting cognitive development in children and threatening life to pregnant women.

Though the nutritional status of children is improving, the MDG goal of reduction of child malnutrition remains a formidable task. In order to achieve the MDG of halving the proportion of people suffering from hunger between 1990 and 2015, Bangladesh needs to make significant progress in the context of meeting basic nutritional requirement of its people. As of 2009, 45% of children under five years of age are found to be underweight where the corresponding figure for 1990 was 66%, indicating considerable progress over the last two decades. This decline was however not quite smooth- it fell drastically between 1992 and 2000 but since 2000 the fall has been quite slow and in the 2005-2009 periods there has hardly been any improvement. Against this backdrop, it seems unlikely that Bangladesh will reach the MDG target of 33% prevalence rate by 2015. The key impediments towards achieving such target are lack of access to health care facilities, especially in rural areas, inadequate and nutritional deficient food intake, inaccessibility of safe water and sanitation practices and absence of better breast-feeding practices. Another crucial factor behind child's nutrition is the nutritional status of mother and malnutrition among pregnant women is another serious issue where the performance of Bangladesh is far below satisfactory.

In terms of Bangladesh's progress towards achieving the MDGs, the 'Countdown to 2015' report of the UNICEF (2008) considered Bangladesh as a country which is 'making progress' in terms of goal 4 of MDG on child mortality and which is 'on track' for achieving goal 1 of MDG on underweight. However, in order to attain the MDG goal, it is also essential to improve the calorie intake of adults. Between 1990 and 2005, there was a modest decrease in the population not obtaining the minimum level of dietary energy consumption (2,122 kcal/day) from 48% to 40% (HIES 2005). In terms of more acute benchmark of dietary intake, the proportion of people consuming less than 1,805 kcals/day has declined by 8-percentage

points within the same time period and was 20% in 2005. Despite the aforementioned progress, it is highly optimistic to assume that Bangladesh will meet its targets for halving the proportion of the population below the minimum level of dietary energy consumption by 2015. In this context, a recent study conducted by FAO (2009) has estimated an increase in the number of food-insecure people by 7.5 million in 2007-08 from the previous year.

The high prevalence of under-nutrition also poses serious threat towards achieving the MDG goal of reducing under 5 mortality rate by two-thirds between 1990 and 2015. The BDHS 2007 found that 41% of children under-five years of age were underweight, while a national Household Food Security and Nutrition Assessment found a comparable underweight prevalence of 38% for this age group. As a result of infections and poor intake of food rich in iron and folic acid, anemia affects around 46% of pregnant women, 39% of non-pregnant women, and almost one-third of adolescent girls in Bangladesh. The nutritional status of girls affects the nutritional status of the adolescents and women they become. Their nutritional status during pregnancy, in turn, affects intrauterine development. Pregnant women with poor nutritional status face greater risks of complications during pregnancy and childbirth leading to low birth weight and increased neonatal mortality. The lifecycle approach to child and adolescent development is essential to address the overall issue of reducing maternal and neonatal mortality.

Further to the above mentioned issues, the existing levels of population with the problems of underweight, stunting and wasting are also quite formidable. Bangladesh is in the 4th position after India, Indonesia, and Nigeria of the list of 36 countries having stunting prevalence greater than 20% as about 9 million Bangladeshi children are stunted. In addition, rates of wasted children also found to be quite high, especially in the aftermath of natural disasters and in the lean season. In spite of the reduction of underweight children from 43% to 36%, and for stunted children from 48% to 46% between 2004 and 2007, there is no evidence of reduction in wasted children in corresponding years.

Under-nutrition in pregnant women often results in infant born with a low birth weight. Low birth weight greatly increases risk of neonatal death and is an important cause of poor growth and development in later childhood, even with consequences for later life. Over the years, the body-mass index of women with measurements less than 18.5% has declined by 4-percentage points to 30% in 2007. This is still quite a high percentage and therefore as a consequence indicates high risk of malnourished children. Such figures are largely a reflection of micronutrient deficiencies among Bangladeshi women and as high as 46% pregnant women, 39% non-pregnant women, and 39.7% of adolescent girls are found to be anemic. The consequence of such deficiency is high maternal mortality, infant mortality, malnourished children and finally unhealthy adults.

The Government is planning to accelerate the progress in reducing the persistently high rates of maternal and child under nutrition by mainstreaming the implementation of high-impact evidence-based nutrition interventions into health and family planning services, scaling-up the

provision of community based nutrition services, updating the National Plan of Action on Nutrition in the light of food and nutrition policies, amongst other important priority actions.

Nutrition service will be mainstreamed with the DGHS and DGFP. All facilities under DGHS and DGFP providing MNCH services will be made available for integrated nutrition service delivery. For this, the Directorates will be staffed with adequately trained personnel who possess the necessary technical as well as management skills to mainstream the nutrition services. Both the Directorates will streamline and strengthen nutrition service through their regular channels and identify respective focal points at the level of program managers for monitoring and coordinating nutritional services/activities.

The strengthened nutrition service will be housed in the DGHS and implemented through an OP titled “National Nutrition Service (NNS)”. The overall leadership of NNS will be provided by the Line Director, NNS who will oversee the delivery of the program, manage the budget and maintain liaison with other LDs of DGHS and DGFP implementing nutrition activities and with the Program Managers (Nutrition) respectively. The LD, NNS will report directly to the Director General of DGHS. The NNS will coordinate its activities with the activities of MNCH related OPs of DGHS and DGFP. In addition, NNS will become part of other national plans of action, notably the National Food Policy Plan of Action (2008 -2015). One of the medical officers of the UHC will be designated as medical officer (public health and nutrition) and assigned the responsibility of coordinating NNS activities at upazila level and below, while the nutrition officer (under DGHS) will be responsible for the technical management of nutrition activities.

As like current arrangements, area based nutrition activities will be performed by the health personnel working in the CCs and through the NGOs contracted for community based IMCI work. Scaling up of the NNS will be done in the remaining Upazilas, with particular priority given to remote and poorer areas. The NNS will also include the (i) facility based services, (ii) training of staff in nutrition and (iii) the development of relevant manuals, micronutrient-related activities, research and surveillance. Capacities of UHC and district hospitals will be strengthened to adequately manage severe malnourished cases. Effective nutrition surveillance will be developed as part of the existing surveillance system.

Strategies for Improving Nutritional Status

Improving Maternal and Infant Nutrition: Longer term interventions with nutrition and poverty alleviation objectives contribute to reduction in child malnutrition. However, child nutrition is strongly related with maternal nutrition and therefore malnutrition among pregnant and lactating mothers should be strongly dealt with. The priority interventions in this context are:

- Iron-folic acid supplementation among pregnant and lactating women and adolescent girls will be undertaken through health and family planning facilities. Such programs will be strengthened through complementary policies to regular programs e.g. community based programs to cover the hard-to-reach vulnerable communities.
- Post partum Vitamin A distribution to improve vitamin A status of neonates through breast milk will be scaled up.
- The national strategy for infant and young child feeding will be implemented.
- Early initiation and exclusive breast-feeding up to six months of age will be encouraged.
- Supplementary feeding for malnourished and marginalized pregnant and lactating women through strengthening and scaling-up maternal iron and foliate supplementation will be introduced.

Strengthening Institutional Capacity: Combating malnutrition and child mortality certainly requires improving the bureaucracies and administrative complexities. Given the large numbers of malnourished mother and children and high under 5 mortality rate, the best institutional strategy would be to implement assistance programs at both facility and community levels. The SFYP in this context will take the following strategies:

- The institutional home for nutrition within the MOHFW will be identified and responsibilities of the selected institute will be expanded and capacity will be developed.
- Roles and responsibilities of other stakeholders for nutrition will be specified with arrangements of appropriate coordination and synergistic action.
- Capacities of Upazila health complexes and district hospitals will be strengthened to adequately manage severely malnourished cases.
- Effective nutrition surveillance will be developed.
- All types of health workers (health assistants, family welfare assistants, assistant health inspectors, family planning inspectors, family welfare visitors, medical assistants/sub-assistant community medical officers) will be appropriately trained in nutrition education.
- The value of women status in reducing malnutrition and dissemination of proper knowledge about nutrition amongst the citizens will be strengthened.
- Appropriate inter-sectoral collaboration will be established for controlling prices of food grains and products and for ensuring food security.
- A comprehensive nutrition policy will be formulated.

- Strategies will be designed to link nutrition programs with safety net programs of the government, e.g. Vulnerable Group Development Program. In this context problems related to leakages and mis-targeting will be seriously taken care of.
- Nutrition interventions which are interlinked with food-based, economic empowerment programs should be strengthened and should be targeted towards the most vulnerable communities and districts.
- Division specific nutritional management program will be introduced with more vulnerable regions receiving priorities in terms of allocation of development expenditure.
- Information systems related to food security and nutritional issues will be strengthened.

Improving Overall Nutritional Status: With a view to combating malnutrition and various diseases related to nutritional deficiency, the SFYP will undertake several strategies, focusing primarily on the nutritional status of children:

- Existing half-yearly Vitamin A capsules distribution for children will be continued.
- Age specific complementary feeding and micronutrient supplements for children will be introduced.
- Monitoring of universal iodization of edible salt will be strengthened to ensure quality through adequacy of potassium iodide in salt.
- Zinc for treatment of diarrhea will be adequately promoted. With the coverage of IMCI, zinc tablets are expected to provide free to children with diarrhea.
- Community management of severely acute malnutrition in children through therapeutic and supplementary feeding will be emphasized.
- Complementary feeding will be linked to multiple micronutrient supplementation programs to improve the quality of diets of children aged 6 to 23 months.
- Strategies to increased coverage of access to safe water and improved sanitation in urban slums and rural areas will be under taken.
- Emphasis will be given on local homestead food production.
- Nutrition education to promote diet diversity will be encouraged.
- Preventive and Therapeutic interventions while incorporating the seasonal dimension of malnutrition will be designed.
- Translating nutrition related research into action.

Treatment of Severe Acute Malnutrition: Mainstreaming the implementation of nutrition interventions into health and family planning services will ensure more coordination in the treatment of moderate and severe acute malnutrition at the health facility as well as community level. At the health facility level, children with severe acute malnutrition and who have additional medical complications will be treated according to internationally recommended protocols. At the community level, the GOB will address community-based management of acute malnutrition through the community based IMCI program.

BCC to Promote Good Nutritional Practices: Social mobilization and behavioral change and communication activities at health facility and community levels will be implemented to promote good health and nutrition practices. Specific behaviors to be targeted will include; promotion of exclusive breast feeding for 6 months and continued breastfeeding up to 2 years; introduction of complementary foods of adequate nutritional quality and quantity after the age of 6 months; and improved hygiene practices including hand washing.

Mainstreaming Gender into Nutrition Programming: Gender and nutrition are closely associated in Bangladesh, and there are strong linkages between a woman's status and both her health and her children's nutritional outcomes. Therefore, both the health facility and the community-based nutrition interventions will involve all community and household members who are responsible for decision making and those who can influence maternal, infant and young child feeding practices as well as other nutrition behaviors. Such an approach will ensure that the concerns of men and women, when it comes to household food and nutrition security, are considered as the joint responsibilities for the nutritional well-being of all household members of men, women and the community as a whole.

INSTITUTIONAL ARRANGEMENTS FOR MONITORING PROGRESS WITH IMPLEMENTATION OF HPN PROGRAMS IN THE SIXTH PLAN

Establishing a functioning system of coordination among health, nutrition and family planning and between other Ministries (notably MOLGRDC) at all levels of service delivery, including DPs and UN agencies, NGOs and the private sector will be required to avoid duplication and diversify service delivery and to enhance performance. MOHFW will continue its effort to strengthen inter-ministerial coordination through the Secretary's Committee Meetings and holding inter-ministerial meetings at a regular interval. Moreover, a separate coordination mechanism will be developed during the next sector program with the MOLGRDC for improving the urban health service in Bangladesh.

Different directorates and departments (like Directorate Generals of Health and Family Planning, Directorates of Nursing and Drug Administration, National Nutrition Program, NIPORT, CMMU etc.) under the MOHFW will continue to monitor implementation under the supervision of respective heads of the institutions. Annual Development Program implementation progress review will be done on monthly under the chairmanship of the Secretary, MOHFW.

The MOHFW has developed a Result Framework (RFW) for HPNSDP at program as well as at Operational Plan (OP) levels. An effectively functioning unit in the name of Program Management and Monitoring Unit (PMMU) will be established in MOHFW, equipped with adequate skilled professionals and logistics, to work on program management and monitoring of different indicators. The Implementation Monitoring and Evaluation Division (IMED) will continue to play a vital role in routine monitoring of activities of the HPNSDP. In addition, the MOHFW will conduct routine surveys to assess the progress of the HPN related indicators.

The LCG sub-group on Health will provide a platform for continuous GOB-DP dialogue in order to promote harmonization and alignment of activities. This LCG-sub-group will

facilitate and coordinate the overall development program of the HPN sector in Bangladesh through effective policy formulation. Two co-chairs will lead the working group, one representing the DPs and the other representing GoB.

An external and independent review of the sector program will be conducted annually (APR) and at mid-term (MTR). The review will be undertaken by independent international and national consultants, during a period that will allow its conclusions and recommendations to be included in the annual revision of the Operational Plan by the various LDs. The review will be followed by a ‘policy dialogue’ and the development of an agreed joint action plan (Aide Memoire) by the MOHFW and DPs that is subsequently used for the new annual work plan along with the budget (ADP) relating to the OPs.

Various joint task groups and technical committees operate under the sector program. The most important Task Groups are: MNCH, Nutrition, Public Health, M&E, HRH, HFRG, Procurement, Financial Management and Gender, Equity and Voice and QM. These arrangements will continue to work during the next sector program and additional task groups may also be formed with new membership when new issues and challenges arise.

ALLOCATION OF DEVELOPMENT RESOURCES FOR HEALTH SECTOR IN THE SIXTH PLAN

As in most countries, much of health care pending will come from the private sector. Public sector spending will be strategically focused on meeting the key social health concerns. Under the SFYP, goals of Health and Family Planning sector is to reduce morbidities and mortalities, especially those of infant, child and maternal, reduce population growth rate and to improve nutritional status especially those of women and children. In order to fulfill such goal and to meet the strategies and policies, the planned development budget allocations over the Sixth Plan period in current and constant prices are shown in Table 8.8 and Table 8.9.

Table 8.8: Development Expenditure Allocation of Health Sector in the Sixth Plan

(Crore taka; current price)

Ministry/Sector	FY2011	FY2012	FY2013	FY2014	FY2015
Health & Family Welfare	3473	4499	5404	6823	8361

Table 8.9: Development Expenditure Allocation of Health Sector in the Sixth Plan

(Crore taka; FY2011 prices)

Ministry/Sector	FY2011	FY2012	FY2013	FY2014	FY2015
Health & Family Welfare	3473	4185	4698	5570	6439

CHAPTER 9: REACHING OUT THE POOR AND THE VULNERABLE POPULATION

INTRODUCTION

Poverty is the single most important socio-economic policy challenge for Bangladesh. Bangladesh has been struggling for a long time to reduce the incidence of poverty and to improve the living standards of its millions of impoverished citizens. In recent decades, Bangladesh has made significant progress in reducing poverty where the percent of population living below the poverty line went down from more than 80 percent in early 1970s to 31.5 percent in 2010 (Table 9.1). However, Bangladesh still faces the reality that 46.8 million of its population live in poverty.

Table 9.1: Headcount Poverty Rate (%)

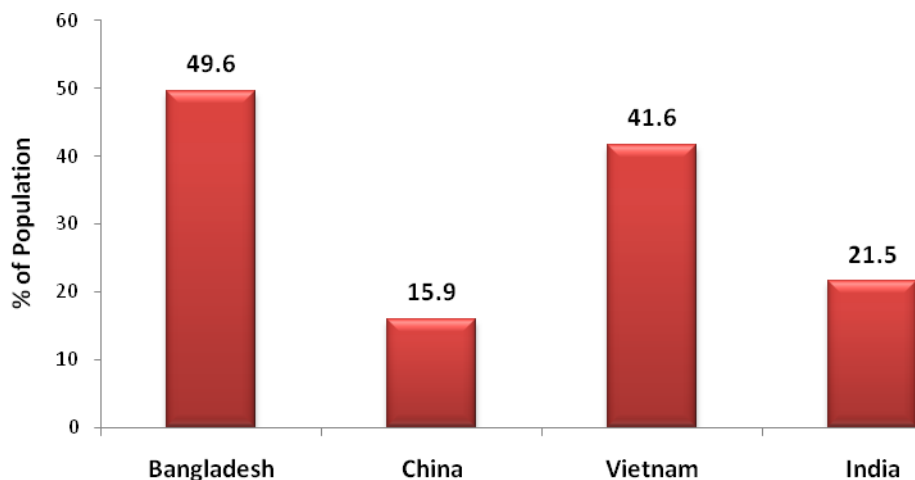
Year	Rural	Urban	National
1973-74	82.9	81.4	
1981-82	73.8	66.0	
1991-92	58.7	42.7	56.6
1995-96	54.5	27.8	50.1
2000	52.3	35.2	48.9
2005	43.8	28.4	40.0
2010	35.2	21.3	31.5

Source: Different HES, HIES

The decline in poverty in Bangladesh stems in large part from strong, decade-long economic growth. The economy's expansion during the 1990s – on average annual real GDP increase of almost 5 percent – meant a rise in real per capita GDP of 36 percent or twice the average rate of other low-and middle-income countries during the same decade. This impressive performance was fueled by large jump in real GDP in the expanding industrial sector where the output of export-oriented ready-made garment (RMG) enterprises grew by double-digit increments. Also, remarkable growth in the inflow of remittances helped reduce headcount poverty.

Despite the progress in alleviation of poverty, Bangladesh still has a larger proportion of people living below the poverty line income defined as \$1.25 a day compared to many developing countries (Figure 9.1).

Figure 9.1: Poverty headcount ratio at \$1.25 a day (PPP) (% of population) in 2005



Source: World Bank, World Development Indicators

The other dimension of poverty is the spatial distribution of poor beyond the urban-rural divide. This concerns the distribution of poverty by districts and divisions. The data suggests an East-West divide in the distribution of poverty, with a significantly higher poverty incidence in the Western Divisions of Rangpur, Barisal, Khulna and Rajshahi as compared with the Eastern Divisions of Dhaka, Sylhet and Chittagong (Table 9.2).

Table 9.2: Distribution of Poverty by Divisions

Poverty line and division	2000			2005			2010		
	National	Rural	Urban	National	Rural	Urban	National	Rural	Urban
Using the Lower Poverty Line (Extreme Poverty)									
National	34.3	37.9	20.0	25.1	28.6	14.6	17.6	21.1	7.7
Barisal	34.7	35.9	21.7	35.6	37.2	26.4	26.7	27.3	24.2
Chittagong	27.5	30.1	17.1	16.1	18.7	8.1	13.1	16.2	4.0
Dhaka	34.5	43.6	15.8	19.9	26.1	9.6	15.6	23.5	3.8
Khulna	32.3	34.0	23.0	31.6	32.7	27.8	15.4	15.2	16.4
Rajshahi	42.7	43.9	34.5	34.5	35.6	28.4	16.0	16.4	14.4
Rangpur	-	-	-	-	-	-	27.7	29.4	17.2
Sylhet	26.7	26.1	35.2	20.8	22.3	11.0	20.7	23.5	5.5
Using the Upper Poverty Line									
National	48.9	52.3	35.2	40.0	43.8	28.4	31.5	35.2	21.3
Barisal	53.1	55.1	32.0	52.0	54.1	40.4	39.4	39.2	39.9
Chittagong	45.7	46.3	44.2	34.0	36.0	27.8	26.2	31.0	11.8
Dhaka	46.7	55.9	28.2	32.0	39.0	20.2	30.5	38.8	18.0
Khulna	45.1	46.4	38.5	45.7	46.5	43.2	32.1	31.0	35.8
Rajshahi	56.7	58.5	44.5	51.2	52.3	45.2	29.7	29.0	32.6
Rangpur	-	-	-	-	-	-	42.3	44.5	27.9
Sylhet	42.4	41.9	49.6	33.8	36.1	18.6	28.1	30.5	15.0

Source: BBS, HIES 2005 and HIES 2010

A yet another aspect of the poverty profile is the hard core or ultra poor. These are the poorest of the poor category and are characterized by much deeper impoverishment and deprivation than the normal poor. They are also amongst the hardest to reach by the normal growth process and would likely require targeted poverty reduction programs. Locating these poor and targeting policies and programs to lift them from the poverty trap is a real challenge and requires concerted efforts. Table 9.2 also suggests that in 2010 there were still 17.6 percent of the total population (26 million people) in extreme poverty.

These various aspects of the poverty profile suggest that growth strategy alone will not be able to fully solve the poverty problem in Bangladesh. While growth acceleration and job creation will be the primary foundation for the poverty strategy, this will need to be complemented by a well designed specific and targeted interventions that go to the bottom of the various factors contributing to the rural-urban poverty divide, the regional variations in poverty, and the large concentration of ultra-poor and seek to remove those constraints. This is a long-term challenge, but the Sixth Plan is well placed to address many of the concerns.

STRATEGIES FOR POVERTY ALLEVIATION IN SFYP

Part 1 of the Plan provides a detailed discussion of strategies and policies for growth, employment and poverty reduction. The relationship between growth, employment and poverty on the one hand and specific disadvantages and vulnerabilities of the poor and other vulnerable population that need to be addressed in order to protect these population are discussed further below.

At the operational level the fundamental task of the SFYP is to develop strategies, policies and institutions that allow Bangladesh to accelerate growth and reduce poverty. Poverty is still pervasive. An essential pre-requisite for rapid reduction of poverty is to attain high economic growth ensuring sustainable productive employment and incomes for large number of people of Bangladesh. Productive employment is the most potent means of reducing poverty. But this is not easily achieved. This requires strategies and actions on the demand side of the labor market (driven primarily by economic growth) as well as strategies and policies on the supply side (labor force growth and quality).

Acceleration of economic growth and employment: On the demand side, both the rate of economic growth and its composition will matter for job creation. Acceleration of the growth rate will require a substantial increase in the rate of investment from the present 24 percent of GDP level. Much of the higher investment will need to be deployed to reduce and eventually eliminate the infrastructure constraint (primarily power and transport) and to strengthen human development. A large part of the financing will come from the domestic public resource mobilization and from higher private savings, including from remittances. Yet some critical level of financing from foreign sources that are strategic in nature and allow transfer of technology will be necessary.

Rapid economic growth, its composition and absorption of labor in high productivity, high income jobs are inter-linked. Low income elasticity of basic food items, land constraint and difficulties of penetrating the world agricultural export markets limit the ability of agriculture to grow at the same pace as manufacturing or services. Presently the average labor productivity and income in agriculture are also very low. Similarly a large part of the labor force is occupied in informal services with very low productivity and income. Accordingly, the economic growth process in the Sixth Plan needs to be appropriately balanced, thereby creating more employment opportunities in the manufacturing and organized service sectors and allowing a shifting of large number of workers engaged in low productive employment in agriculture and informal services to these higher productivity sectors of the economy.

Therefore, much of the high productivity, high income jobs will need to come from a labor-intensive manufacturing sector based on domestic and export markets and from organized services. Both large and small enterprises need to contribute to this growth. The role of small enterprises is particularly important to provide the employment base. The promotion of small enterprises in rural areas needs to be a major strategic element for creating higher income and employment in the rural economy, which is critical for sustained poverty reduction.

The re-balancing of the growth and employment process must be accompanied by strategies to enhance the income-earning opportunities of workers remaining in agriculture by raising land productivity and increasing diversification of agriculture production. Agriculture diversification in both crop and non-crop sectors will help promote commercialization of agriculture and raise farm incomes

Employment abroad and associated remittances have played a major development role in Bangladesh. This element of the employment strategy will be strengthened. In addition to pursuing the strategy to export low skilled manpower, the Sixth Plan effort would focus on export of well trained skilled and semi-skilled manpower to existing as well as new destinations.

Benefiting from higher labor force growth (the demographic dividend) and ensuring labor quality: Although Bangladesh is currently experiencing ‘demographic transition’ as a result of slower population growth, entry of young population in the labor force will continue due to demographic factors. This demographic dividend needs to be properly used through a well articulated human development strategy. The quality of labor force is weak due to low access and low quality of education. The Sixth Plan will seek to address these challenges by developing and implementing a well thought out education and training strategy. The strategy needs to be particularly sensitive to reduce the access gap of the poor and the women, especially in the under-developed or lagging regions of the country. A significant part of the additional investment for higher growth will need to be deployed to the development of the labor force with special emphasis on the target group.

Ensuring food security: The recent global food price inflation illustrates the critical importance of ensuring food security for a large poor country like Bangladesh. Past progress in rice production suggests that Bangladesh has the capacity to achieve food security efficiently through domestic production. Indeed, with proper incentives there is scope for food exports. The emphasis on productivity improvements will be particularly helpful in reconciling food security objectives with farmer incentives. Along with supply side policies for food production, efforts are needed to ensure that the poor and vulnerable population has the income and means to procure the required amount of food and nutrition.

Managing the spatial dimensions of growth: Growth experiences in Bangladesh and elsewhere demonstrate both a tendency towards urbanization as well as uneven regional growth. The urbanization problem has become particularly acute in Bangladesh owing to the primacy of Dhaka. The unbalanced growth of Dhaka shows both a large concentration of wealth and income as well as unsustainable pressure on Dhaka's already fragile infrastructure. The urban poor are located in a large number of slum areas of Dhaka and other metropolitan city with terrible quality of life due to lack of access to proper shelter, water, electricity and sanitation. Concerning regional disparities, the divisions of Dhaka, Chittagong and Sylhet seem to do better in terms of both growth and poverty reduction as compared with Rangpur, Barisal, Khulna and Rajshahi. The poor of the lagging regions are especially vulnerable in terms of access to employment and income options.

The Sixth Plan will make efforts to address both these spatial dimensions of growth. On the urbanization front the strategy will emphasize a more balanced growth of urban centers across the entire country through proper institutional reforms that involves the establishment of locally elected and accountable city corporation/municipalities. Property tax base will be reformed to strengthen the financial autonomy of corporation/municipalities along with block grants from the budget based on principles of equity and population. Special emphasis will be given to improving land administration and management to arrest the spiraling urban land prices that is becoming a binding constraint to the expansion of manufacturing and modern services as well as limiting the ability to provide affordable housing. Efforts will be made to upgrade the living conditions in the slum areas through a range of measures including better shelter opportunities, proper water supply and sanitation services and electricity services. Regarding regional disparities, the Plan would strive to address the lagging regions problems, especially focused on Rangpur, Khulna, Barisal and Rajshahi Divisions, through a strategy that involves public expenditure in infrastructure and human development, by improving the access to financial services, by promoting international labor migration from these divisions, and by facilitating more trade and investment in the border districts with neighbors including India.

Reducing income inequality: Inequality emerges from a combination of greatly unequal distribution of physical assets as well as human capital. Lack of factor endowment such as land, capital, credit and skills has been preventing poor people in Bangladesh to participate in productive economic activities and has compelled them to remain in a disadvantageous

situation. Opportunity to break the low factor endowment trap through utilizing essential public services (such as education, training, safe drinking water, sanitation and other health facilities) has not been effective due to poor people's limited access to those provisions. Access to these essential services for the majority of the population depends not only on their income levels but also on the quality and efficiency of the service delivery through the publicly funded and operated systems. Accordingly, the Sixth Plan's strategy to reduce income inequality will follow a two-prong strategy. First, it will include efforts to increase the access of the poor to assets and means of production. And second, it will strengthen the delivery of human development services to the poor.

The strategy for enhancing the poor group's factor endowment in the Sixth Plan will be focused on ensuring better access by the poor to irrigated water, fertilizer, electricity, rural roads and institutional finance. The government's public expenditure policies and programs and the financial sector strategies and policies will pay specific attention to implementing this strategy.

A substantial expansion as well as quality enhancement of the supply of essential human development services for the poor will be done over the Sixth Plan period. The strategy will include developing a system of accountability and transparency in the delivery of these essential services to ensure availability of appropriate staff and adequate services for the poor. The human development strategy of the Sixth Plan will focus on these aspects in the design of strategies, policies and programs.

Ensuring social protection for the under-privileged population: Even with higher growth, better jobs and better access to essential services, a part of the under-privileged population will likely be left out. Additionally, substantial risks are posed by natural disasters and climate change for this vulnerable population. To address this challenge, the Sixth Plan aims at significantly strengthening the social protection programs. The strategy will be to design and implement a range of social protection programs that meets the needs of this under-privileged group. In this regard, existing programs will be reviewed and reformed to establish better targeting with a view to ensuring that all under-privileged groups including the disable, the elderly, the tribal population, and children and women at risk are given priority in the distribution of benefits. Particular attention will be given to strengthening the underlying institutions.

Ensuring gender parity: Despite solid progress in improving gender balance in education and steps towards empowering them in areas of employment and political space, the gender gap between men and women remains large in Bangladesh. The women and girl child in the poor households tend to be worse off compared to male members, labor force participation of female still remains low, and wage differential between male and female still remains substantial.

The National Policy for Women's Advancement 2011 provides for the elimination of all forms of discrimination against women, equal rights and equal partnership in development. Accordingly, establishing equal opportunities for women in all sections of the society with an objective of integrating them into social and economic sphere is a major strategic element underlying the Sixth Plan. The Sixth Plan strategy embeds the critical role of women in nation building and thus ensures that their needs, rights, entitlements and contributions are appropriately reflected in the Plan document. The human development and social protection strategies underlying the Plan will place particular emphasis on gender aspects of development. It is also recognized that women are a heterogeneous groups such that their situations, deprivations, and needs vary according to their locations within various communities, religions, and regions. Thus, along with promoting rights and entitlements of women, Sixth plan envisages to cater to all these differential and specific requirements.

Sustaining growth and protecting the poor from the adverse effects of environmental degradation and climate change: Natural resources like land and water are limited and their per capita availability is diminishing due to rising population on the one hand and also due to excessive use of common pool resources on the other hand. Excessive and indiscriminate use of our natural common pool resources has degraded them to an unusable state. The degradation of natural resources reduces the well-being of people; especially the poor and women suffer more, as they depend much more on natural common property resources for fuel and water. Thus, the focus of the Sixth Plan's environmental protection strategy would be the conservation and maintenance of natural resources, reducing air and water pollution, and liberating encroached rivers, water bodies, forest areas and khas land.

Bangladesh is a victim of climate change caused by activities worldwide. The growing evidence on climate change suggests that Green House Gas (GHG) emissions, resulting from the cumulative action of developed and emerging economies, would have serious deleterious effects in near future, unless effectively contained. It is predicted by international agencies that Bangladesh will be adversely affected by climate change in the form of melting of Himalayan glaciers, global warming and rising sea level, intensified natural calamities, and greater water scarcity leading to loss of livelihood, rising unemployment and poverty. Furthermore, a rise in the sea level, leading to coastal submergence (i.e. 17 % of Bangladesh) would cause large-scale displacement of people. Clearly, the vulnerability of the poor to climate change is large. The Sixth Plan will take effective steps in collaboration with the international community to help Bangladesh address the adverse consequences of climate change. An acceptable and workable collaboration strategy must include fair and just burden sharing for mitigation as well as adaptation strategies across nations. In order to realize these objectives, mainstreaming of climate change and environmental issues into national planning process is being initiated.

STRENGTHENING THE PARTICIPATION OF THE POOR IN GROWTH ACTIVITIES

The Sixth Plan recognizes that the full participation of the poor in growth activities will not be possible unless the constraints are removed. The main constraints are lack of access to factors of production and the lack of human capital. The two are inter-related and a comprehensive poverty reduction strategy must work on both fronts. The issues of how to ensure the access of the poor to human capital are discussed in detail in Chapters 7 and 8. The discussion below focuses on the Sixth Plan's strategy for strengthening the access of the poor to factors of production.

Some 80 percent of the Bangladeshi poor live in rural areas. The correlation between occupation of head of household and the rate of poverty in 2005 is shown Table 9.3¹⁷. For both rural and urban areas, the incidence of poverty is highest for households where the head is employed as a daily wage earner in either agriculture or outside agriculture. The poverty incidence is lowest for households in urban areas where the head is occupied as a salaried employee. The distribution of

Table 9.3: Poverty Rate and Occupation 2005

Occupation of Head of Household	Poverty Rate Percent			Population Share Percent		
	Urban	Rural	Total	Urban	Rural	Total
Self-employed: agriculture	27	33	33	6	29	23
Self-employed: non-agriculture	23	38	33	31	17	20
Salaried employee	17	27	22	31	10	15
Daily wage: agriculture	72	72	72	5	19	16
Daily wage: non-agriculture	55	60	59	15	12	13

Source: Bangladesh Bureau of Statistics, HIES 2005

The poor by population share suggests that much of the rural poor are engaged in agriculture, either as small holders or as daily laborers. A significant population share of the poor is also engaged in non-farm enterprises. The share of salaried population is the smallest, only 10 percent. Salaried head of household is relatively better off in both urban and rural areas although the poverty rate is much higher among rural salaried head of household than in the urban areas.

The results of Table 9.3 have major implications for designing employment strategies for the poor:

First, the creation of good paying salaried jobs in both urban and rural areas is important. This suggests the need for supporting the development of modern service sectors. The expansion of banking, government services, health, education, IT, trading and transport services will all augur well for job creation in the service sector. Employment in services sector for the poor

¹⁷ Data for 2010 is not yet available

will require major improvements in education, training and health services. So, access to better human capital for the poor will be critical.

Second, better access to credit and farm inputs will be essential to enable the marginal farmers and daily farm laborers to get out of the poverty trap. The most critical factor is land. Landless and near landless households tend to have high incidence of poverty in rural Bangladesh (Table 9.4). The one positive development is that some of the landless have moved out of poverty by finding other sources of income. Nevertheless landownership remains a major determinant of rural poverty in Bangladesh. The policy options however are rather limited. With growing population pressures land has become a hugely scarce factor of production. Also average size holdings are relatively small with limited redistribution prospects through land reforms. Similarly, Government land has also been encroached upon by land grabbers leaving little scope for redistribution. However, government policy can contribute by improving the functioning of land markets through digital record keeping of ownership and transactions, proper land valuation, proper zoning policies, and preventing encroachment of government lands.

Table 9.4: Land Ownership and Poverty in Rural Bangladesh

Land Size	Poverty Rate %		Population Distribution %	
	2000	2005	2000	2005
Landless (less than 0.05 acre)	63.5	56.8	48.0	45.8
Functionally landless (0.05-0.5 acres)	59.7	48.8	13.0	15.9
Marginal (0.5-1.5 acres)	47.2	35.1	17.5	18.8
Small (1.5-2.5 acres)	35.4	23.7	9.2	8.8
Medium-large holdings (2.5 acres or more)	20.7	12.8	12.4	10.7

Source: Bangladesh Bureau of Statistics, HIES 2000, 2005

On the agriculture input side there are much better prospects for policy intervention through a better distribution of farm subsidies on water, fertilizer and seeds. Indeed, better access of the poor to these inputs will raise farm productivity and help both the small holders as well as the farm workers. Another intervention is through research and development and agricultural extension services focused on the poor.

Third effective support to agricultural marketing could be another pro-poor policy intervention. The imperfections in the marketing of farm produce are well known. Much of this has to do with the lack of adequate farm-to-market roads and proper storage facilities. Government investment in rural roads can be a very powerful pro-poor policy intervention.

Fourth, the difficulties of providing the poor farmers with credit for investment and working capital are a well known problem. Better targeted provision of farm credit through commercial banks can play an important role in reducing rural poverty.

Fifth, growing land constraint and the need to raise farm productivity suggests that increasingly more reliance will need to be put on non-farm sources of income and

employment. This transformation is already underway but will be boosted further in the Sixth Plan. A host of factors impact on the growth and dynamism of non-farm enterprises including technology, entrepreneurship, and access to infrastructure, especially electricity, but perhaps the most important factor is access to credit. The ongoing micro-credit revolution pioneered in Bangladesh has already demonstrated the power of micro-credits in reducing poverty.

Finally, the access to remittance income is a significant positive determinant of poverty reduction. The Sixth Plan will make special efforts to support the expansion of migrant workers to international markets, particularly from the lagging districts.

The role of micro-credit, remittances and rural non-farm employment in poverty reduction and the specific policy interventions to be taken in the Sixth Plan are reviewed below in greater detail.

Critical Role of Access to Finance for Poverty Alleviation

A review of the characteristics of the poor shows that lack of assets is a critical determinant of poverty. This is in terms physical assets, financial assets as well as human capital. Human development policies focused on health and education is a powerful instrument for equipping the poor with human capital and is a great equalizer of opportunities. Regarding physical assets, short of redistributing land, possibly the most potent way of enhancing the opportunities for capital accumulation is better access to financial resources at an affordable price

Three financial service requirements have been identified that will reduce income vulnerability and enhance income level. They are:

- (i) *Access to credit of poor households*: It will relax liquidity constraint of the resource constrained poor households and create economic opportunities, though marginal benefit of such access to credit will depend on access to economic information and skills of the borrowers.
- (ii) *Access to social safety net programs*: Poor are subject to both income and consumption vulnerability. The social safety net programs can minimize income and consumption vulnerability for the extreme poor households. Expansion of such programs can be complimentary to the first requirement that we have mentioned. Consequently, marginal benefits of access to credit will be higher.
- (iii) *Access to insurance for protection and preservation of assets/wealth*: Poor households, like everybody else, are subject to life and property risk as well as credit risk. Death or disability of bread earner or damage to property due to natural calamities—makes poor households more destitute. In such a situation, access to micro insurance can protect family from income shocks and preserve wealth.

Micro finance revolution that started some three decades ago has brought changes in financial landscape in rural financial markets. Poor that did not have access to credit can access credit. Micro finance institutions address the problem of formal market failure due to adverse selection and moral hazard. On the other hand, it offers institutional framework that can make rural financial market more effective. The major elements of micro finance are: (i) self-selected group; (ii) compulsory savings; (iii) participation of poor members in investment decisions, and (iv) joint liability of the group members for loan default.

Micro Finance Addresses Needs of the Ultra Poor

Targeting ultra poor is another frontier of micro finance movement in Bangladesh. More than 20 percent of rural population lives in extreme poverty. These households live below lower poverty line, which is defined as the line where average food consumption per capita is equal to average total consumption implying that the households did not have any non-food expenditure. It is also defined in terms of minimum food calorie, 1805 kilo calorie. These households are also termed as ultra poor. MFIs have been addressing the needs of the ultra poor through different programs.

Beggars, destitute, landless, daily wage earners, bonded labor, female headed poor households, physically handicapped, seasonal labor, poor households living in char and/or flood prone or river erosion areas and households with no regular income flow are generally under the UP programs. Generally they are in structural poverty. In case of structural poverty, special focus is needed to push them forward.

MFIs in Bangladesh have been pursuing flexible system to provide financial services to the ultra poor. There are variations in approaches as practiced in Bangladesh. Although generally group approach is pursued, most MFIs tend to follow individual approach. Flexible loan contract as well as loan interest rates are offered. Common lending interest rate is 20 percent. In case of ultra poor programs interest rates vary between zero and 15 percent. Repayment installment system is flexible. Flexible payment system based on the ability of ultra poor is followed. Like traditional micro finance programs, savings is the dominating element. The major MFIs in Bangladesh have been implementing separate programs for the ultra poor. BRAC has an approach with assets transfer and training support in addition to daily subsistence allowance. Grameen Bank has Beggars' program (interest free flexible loan repayment system). It has a credit guarantee scheme under which UP trader's trade credit for goods worth max Tk.2000 (\$30). The supplier of credit gets GB guarantee. ASA has a special program for the UP which is offered through specialized branches. Loan contract is flexible – repayment schedule. PKSF has been implementing HP program through its partners with flexible terms and conditions.

Bangladesh MFIs have made significant progress in reaching out the ultra poor. Around 4 percent of the members are ultra poor members when micro finance coverage of ultra poor is compared with the total number of members mobilized. Around 1.38 million ultra poor

members have been brought under micro finance net by the end of 2008. Of them around 80 percent were borrowers. Loans outstanding amounted to Tk. 2.25 billion. The design of the ultra poor programs enables its members to save. Around 29 percent of the loans outstanding were member net savings. This reflects that even the ultra poor can save if appropriate instruments are available.

Micro finance has expanded tremendously both horizontally and vertically. With wider branch network, MFIs have been able to expand financial services to the millions of poor members and borrowers. Financial products are diversified – from traditional small business to livestock development and manufacturing. From the portfolio mix of the lenders, one is able to derive information on demand side. Livestock has a higher demand. This is less risky. Small business remains prominent sector. Demand for loans for financing these sectors has grown over time. Increase in the supply of loans is a testimony of such higher demand.

Role of Micro Finance in Reducing Seasonal Poverty and Vulnerability

Poor households are vulnerable because of idiosyncratic risk and covariate risk. The presence of these risks affects both poor and non-poor. In either of the cases, it makes them vulnerable. In some cases, covariate risk, like flood, cyclone, tornado and other natural disaster, may contribute to seasonal poverty. In this section, we use the term ‘vulnerability’ in terms of consumption vulnerability, income vulnerability and exposure to different shocks. We present two evidences – one on monga where consumption vulnerability is extreme, and the other one on exposure to different shocks, based on a national survey. Both the surveys were conducted by Institute of Microfinance.

Monga (famine like situation), caused by flood or draught, in north-western Bangladesh is frequent. It is essentially caused by inadequate employment opportunities for the poor during September-November when there is no farming. It is equally observed in Southern Bangladesh where intensity of covariate risk is colossal, caused by cyclone, for example. In the north-western region of Bangladesh, intensity of poverty increases during monga, although poverty is structural in nature. The Government of Bangladesh has been expanding social safety net programs like food for works programs, 100-day employment guarantee scheme, old age pension scheme. Despite expansion, its ability to outweigh marginal loss from covariate risk is limited as not all poor are under these programs and the amount of benefit is small. In such a situation, more long term interventions are required. In the case of monga type of situation, off-farm economic activities need to be created so that farm-based employments can be largely substituted by off-farm based employment opportunities. In the case cyclone driven covariate risk requires larger interventions. In either or both the cases, two financial services will be required – one, provision of micro credit, and second, provision for micro insurance.

Micro Finance in Bangladesh: Present Scenario

Bangladesh has experience of over two decades in micro finance. Some 750 micro finance institutions with a network of some 16000 branches have been operating. In 2008, annual

disbursement was around Tk.300 million (US\$4.2 billion), loans outstanding of Tk.220 billion (US \$3.3 billion) and net member savings of Taka 140 billion (US\$2 billion). Annual loans disbursement has grown during the past five years at a rate of 20 percent. Average loan size is around Tk.23,000. Micro credit is diversified in nature. Micro enterprise loans, relatively large loan varying between Tk.30,000 and Tk.500,000 constitute around 14 percent of the loans. Around three million borrowers are micro enterprise borrowers. In addition, micro credit is targeted for ultra poor. More than 12 percent of the borrowers are ultra-poor.

Although poor households benefit from micro credit the larger effect of micro credit can be found only when vulnerability of poor households is minimized. The poor are vulnerable to seasonal poverty and different shocks including lumpy expenditures for children, marriage and major medical treatment. Seasonal poverty arises because of natural disaster such as monsoon in the greater Rangpur region and Sedor in Southern region. Vulnerability to shocks is common. The net gains from micro credit are, in case of any covariate shock of higher magnitude like Sedor, not sufficient to cope with vulnerability to consumption and income loss. In other cases, micro credit has contributed to minimizing vulnerability to consumption and income. The less vulnerable are the households with off-farm self-employment. In the greater Rangpur region, during the period of monsoon, households with self-employment had twice more employment days than the households depending on wage employment only. Micro credit does contribute to off-farm employment creation. It is not only the natural shocks that the poor are exposed to. They are exposed to idiosyncratic shock like health related shocks. Often we do not find negligible net economic impact of micro credit from one point to another point.. Idiosyncratic shocks like lumpy medical expenses or cost of marriage reduce net gains from micro credit. Idiosyncratic shocks are costly and they create both short and long run burden. Micro credit reduces such vulnerability of the households.

Access to Rural Credit

Although non-government micro finance programs dominate micro credit market structure, the GoB micro credit programs are no less important. The noted sources are Bangladesh Rural Development Board (BRDB) and Palli Daridra Bimochan Foundation (PDBF), organizational transformation of BRDB's RD-12 program. BRDB has been promoting rural development through providing both rural finance including micro finance, and skill development training. It has been contributing substantially. Nevertheless, both PDBF and BRDB have expanded credit substantially during the past years.

Recognizing the strong social capital and other qualities of poor people and considering the potential of microsavings in developing the asset base for the poor, the Government has designed and developed the Project “One House – One Farm” popularly known as “Ekti Bari – Ekti Khamar”. The project components include: formation of comprehensive village development cooperative societies, introducing contributory microsavings to attract poor people for making small savings through incentives, providing seasonal microcredit to support micro-investment in the farm sector, development of farm-based volunteers mainly in the field

of homestead agriculture, poultry, fish culture, livestock farming, forest nursery and horticulture. This programme will develop cooperative marketing to ensure proper prices for the farmers and promote food processing and other agriculture product processing at the grassroots level. Efforts will be made to develop community food storage system to ensure food supply and food security at lower cost at the community level.

Table 9.5 shows an increasing trend in the disbursement of targeted agricultural and specialized programs for rural development by the public sector banks. The share of

Table 9.5: Targeted Agricultural and specialized Credit Program through Public Sector Banks and Cooperatives

(Taka in Crore)

Year	BRDB & BSBL	Specialized Banks (Agricultural Development)	State owned commercial Banks	Total public sector credit	Share of Specialized Banks
1999-00	408.31	1905.51	537.47	2851.29	66.83
2000-01	251.81	2189.88	577.98	3019.67	72.52
2001-02	313.7	2042.25	598.96	2954.91	69.11
2002-03	354.88	2243.1	680.39	3278.37	68.42
2003-04	502.48	2640.87	905.66	4049.01	65.22
2004-05	665.32	3149.32	1142.14	4956.78	63.54
2005-06	752.12	3551.66	1192.43	5496.21	64.62
2006-07	782.69	3482.02	1027.8	5292.51	65.79
2007-08	740.36	4061.12	1365.5	6166.98	65.85
2008-09	698.99	4703.69	1588.89	6991.57	67.28

Source: Bangladesh Bank

specialized agricultural development banks (BKB and RAKUB) is consistently around 66 percent. Although disaggregation of such loans is not available, we find it difficult to point out the share of noncrop loans. Nevertheless, anecdotal evidence suggests that around one-third of these loans are non-crop loans. These loans finance off-farm economic activities, and in turn self employment vis-à-vis income growth.

Outreach of MFIs

Outreach of the MFIs is defined in terms of number of members, borrowers and branches. Wide expansion over the past six years has taken place. Number of members at the end of 2008 was 33.4 million, almost doubled during the past six years and grew at an annual rate of around 14 percent. More than 90 percent of the members are borrowers. Annual average growth rate has been more than 17 percent implying higher demand for credit. Over 600 MFIs mobilized these members through a network of over 14,500 branches, three times the number of commercial and development bank branches in rural credit market (Table 9.6). Such expansion reflects (i) higher ability of the MFIs to provide financial services to the poor, and (ii) higher demand of poor for financial services. It, however, also reflects promotion and development of rural financial markets.

Table 9.6: Bangladesh Micro Finance –Operational Outreach

	2003	2004	2005	2006	2007	2008	Annual average change
Members (in million)	17.75	20.68	24.27	29.00	33.14	35.87	13.77
Borrowers (in million)	13.45	15.61	18.96	25.99	29.05	29.28	17.34
MFI branches (No.)	6837	9165	9253	11368	14577	14577	15.38

Source: Bangladesh Bank

Financial Outreach of MFIs

Financial outreach includes both credit and member savings. There has been higher growth in loans disbursement as well as loans outstanding during the past six years. The Industry that had disbursed Taka 60 billion through a network of 6,837 branches in 2003 had grown at an annual rate of 27 percent. In 2008, it disbursed Taka 209 billion (Table 9.7). Loans outstanding have been growing at a lower rate. Critics often argue that growth of credit is a reflection of growing indebtedness. This proved to be wrong even simply looking at the amount of savings that the members/borrowers have saved over time. The net saving balance was Tk.104 billion in 2008, which is around two-third of the loans outstanding. Net loan per borrower has also increased. It is interesting to note that while loans outstanding grew three times during the period 2003-08, net savings increased by around 3.5 times. This is only

Table 9.7: Financial outreach of the MFIs, 2003-08

	2003	2004	2005	2006	2007	2008	Annual growth rate
Loans disbursement (in billion Tk)	60.85	69.16	92.59	124.44	176.45	209.18	26.51
Loans outstanding (LO) (in billion Tk)	52.5	64.4	83.7	110.9	138.6	158.8	23.21
Net Savings (NS) (in billion Tk)	28.9	38.5	52.0	73.1	87.8	104.4	26.39
NS as % of LO	55.1	59.8	62.1	65.9	63.3	65.7	
LO/Borrowers (Tk)		4087	4231	4345	4536	5106	9.17
NS/Borrowers (Tk)		2324	2615	2275	2926	3296	12.61

Source: Bangladesh Bank

possible through higher growth rate of savings. This is further evident from the growth rate of average loans outstanding and average net savings balance. Average savings per borrower has grown at a higher than that of average loan balance per borrower. Savings not only makes the members financially independent but it also act as insurance in times of crisis. During the past several natural shocks, savings have played as a cushion for the poor members.

Main Issues and Challenges in Microcredit

Microcredit has helped address poverty by providing loan in small amounts without collateral and has helped in particular women who are the target borrowers of micro lending. Over the years, various challenges with regard to microcredit have emerged. These are: (i) prevalence of high interest rates which are being reduced, but further reduction of interest rate is necessary; (ii) vicious cycle of microcredit - the poor are borrowing from one microcredit organization to repay another; (iii) microcredit programs have not been very successful in including the hardcore poor; (iv) rate of graduation to above the poverty line among the microcredit borrowers is low, indicating persistent dependency on microcredit; (v) most of the microcredit recipients being women, bear the burden of repayment; (vi) microcredit organizations compete with each other and often put pressure on the potential clients to borrow; (vii) profitability of micro enterprises is small and often is not sustainable on a long-term basis because of enterprise decapitalization, saturation of markets for products that are traditionally produced by microcredit borrowers, weak coordination among NGOs and MFIs and a weak financial system. Moreover, the dominance of weekly payment system attracted the micro-credit investment in the non-farm sector and farm sector remained unsaturated. Seasonal micro-credit is needed to saturate the farm sector.

Strategies for Microcredit Expansion in SFYP

The Sixth Plan's micro credit expansion consists of the following:

- Formal rural credit should be expanded from the present level of Tk. 7000 crore. It has been growing every year at an annual growth rate of around 10 percent. This is quite low. This has to be enhanced, and it should grow at 15% annually in order to create more demand for credit to finance off-farm economic activities including SMEs.
- There is a formal market failure to address demand for credit of poor households. Public sector banks are inefficient and costly, and are not able to expand financial services to poor households for their high transaction costs and perceived associated risk of non-recovery of loans. Under these circumstances and in view of the successful experiences of micro financial institutions (MFIs), the Government will emphasize on expanding financial services to poor households with equal opportunity for women through micro finance institutions because of their wider network and commitment.
- Greater emphasis will be placed to increase the coverage of the program to a larger number of deserving households; introduce a uniform approach of operation both by NGOs and the public sector; and strengthen the regulatory framework for streamlining the activities of the microcredit program in the country. The Government would channel more resources for microfinance operations, minimize interest rate and increase effectiveness of microcredit for poverty alleviation, avoid overlapping and reduce seasonal vulnerability through microcredit. Local governments will be involved in microcredit delivery.
- A Microfinance Regulatory Authority (MRA) has been established to provide appropriate regulatory framework. A national microcredit policy will be framed to provide guidelines

about the operation of microcredit. It is also necessary to rationalize interest rates. Necessary mechanism will be devised to ensure that microcredit reaches the ultra poor and the hard to reach areas especially those located in regions with higher incidence of poverty.

- Up-scaling microcredit is a natural consequence of microcredit program as the progressive microcredit recipients demonstrate their entrepreneurial ability to handle larger size loans requiring expansion, deepening and diversification of loan products. Some of the microcredit organizations, notably some partner organizations with support of PKSF, have increased their loan ceilings to Tk. 300,000 for microenterprise program and to Tk. 30,000 for all other programs. The microenterprise loan not only helps reduce poverty of the borrowing household but also creates employment opportunity for other poor people. It is expected that as more and more borrowers graduate out of the regular microcredit program the demand for larger size loans will increase. The Sixth Plan will facilitate this transition to scale up.
- Special emphasis will be placed on micro enterprise development. Micro enterprise development can be engine of rural economic growth provided appropriate interventions are introduced. Credit as well as access to information and training will be required for micro enterprise development. Particular attention will be given to women who are lagging behind in micro enterprise development; and they will be provided with a better access to business and vocational training, micro enterprise credit and better market information.
- Skill development of borrowers would contribute to income growth and efficiency in micro credit market. MFIs would be involved in the process. Formation of Savings Groups will be encouraged.
- Access to better information for microcredit borrowers will improve the productivity of credit. Special effort will be made to target the benefits of the ICT expansion program for these borrowers.

International Migration and Remittances

Bangladesh has benefitted tremendously from the large inflow of remittances. Evidence from Bangladesh and other South Asian countries show that income from remittances has been a major positive factor for the reduction of poverty. The Government has been striving hard to deepen overseas employment opportunities in different countries in the World. The major exporting countries of Bangladesh workforce have been Saudi Arabia, Malaysia and Abu Dhabi in terms of remittances and number of employments. The concerned ministry and the Bureau of Manpower, Employment and Training (BMET) have concentrated on the incentive structure required for cost-effective work force export as well as for remittances of foreign currency through formal channel. Table 9.8 shows number of exported work force and the amount of remittances received during the past ten years.

Table 9.8: Trend in Number of Employment Abroad and Amount Remittances

Year	Number of migrants	Remittance in million US\$	Remittance in million taka
1999-2000	222686	1949.32	98070.30

2000-2001	188965	1882.10	101700.10
2001-2002	225256	2501.13	143770.30
2002-2003	254190	3061.97	177288.20
2003-2004	272958	3371.97	198698.00
2004-2005	252702	3848.29	236469.70
2005-2006	381516	4802.41	322756.80
2006-2007	832609	5998.47	412985.29
2007-2008	875055	7914.78	542951.40
2008-2009	465351	9689.26	666758.50
2009-2010	383150	10987.40	760109.59

Source: Bangladesh Bank

Further efforts will be made in the Sixth Plan to promote migration, especially from lagging districts of the northern and north-western regions of the country. Two major interventions will be undertaken - skill development through training programs and financing of migration. Efforts will also continue to reduce the transaction costs of remittances through better banking support to migrant workers and also to ensure that male and female migrant workers are treated well and with dignity in host countries through the oversight by local embassies as well as through high-level policy dialogue with host governments as necessary.

Rural Non-Farm Activities

The Sixth Plan's vision for rural non-farm activities (RNFA) is to foster such activities as an important and effective poverty reduction activity for women in particular. Therefore it is important to identify activities for RNFA and the roles of both public and private sectors and to encourage entrepreneurs to promote RNFA.

The following problems/challenges have been identified for RNFA: (i) since RNFA includes a diverse group of activities, it is difficult to define it as a sector and hence it lacks any baseline assessment; (ii) activities in RNFA are often financed by microcredit, which can only support very small-sized activities. There is a limitation in accessing finances for larger sized activities; (iii) people engaged in RNFA activities, particularly women, lack capacity and skill for producing quality products; have inadequate access to information in determining what to produce and often they lack skills in marketing their products; (iv) as institutional financing is mainly urban biased, problems arise since the NGOs are not very effective in providing business advice because they themselves are not well-equipped to provide such support; (v) management capacity of small enterprises operating in RNFA is rather poor; and (vi) RNFA suffers from inadequate infrastructural facilities particularly energy and communication;

Future strategies will focus on two broad areas: (i) improving the rural investment climate; and (ii) supporting institutional framework. Measures for improving investment climate will include ensuring more energy supply in the rural areas with emphasis on bio-fuel and solar energy use; emphasis on routine maintenance of the existing roads, development of waterways

and railway communication; up-scaling and technology upgradation of small enterprises focusing on product development and quality improvement; provision of training for workers based on market demand and also for entrepreneurs in improved business method; promoting linkage with agriculture and greater value addition of farm products through a boost in agro-processing, arranging local-level fairs on routine basis to promote RNF products, skill development training and internship facilities, in-country and international tours through public-private financial participation.

In order to mainstream RNF issues in rural development, an institutional set-up will be formed with different stakeholders, including local government institutions, private entrepreneurs in RNF and providers of financing and other support services. These stakeholders shall identify the strategic policy and investment priorities. The government will consider instituting a monitoring unit to monitor implementation of the initiative and the results.

The RNFAs are undertaken mainly within the informal sector and it is desirable to keep them informal under the present settings. However, creation of an enabling environment for them and provision of some support services would make this sector more vibrant and will contribute substantially to poverty reduction. Some interventions that would be considered are: improving marketing capacity by providing sales centers in the GCM and other periurban markets where the government can provide supports and entrepreneurs can undertake a buy-back system; training and awareness building about hygienic agro-processing and food processing activities; strengthening SME Foundation to allow it to serve more effectively, providing women with basic skills about business management and steps linking them to markets, setting up of more vocational institutes in the rural and periurban areas, allocating more funds under microcredit and microfinance, improving the management of this sector through organizing training, orientation, and workshops, disseminating market information and providing institutional and logistic support to entrepreneurs, taking initiatives by the government to create ICT villages in rural areas and taking initiatives by government and NGOs to bring diversification in products and upgrading product designs.

SOCIAL PROTECTION PROGRAMS FOR THE POOR AND VULNERABLE

The Importance of Social Protection

The diverse underlying causes of poverty in Bangladesh include vulnerability, social exclusion, and lack of assets and productive employment; although the main symptom is often hunger and malnutrition. The extreme vulnerable poor can potentially lift themselves out of poverty with appropriate short to medium-term support. The extreme dependent poor, who are old, disabled or chronically sick, will depend on long-term social protection to survive. The children of the extreme poor, who are stunted or malnourished, are vulnerable to harassment, and have limited, or no access to education. A sharp rise in inequality would not only undermine the impact of growth, but may also threaten social cohesion and breed instability

and discontent. Both poor and non-poor families are vulnerable to shocks (e.g. natural disasters, health problems) that can return them quickly into extreme poverty.

There are four major concerns that the current rate of progress in reducing extreme poverty may not be maintained: (1) slowdown in the global economy together with domestic factors; (2) growing population density is likely to force more of the poorest people to live in the most vulnerable areas; (3) climate change will exacerbate the vulnerability of poor people to environmental shocks, with the predicted increase in extreme climate events; and (4) demographic and social changes may further increase vulnerability and social exclusion.

Risks and vulnerability are mainstream problems in the lives of the average Bangladeshi and are recognized as such by governments, individuals and communities. Social Safety Net Programs to address risk and vulnerability have been an integral part of the anti-poverty strategy of this and previous governments. However, with inadequate informal social support, newer risks emerging from rapid processes of urbanization and global economic integration, and, stronger assertion of mitigation demands from a democratizing polity, a holistic re-thinking on the direction, scope and design of safety net policies in particular and social protection policy in general has become necessary. Social protection includes safety nets, various forms of social insurance, labor market policies as well as processes of self-help existing or emerging within society. Risk reduction and social protection are important not only in themselves but also because an unaddressed risk atmosphere carries negative psychological consequences for the livelihood of the poor and for community efforts needed for social cohesion.

Effective policy initiative on a holistic approach to social protection will require a sharper profiling of risks, old and new. These include disasters, anticipated risks such as *monga* and seasonal poverty, public health risks associated with the urbanization process, social ills such as dowry, erosion of family-based safety nets and emergence of new vulnerable groups such as the elderly and the disabled, and, the uneven globalization process which may give rise to new categories of poor whether in terms of worker displacement, livelihood losses or victims of environmental disasters.

An important corollary of moving towards a comprehensive approach on social protection programs will be the need to streamline the institutional strategy on implementation. The potential of local government bodies, particularly the Union Parishad, to coordinate a streamlined institutional strategy needs to be actively explored.

The Government's Social Protection Programs

The Social Protection Programs address basic needs of the poor and vulnerable people, namely food, shelter, education and health. The government is also committed to achieve the MDG target of eliminating extreme poverty through an integrated and comprehensive social safety net program which will be sustainable. Government has allocated 15% of the total national budget against social protection program of the country which is 2.5% of the GDP of the 2010-11 FY. For ensuring social security of the vulnerable poor and their empowerment

Disaster Management and Relief Division are implementing major social protection program. Among the primary government programs are: Food for Works (FFW), Vulnerable Group Development (VGD), Vulnerable Group Feeding (VGF), Open Market Sales (OMS), Cash for Work (CFW), Gratuitous Relief (GR), Employment Generation program for the Poorest (EGPP), Test Relief, old-age allowances, and allowances for retarded people, allowances for widow and distressed women, and grants for orphanages. There are also allowances for freedom fighters, programs for the physically challenged, and so on. Distressed people particularly women, children and disabled persons have been given priority. Programs are implemented through both non-development budget and development budget.

The Government views poverty from two broad perspectives – income poverty and human poverty. It identifies direct and indirect social protection programs to address these two types of poverty, where the direct measures (income/ employment generating programs) are considered as those that are targeted towards the poor, and indirect measures (human development program) are growth oriented and hence expected to leave indirect effects on poverty reduction. Examples of indirect or growth oriented measures cover mostly infrastructural development and rehabilitation programmes. However there are also safety net programs that merge the two concepts of direct and indirect measures. For example, a direct measure like Food for Work program that is targeted towards the poor is also used to construct infrastructural services, falling in the category of indirect measure. Table 9.9 presents the names and examples of major types of social protection programs in Bangladesh.

Table 9.9: The Main Types of Social Protection Programs in Bangladesh

Type	Program Examples
Cash transfers	Old Age Allowance Widowed and Distressed Women Allowance Disabled Allowance
Conditional cash transfers	Primary Education Stipend Program (PESP) Stipends for Female Secondary Students
Public works or training based cash or in kind transfer	Rural Maintenance Program; Food-for-Work Vulnerable Group Development (VGD) Employment Generation Programme (EGP)
Emergency or Seasonal Relief	Vulnerable Group Feeding (VGF) Gratuitous Relief (GR); Test Relief (TR) Open Market Sale (OMS)

Source: Ministry of Finance

Apart from their poverty focus, a part of the social protection programs is aimed at addressing the special needs of target groups within the poor and underprivileged group: physically challenged children, disabled persons, socially excluded population in tribal areas, poor women. Another part is transitory in nature that comes into play during natural disasters.

For all programs the institutional arrangements are as important as their financing. Evidence suggests that the scope for improving the design of programs, their targeting and associated institutions is substantial. With limited resources, the emphasis on these aspects will be critical.

In addition to these programs, other social protection programs managed by various ministries are the following:

- Programs under Livestock Sector to alleviate poverty
- Fund for Housing the Homeless
- Program for Generating Employment for the Unemployed Youth by the Karmashanghstan Bank
- Abashan (Poverty Reduction and Rehabilitation) Project
- Fund for Mitigating Risks due to Natural Disasters
- Program for Mitigating Economic Shocks
- Programs for Reducing Poverty and Generating Employment under the Ministry of Women and Children Affairs

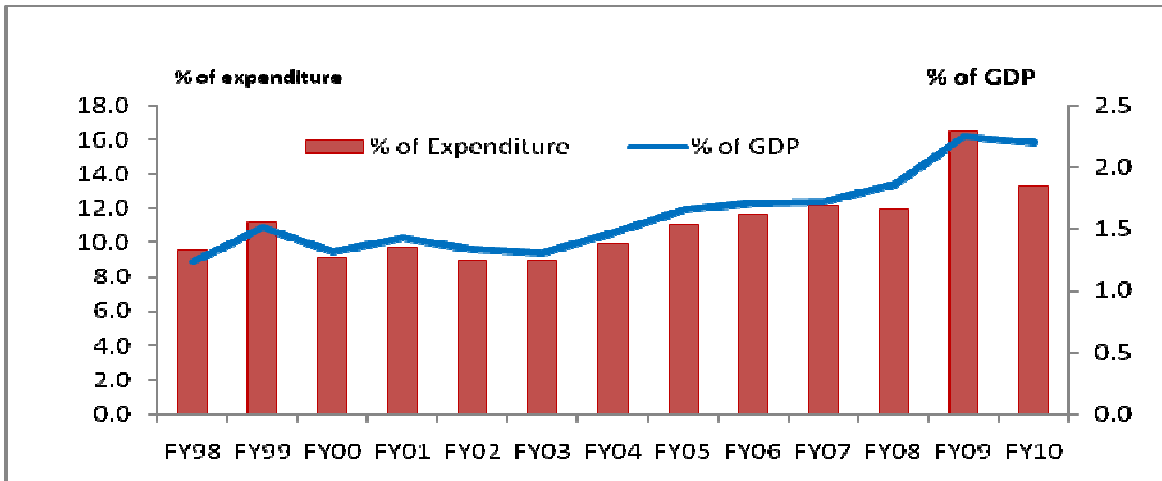
A range of specialized institutions manage the various social protection programs:

- Information and Communications Technology (ICT) for Poverty Alleviation
- Rural Infrastructure Development Program
- Palli Daridrya Bimochan Foundation (PDBF)
- Bangladesh Academy for Rural Development (BARD)
- Rural Development Academy (RDA)
- Department of Social Services
- Palli Karma-Sahayak Foundation (PKSF)
- Ministry of Food and Disaster Management
- Bangladesh Rural Development Board (BRDB)

Public Spending for Social Protection

Expenditure on social protection programs is increasing over time. Fig 9.2 shows the trends in transfers as percentage of total expenditure and as percentage of GDP. These transfers have grown modestly both as a share of total expenditure and as a share of GDP. While the Government is committed to protect public spending on social protection, budgetary imperatives require much more attention to making these programs effective. Increasingly, efforts will also concentrate on securing more contributory social protection programs based on beneficiaries' capacity to pay.

Figure 9.2: Trend in Total Transfers



Source: Ministry of Finance

Monthly allowances for the elderly along with total allocations in the programs also increased. Table 9.10 shows the trends in old age allowance program.

Table 9.10: Trends in Old Age Allowance Program

Fiscal Year	Fund (million BDT)	Monthly Allocation per person (BDT)	No. of Beneficiaries (in millions)
1997-1998	125	100	0.4
1998-1999	485	100	0.4
1999-2000	500	100	0.4
2000-2001	500	100	0.4
2001-2002	500	100	0.4
2002-2003	750	125	0.5
2003-2004	1800	150	1.0
2004-2005	2604	165	1.3
2005-2006	3240	180	1.5
2006-2007	3840	200	1.6
2007-2008	4485	220	1.7
2008-2009	6000	250	2.0
2009-2010	8100	300	2.2

Source: Ministry of Social Welfare

The key challenges of implementing SSNPs are coverage issues, targeting beneficiaries, leakages, and disparity in regional distribution. These are discussed below.

While coverage is relatively low, a significant number of households gain access to multiple programs. Data from a study of transfer programs shows that about a quarter of households were receiving transfers from more than one safety net program. Analysis of the HIES (2005) also showed that over 11% of households were participating in at least two of the three programs – VGD, FFE and FFW. Coverage in urban areas remains low.

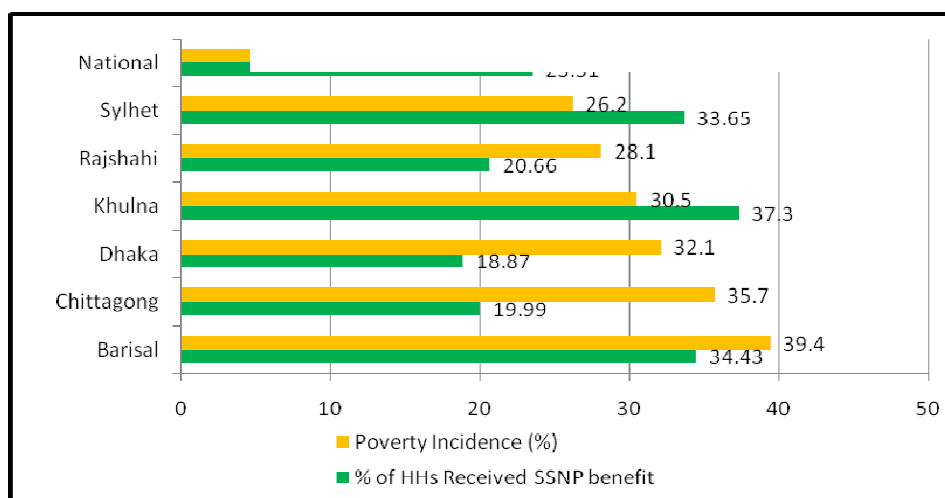
Data indicate that 27% of VGD beneficiaries are not poor. 11% of participants of the PESP meet none of the eligibility criteria for program participation while almost none of the beneficiaries meet at least three criteria. Almost 47% of beneficiaries of the PESP are non-poor and incorrectly included in the program due to faulty and arbitrary selection procedure.

Some of the vulnerable groups insufficiently covered or not covered at all, for example, the elderly, disabled and the women poor. All households within less-poor Upazila are denied assistance, including those with very high food insecurity.

Leakages in the FFW program have been estimated to be 26%. Leakage in the female stipend programs is in the 10-12% range. A PERC report (2003) shows that about 20-40% of the budgetary allocations for the female secondary stipend program does not reach the beneficiaries. Leakages from programs show a strong correlation with the number of intermediaries in the transfer process.

HIES 2005 showed that there was regional disparity in distribution of households receiving social protection benefits. Barisal and Rajshahi divisions, with the highest incidence of poverty, did not have the correspondingly higher number of social protection beneficiaries. In contrast, Sylhet Division, with the second lowest poverty incidence had the highest proportion of social protection recipients. However, the 2010 HIES data suggest that this anomaly was corrected. Khulna, Barisal and Rajshahi divisions have experienced considerable rise in the coverage of SSNP (Figure 9.3). This partly explains the larger reduction in poverty in these three divisions in 2010.

Figure 9.3: Poverty Incidence and SSNP Recipient by Divisions



Source: HIES 2010

During the Sixth Five Year Plan, the coverage of SSNPs will further be expanded. However, efforts will be put in place so that such SSNPs do not lead the recipients to become heavily dependent on these programs and become work-averse. The SSNPs will be linked to productive and employment creating activities. In this respect the institutional and human capacities of the disaster Management and Relief Division will be strengthened. Details Social Safety Net Programmes for the FY2011-12 is shown in annex Table: 9.13.

PARTICIPATION, SOCIAL INCLUSION AND EMPOWERMENT

There are heterogeneous groups of people in the society with different identities and vulnerabilities. These groups face different realities, obstacles, and opportunities and have different needs and priorities. There is a need to take such differences into consideration to

remove obstacles, address needs and expand opportunities for the people. The excluded, disempowered, and vulnerable members of society, in many cases are women, children, people from different ethnic communities, people with disabilities and other disadvantaged groups. The Government is keenly aware of the need to take legislative, administrative, judicial and financial measures to ensure the equality of opportunities and economic and social freedom for the socially disadvantaged and vulnerable population.

Women's Advancement and Rights

Women frequently experience poverty differently, have different poverty reduction priorities and are affected differently by development interventions. In addressing gender based discrimination, the SFYP will follow a two-pronged approach. Firstly, gender will be integrated into all sectoral interventions. Secondly, attention will be given to remove all policy and social biases against women with a view to ensuring gender equality as enshrined in the National Constitution.

Vision and Goals: The vision for women's advancement and rights is to create a society where men and women will have equal opportunities and will enjoy all fundamental rights on an equal basis. To achieve this vision, the mission is to ensure women's advancement and rights in activities of all sectors of the economy.

The Government adopted the 'National Policy for Women's Advancement' (NPWA) 2011 that aims at eliminating all forms of discrimination against women by empowering them to become equal partners of development. The overall development goal for women's empowerment covers the following areas:

- a. promoting and protecting women's rights;
- b. eradicating the persistent burden of poverty on women;
- c. eliminating discrimination against women;
- d. enhancing women's participation in mainstream economic activities;
- e. creating opportunities for education and marketable skills training to enable them to participate and be competitive in all economic activities;
- f. incorporating women's needs and concerns in all sectoral plans and programs;
- g. promoting an enabling environment at the work-place: setting up day care centers for the children of working mothers, career women hostels, safe accommodation for working women;
- h. providing safe custody for women and children victims of trafficking and desertion, and creating an enabling environment for their integration in the mainstream of society;
- i. ensuring women's empowerment in the field of politics and decision making;
- j. taking action to acknowledge women's contribution in social and economic spheres;

- k. ensuring women's social security against all vulnerability and risks in the state, society and family;
- l. eliminating all forms of violation and exploitation against women;
- m. developing women's capacity through health and nutrition care;
- n. facilitating women's participation in all national and international bodies;
- o. strengthening the existing institutional capacity for coordination and monitoring of women's advancement;
- p. taking action through advocacy and campaigns to depict positive images of women;
- q. taking special measures for skills development of women workers engaged in the export-oriented sectors;
- r. incorporating gender equality concerns in all trade-related negotiations and activities;
- s. ensuring gender sensitive growth with regional balance; and
- t. protecting women from the adverse effects of environmental degradation and climate change.

Current challenges: Bangladesh has made measurable progress in women's advancement and rights in a number of areas including education, participation in labor force, health and nutrition, and participation in public services. In the area of women's advancement and rights, the government has made strong commitments and undertaken various initiatives to reduce the gap between men and women. However, on the path towards achieving the desired goals of gender equality and gender mainstreaming, some challenges remain. These include:

- The female-headed households usually earn less income since poor women have low earning capacity and their wages are lower than male wages.
- Women are more susceptible to becoming poor when they lose the male earning member of the family because of abandonment, divorce, or death.
- Women's economic participation is low although increasing.
- Violence against women is pervasive. Physical and sexual assaults, including acid throwing, are common. In addition, trafficking is also reported. Poverty, dowry, early marriage, superstition, social attitude etc. are the major causes of violence against women.
- Women face social pressure for early marriage leading to loss of education, employment opportunities, decision-making power, and leading to early childbirth. The rates of maternal and infant mortality are high among adolescent mothers.
- With higher incidence of droughts, floods, cyclones and other natural calamities due to looming threat of climate change, women are affected differently than men indicating the need to introduce gender sensitivity in coping mechanisms and strategies.
- The main problem with gender governance is the implementation of the existing laws, rules and regulations and stated policies. In addition, reforms of some laws, rules and

regulations, policies and the institutional mechanism are needed to make governance gender sensitive.

SFYP Strategy to Address Gender Issues

The main strategy and policy initiatives to improve the economic political and social inclusion and empowerment of women include:

- **Policy and legal framework:** Taking the constitution as the basis, the government's commitment to various international forums (CEDAW, Beijing Platform for Action etc.) would be taken into consideration in addressing women's advancement and rights issues
- **Productive employment:** To create more jobs, action would be taken to improve women's employment opportunities and wages outside the household and also ensure equal pay for equal work. An enabling environment would be created in the workplace by establishing day care centers. Provision would be made for life and disability insurance for workers, especially women workers. Steps would be taken to ensure secure jobs and decent working conditions for women in the formal and informal sectors.
- **Enabling environment:** Measures would be taken to develop advocacy for treating girl child and boy child equally and promote equal sharing of household and productive work. Necessary legal and administrative measures would be taken for ensuring a safe workplace, transportation facilities, and infrastructure like separate toilets, lunch rooms and lunchtime.
- **Eliminating female health and education disparities:** The Sixth Plan will continue past efforts to remove all disparities in health and education indicators. Related sectoral targets and programs will build this objective as a major plan focus.
- **Priority to women in social protection programs:** The existing programs for social protection for disadvantaged women would be continued. Gender sensitive measures would be taken to protect women from economic vulnerability and risk due to natural disasters. The effect of the emerging problems of climate change on women would be assessed for designing coping strategies and mitigation measures. Banks and micro-credit providers would be encouraged to extend small and micro-credit to the poor and the vulnerable.
- **Political empowerment and participation:** In this context, the main targets are to ensure participation of women in the National Parliament and the local political institutions, influence political decisions in favor of women, ensure direct election in the reserve seats in the National Parliament and ensure women's representation in the local bodies with authority and responsibility. Initiatives would be taken to make women politically more conscious, encourage women to participate in politics and to build leadership among women at all levels.
- **Addressing violence against women (VAW):** The major targets for elimination of VAW are to ensure reporting of all VAW incidence, reduce reported VAW at least by half, consolidate the "One-Stop Crisis Centre" in medical college hospitals at divisional levels

to provide medical treatment, legal and psycho-social counseling to women and children victims of violence, and providing shelter facilities and making efforts for their reintegration and rehabilitation in society. The police, the administration and the judiciary will be sensitized to apply CEDAW with provisions in cases of VAW and women's rights.

- **Gender mainstreaming:** Laws, rules and regulations, institutional mechanisms, policies, projects and programs which are not gender sensitive would be reformed. The intuitional mechanism for coordination and monitoring of gender equality issues would be strengthened.
- **Institutional strengthening:** The National Council for Women's Development (NCWD) would oversee women's advancement-related activities by providing guidance and policy support. The Women's Development Implementation and Evaluation Committee (MoWCA) will regularly review, evaluate and co-ordinate women's development activities and assist NCWD by reporting on progress of implementation. The Women in Development (WID) focal point mechanism would be strengthened to play an effective role in leading the coordination, monitoring the implementation of women's advancement and rights in policies, projects, programs.
- **Integrating gender issues in planning and budgetary processes:** For integration, capacity building of relevant government officials on gender responsive budgeting and planning will be undertaken. The poverty and gender impact assessment criteria and yardsticks will be adopted in line with the policy agenda.
- **Strengthening female participation in economic decision making:** Measures would be taken for ensuring participation of women producers, women trade unions and women entrepreneurs in trade negotiations and in various committees of the Ministry of Commerce, ensuring coherence between the dominant international economic agenda and the international legal obligations, making arrangements for market access to goods where women are 'behind the label', planning for market access to women in the secret services under Mode 4, encouraging FDI in women labor intensive industries, and ensuring women's voice in international forums.
- **Addressing ethnic dimension of women:** Special program for ethnic women including poor, destitute and elderly will be undertaken to address their needs. In order to increase productivity and diversification of activities, the ethnic women's capacity would be enhanced through health, education and services.
- **Promoting public image of women:** The media will be sensitized to promote positive images of women. In order to make the media more gender friendly, effort will be taken to establish increased linkages between women's groups and the broadcasting agencies.
- **Disability and gender issues:** Women with disabilities will be given preference under the safety net measures.

Children's Advancement and Rights

Bangladesh has made significant progress in the area of child rights' promotion, survival, and development. Nevertheless, the general situation of the children in Bangladesh needs to

improve further since the survival and development of many Bangladeshi children is still threatened by malnutrition, disease, poverty, illiteracy, abuse, exploitation, and natural disaster.

The Vision: The vision regarding children's advancement and rights is to create 'a world fit for children'. The goals to be achieved are: (i) ensuring children's rights and advancement through the implementation of government policies and legislations; (ii) providing health services the children need; (iii) ensuring access to food and nutrition they need; (iv) providing access to girls to education, training and development opportunities; (v) ensuring access to urban poor children to early childhood development, education, sports and cultural activities providing knowledge and life skill; (vi) protecting children from all forms of abuse, exploitation and violence; (vii) providing access to children particularly in urban and remote settings to clean water and sanitation, and a healthy environment; (viii) ensuring participation of children in defining their needs, developing programs, implementing interventions, and evaluating their success; (ix) ensuring support of duty bearer, parents and other care givers on whom children have to depend; and (x) ensuring widespread public support for survival and development of children.

Proposed Actions in the Sixth Plan

Intervention and actions for achieving the strategic objectives are indicated below:

- **Child health:** The program areas include eradication of polio, elimination of measles and neonatal tetanus, improvement of nutrition and strengthening the school health program. The actions will include maximizing the efficiency and cost-effectiveness of health expenditure and improving governance. The specific activities will include sensitizing primary and secondary students about critical child health and reproductive health issues, healthy practices and worm infestation, and supplying iron and folic acid tablets for schoolgirls. Activities will be undertaken to develop an adolescent health strategy including counseling, building awareness for adolescents on hygienic practices, nutrition, puberty, RTI/STD and HIV/AIDS.
- **Food and nutrition:** To control vitamin A deficiency and contain the prevalence of night blindness, vitamin A supplements will be distributed to children with vitamin A deficiency, measles, persistent diarrhea or severe malnutrition and to postpartum women within 6 weeks of delivery. Ongoing efforts to control iodine deficiency disorders through universal salt iodization will continue. To address the causes of anemia, strategies will be used to control anemia, including iron-folate supplementation, anathematic treatment, fortification, and BCC to increase the consumption of iron-rich foods and promoters of iron absorption. A strategy will be developed to address the health care needs of children with physical and mental disabilities.
- **Child education:** The intervention for early childhood development will include an awareness raising program for parents to make them aware of early childhood development's benefits, promote community-based childcare centers for clusters of

families where literate mothers are trained to become caregivers and design facilities for early learners. Efforts will be made to increase enrolment rate and decrease dropout rate, train primary teachers, increase the attendance rate, increase contact hours, and maintain gender parity in access and achievement. Non-formal education (NFE) will be provided to diverse types of children deprived of education, like un-enrolled or drop-out children and hard to reach children to enhance their employability and productivity through skill training.

- **Access to water and sanitation:** The specific objectives are to: mitigate arsenic problem in drinking water by providing alternative systems, increase rural and urban slum access to sanitary latrines, expand water and sanitation services to cover currently underserved Pourashava areas, provide improved water supply to underserved, un-served and difficult to reach areas by 2011. The primary schools will be ensured access to sanitation and safe drinking water. Environmental hazards for children (sound, air, water pollution, etc) would be reduced and standards for sound, air and water pollution would be implemented.
- **Child empowerment:** Children would be empowered to have a voice in the socio-economic decision-making process in the family, society and national levels. In this respect, it would be necessary to create a national platform for allowing children to express opinions on their needs and expectations and means of addressing them.
- **Child protection:** All children, particularly those who are vulnerable, would be ensured right to protection from abuse, exploitation and violence. The policies of existing NPA would be used against sexual abuse and exploitation of children and trafficking. Laws affecting children will be harmonized and enforced. Awareness amongst law enforcing officials and judicial officers and the development of a diversion scheme involving the courts, social workers and probation officers as an alternative to custodial sentences will be undertaken.
- **Birth registration:** The Municipal Corporations and Pourashavas will be mobilized to register all births. Awareness raising programs through union Parishad members, and leaders of social opinion including Imams will be conducted to eliminate the practice of early marriage. A widespread social awareness campaign and community mobilization on protection issues will be undertaken to foster positive attitudes towards children, particularly girls, and bolster the positive attitude of parents and decision-makers on the need to protect children regardless of the socio-economic environment.
- **Child labor:** Effective measures will be taken to reduce child labor, and eliminate worst forms of child labor with a particular focus on child domestic workers, migrants, refugees and other vulnerable groups. In this context, a policy for children in the formal sector focusing on those caught up in the worst forms of child labor will be formulated. Street children will be assisted in accessing their rights and protecting them from all forms of abuse and exploitation. Working children such as waste collectors, leather workers, brick breakers, auto-workshop workers and tempo helpers will have access to learning opportunities in formal and non-formal facilities.
- **Child abuse:** To recover and remove children from abusive and exploitative circumstances, the interventions will include developing community support for these

children; providing livelihood alternatives, basic services and adoption, and implementing policies and legislation necessary for the prevention of abuse, discrimination, exploitation and violence Steps will be taken to increase efficiency to combat sexual abuse, exploitation and trafficking of children through enhanced coordination and cooperation.

- **Management and coordination:** The Ministry of Women and Children Affairs will conduct public advocacy and coordinate interventions for children's well-being and rights. An inter-ministerial coordination committee consisting of government ministries with children's portfolios and organizations representing children's mandate will be chaired by the Secretary of the Ministry of Women and Children Affairs and will coordinate the implementation of CRC, CEDAW, and the World Fit for Children Plan of Action.

Ethnic Communities

Bangladesh has around forty-five different small ethnic communities comprising of 2 million people. Some of the 'hardcore poor' of Bangladesh are found among these communities.

The Vision: For the people belonging to these ethnic groups, the vision is to ensure their social, political and economic rights; ensure security and fundamental human rights; and preserve their social and cultural identity. They will be ensured access to education, health care, food and nutrition, employment and protection of rights to land and other resources.

The crucial provisions of the CHT accord of 1997 have mostly been implemented. A separate Ministry of CHT Affairs has been created, a Land Commission Act passed by the Parliament, withdrawal of army camps has been started and the Land Commission constituted to resolve land disputes in the three hill districts. The District and Sessions Courts have started functioning in the three districts of CHT. The government programs have also incorporated the needs and concerns of the ethnic communities. The unimplemented provisions of the peace accord would be considered for implementation by the government. The Land Commission will be reconstituted and land survey carried out.

Areas of Future Action: The challenges with respect to addressing social and economic conditions of ethnic communities cover: (i) living in remote areas and far away from each other making it difficult to reach, mobilize and organize them, (ii) partial operationalization of the 'Land Disputes Resolution Commission' to prevent land grabbing and displacement of ethnic communities, (iii) lack of specific objectives concerning needs and concerns of ethnic communities in mainstream policies of respective ministries/divisions, (iv) absence of an alphabet and dearth of students hindering development of curriculum in languages of the ethnic communities at schools, (v) low food production resulting in food insecurity, (vi) inadequate institutional mechanism to establish linkage and coordination with NGOs and the private sector to address issues related to ethnic communities in a comprehensive manner, (vii) lack of comprehensive understanding of the problems of the indigenous communities, and (viii) absence of detailed information on ethnic population with ethnic disaggregation.

Major areas of interventions would include:

- **UN Declaration:** The Government would consider implementing the UN Declaration on the Rights of Indigenous Peoples 2007 and ratify the ILO Convention 1969.
- **Rights on land:** An appropriate land policy will be formulated which can deal with land disputes involving ethnic groups. A secure land tenure system will be introduced in Chittagong Hill Tract. Representatives of the ethnic groups will be included in undertaking development projects in their areas.
- **Empowering ethnic communities:** The government will ensure participation of local governments in the management of natural resources and will recognize the traditional knowledge of the various ethnic peoples. The government will ensure community involvement in the adoption of technologies without competing with their traditional food production system.
- **Human development programs:** Existing human development programs will address the special needs of the ethnic people. Monitoring and supervision will be strengthened so that education, health and maternal child health services, and nutrition and housing facilities reach the ethnic people.
- **Language and access to education:** A national language policy will be formulated to safeguard the languages of ethnic peoples. An action plan on mainstreaming the education of ethnic children will be implemented.
- **Electrification and telecommunication:** The national power grid and distribution system for electricity supply in different Upazilas of hill districts will be expanded. The government will consider the feasibility of raising electricity generation capacity of the Kaptai Hydroelectric Power Station and setting up a grid substation in the hill districts to meet the demand for electricity
- **Preferential access to social protection programs:** Social protection assistance will be provided in hill districts to strengthen their capacities to cope with any sudden decrease of their income due to damage to Jhum crops caused by floods and droughts.
- **Rural development and non-farm economic activities:** In the hill districts, income generating activities through small and cottage industries, trading, and poultry and livestock rearing will be expanded. The income of poor people will be enhanced through social forestry in hilly areas and cultivation of fruits and medicinal plants. Measures will be taken to support EPB's 'one district one product' initiative under which 'Textiles for Rangamati', 'Pineapples for Khagrachari' and 'Rubber for Bandarban' have been finalized.
- **Expansion of micro credit:** Micro credit activities for the poor people will be expanded and vocational training will be provided to the poor. The development of rural roads, hats, and bazaars for marketing of agricultural products will continue. Action will be taken to eliminate barriers so that agriculture and local products have easy access to national and international markets.
- **Development of tourism:** Private investment will be encouraged to develop sustainable tourist facilities in Rangamati, Bandarban, and Khagrachari.

Persons with Disabilities

The Government envisions promoting and protecting rights of persons with disabilities and facilitate their full participation and inclusion in mainstream social, political and cultural lives. They will be enabled to lead productive and meaningful lives through access to education, health care, food and nutrition, employment and protection, and security in society. The Government is strongly committed to the advancement and rights of persons with disabilities by virtue of the Constitution which enshrines equal rights and status for every citizen and by signing the UN Convention on Rights of Persons with Disabilities and the Beijing Proclamation on the Full Participation and Equality with Disability in Asia and the Pacific Region.

A National Disability Action Plan has been formulated involving all related ministries. The Ministry of Social Welfare has taken up programs for enabling and integrating persons with disabilities with mainstream of society through various programs including stipend programs for students, subsistence allowance, skill training, and interest free micro credit. In addition to its own initiatives, the government provides funds to NGOs to provide education facilities to persons with mental disability.

Despite some progress, access to special education, training and rehabilitation, equal opportunities, creation of employment and income generating opportunities, social security, accessibility to physical facilities, fixation of quota, and prevention of disabilities are not yet fully ensured since different ministries are not legally responsible for addressing disability issues in their action plans. Proper supervision and monitoring of NGO activities is essential.

Proposed actions: Along with expansion of integrated education program for visually impaired children, existing institutions for hearing impaired and mentally retarded children will be expanded. New institutions will be established to provide access to more children with disabilities at primary, secondary and tertiary levels. A collaborative effort among the government, NGOs and the private sector will be encouraged to expedite the expansion of the existing institutions, establish new institutions, and undertake teachers' training and action researches on disability.

Action will be taken in the health sector to (i) strengthen early detection of symptoms of disability and provide primary medical rehabilitation; (ii) undertake a nutrition program for pregnant women; (iii) appoint trainee doctors, nurses and other caregivers to deal with disability issues; and (iv) introduce support services of assistive devices and equipment at the health centers.

Measures will be taken so that persons with disabilities can have access to all physical facilities and information and communication. Inclusion of persons with disabilities in various national and community level decision making processes that affect their lives would be ensured. Services like early detection and timely medical intervention, fitment of artificial aids and appliances, educational services in special and integrated schools, vocational rehabilitation

and micro credit will be provided to persons with disabilities through community based rehabilitation (CBR) program in the rural areas.

The requirements of the poor and vulnerable, including women and children, will be prioritized in all activities implemented under the action plan. The Climate Change Action Plan comprises immediate, short, medium and long-term programs.

The serious consequences of climate change, including especially the consequences for Bangladesh, lead naturally to the question of what should be our response. Two types of response need to be considered. The first relates to adaptation, i.e., measures that have to be taken given the very high likelihood that climate change will occur and will have adverse effects. The second relates to mitigation, i.e. steps to be taken that might reduce the extent of climate change.

The Bangladesh Disability Welfare Act would be amended to clarify definitions of disability and make it consistent with standards set out internationally on disability rights. The National Coordination Committee for persons with disabilities would be strengthened to monitor and coordinate activities of different ministries/divisions.

Disadvantaged and Extreme Poor Groups

There are some disadvantaged and stigmatized groups (such as dhopa, muchhi, napit, Hijra/transsexuals and other traditional low caste people) who are subject to social injustice and are marginalized, and have little opportunities for overcoming their harsh realities. The vision for these disadvantaged and extreme poor groups is to include them into the mainstream of society by ensuring their participation in socioeconomic activities and to promote and protect their human rights, reduce their persistent poverty, and ensure education and skill training for income generating activities.

Several actions are already in progress for the development of the disadvantaged groups. Among the coastal fishing communities various activities such as savings/credit schemes, promotion of alternative income generating schemes for men and women, improving access to social services and building their capacity to face and survive natural disasters have been introduced. Development activities for the sweeper community have been undertaken by NGOs. The owners of tea gardens have entered into agreement with the trade union of tea garden workers to enhance their wages and provide subsidized food. Similarly, communities like kaibarta/namasudra, jalo (fishermen), dhopas, napits and other groups face decaying occupations. The Ministry of Social Welfare has implemented capacity and livelihood development program for socially disadvantaged women with a view to creating employment/self-employment of sex-workers and their children in selected cities.

Proposed actions: The cooperation and involvement of local bodies i.e. Upazila and Union Parishads and NGOs will help to locate/ identify the disadvantaged people to enable them to participate in development activities. Government functionaries at upazila, district, and

divisional/national level will coordinate their activities. The Ministry of Land would give priority to allotting khas land to people of the disadvantaged communities for settlement under the Asrayan project. For the tea garden workers, planters/owners would be encouraged to earmark land within the estates so that they can build their own dwelling.

DEVELOPMENT RESOURCE ALLOCATION FOR SOCIAL PROTECTION DURING THE SIXTH PLAN

The provision of social protection involves work of a large number of ministries including food, disaster management, rural development, social welfare and women's affairs. Also a large part of the budget consists of subsidies and current transfers from the budget, where Ministry of Food and Disaster Management currently implements about 85% of all safety net programmes. In recent years the allocation of annual budget for social protection has exceeded 3 percent of GDP. The development budget allocations for ministries dealing with rural development and food and disaster management are shown in chapters 1 and 10 respectively. The development budget allocations for the ministries of Social Welfare, Women and Children Affairs and Youth and Sports are shown in Tables 9.11 and 9.12 in current and constant prices.

Table 9.11: Development Resource Allocation for Social Protection under the Sixth Plan

(crore taka; current prices)

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Ministry					
Ministry of Social Welfare	235	250	290	348	402
Ministry of Women and Children Affairs and Youth & Sports	209	247	286	343	396
Total	444	497	576	691	798

Table 9.12: Development Resource Allocation for Social Protection under the Sixth Plan

(crore taka; 2011 prices)

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Ministry					
Ministry of Social Welfare	235	233	252	284	309
Ministry of Women and Children Affairs and Youth & Sports	209	229	248	280	305
Total	444	462	500	564	615

Table 9.13: Social Safety Net Programmes

(A.1) Cash Transfer (Allowances) Programmes & Other Activities:

(A.1.1) Social Protection

SI	Programmes	Coverage (Persons in lac/ Man Month)			Budget (Taka in crore)		
		Budget (2010-11)	Revised (2010-11)	Budget (2011-12)	Budget (2010-11)	Revised (2010-11)	Budget (2011-12)
1.	Old Age Allowance	24.75	24.75	24.75	891.00	891.00	891.00
2.	Allowances for the Widow, Deserted and Destitute Women	9.20	9.20	9.20	331.20	331.20	331.20
3.	Allowances for the Financially Insolvent Disabled	2.86	2.86	2.86	102.96	102.96	102.96
4.	Maternity Allowance Programme for the Poor Lactating Mothers	0.88	0.80	0.92	43.20	36.96	42.50
5.	Honorarium for Insolvent Freedom Fighters	1.50	1.50	1.50	360.00	360.00	360.00
6.	Honorarium & Medical Allowances for Injured Freedom Fighters	0.08	0.08	0.08	63.11	83.07	68.45
7.	Grants for Residents in Government Orphanages and Other Institutions	0.16	0.16	0.18	25.72	22.90	28.66
8.	Capitation Grants for Orphan Students in Non-gov. Orphanages	0.48	0.48	0.50	42.00	42.00	63.00
9.	General Relief Activities	5.00	5.00	5.00	42.19	326.97	53.32
10.	Block Allocation for Disaster Management				100.00	100.00	100.00
11.	Non-Bengali Rehabilitation	1.10	1.10	1.10	16.00	16.00	17.00
12.	Allowances for Distressed Cultural Personalities/Activities	0.01	0.01	0.001	1.50	1.50	2.00
13.	Pension for Retired Government Employees and their Families	3.25	3.25	3.25	3989.64	4003.13	4970.00
14.	Ration for Shaheed Family and Injured Freedom Fighters	0.25	0.25	0.23	33.58	27.00	25.00
	Subtotal: Lac-Man & Taka (A.1.1)	49.52	49.44	49.57	6042.10	6344.69	7055.09
(A.1.2) Social Empowerment							
1	Stipend for Disabled Students	0.19	0.19	0.19	8.8	8.8	8.8
2	Grants for the Schools for the Disabled	0.12	0.12	0.12	5.81	5.81	5.81
	Subtotal: Lac-Man & Taka (A.1.2) =	0.31	0.31	0.31	14.61	14.61	14.61
	Total: A.1 (A.1.1+A.1.2)=	49.83	49.75	49.88	6056.71	6359.30	7069.70
(A.2) Cash Transfer (Special) Programme							
(A.2.1) Social Empowerment							
1	Housing Support	1.00	1.00	1.00	5.52	5.52	6.10
2	Agriculture Rehabilitation	25.00	25.00	25.00	50.00	50.00	50.00
	Subtotal: Lac-Man & Taka (A.2.1) =	26.00	26.00	26.00	55.52	55.52	56.10
	Total: A (Taka)=	75.83	75.75	75.88	6112.23	6414.82	7125.80

Sl	Programmes	Coverage (Persons in lac/ Man Month)			Budget (Taka in crore)		
		Budget (2010-11)	Revised (2010-11)	Budget (2011-12)	Budget (2010-11)	Revised (2010-11)	Budget (2011-12)
(B) Food Security Programmes: Social Protection							
1.	Open Market Sales (OMS)	138.00	276.00	231.93	1190.00	2207.50	1848.00
		(Lac Man)	(Lac Man)	(Lac Man)	(5.50)	(11.00)	(10.00)
2.	Vulnerable Group Development (VGD)	88.33	88.33	88.33	638.33	729.92	754.64
		(Man Month)	(Man Month)	(Man Month)	(2.65)	(2.65)	(2.65)
3.	Vulnerable Group Feeding (VGF)	122.22	122.22	104.44	1535.92	1473.64	1607.15
		(Lac Man)	(Lac Man)	(Lac Man)	(5.50)	(5.50)	(4.70)
4.	Test Relief (TR) Food	39.05	39.05	39.05	953.88	1039.67	1117.32
		(Man Month)	(Man Month)	(Man Month)	(4.10)	(4.10)	(4.10)
5.	Gratuitous Relief (GR)- Food	80.00	80.00	80.00	223.41	263.76	273.56
		(Lac Man)	(Lac Man)	(Lac Man)	(0.80)	(0.80)	(0.80)
6.	Food Assistance in CTG-Hill Tracts Area	7.14	7.14	7.14	190.95	223.63	225.90
		(Man Month)	(Man Month)	(Man Month)	(0.75)	(0.75)	(0.75)
7.	Food For Work (FFW)	38.10	38.10	38.10	993.76	1294.00	1276.00
		(Man Month)	(Man Month)	(Man Month)	(4.00)	(4.00)	(4.00)
Total (B Lac-Man) =		340.22	478.22	416.37	2949.33	3944.90	3728.71
Total (B Man-Month) =		172.62	172.62	172.62	2776.92	3287.22	3373.86
Total: B (Taka) =					5726.25	7232.12	7102.57
(C.1) Micro-Credit Programmes: Social Empowerment							
1	Micro-credit for Women Self-employment	0.00	0.00	0.00	3.00	3.00	6.00
2	Fund for Micro-Credit through PKSF	63.00	63.00	79.20	150.00	116.52	188.57
3	Social Development Foundation				200.00	214.00	118.44
4	NGO Foundation				6.50	6.50	10.00
Subtotal: Lac-Man & Taka (C.1) =		63.00	63.00	79.20	359.50	340.02	323.01

SI	Programmes	Coverage (Persons in lac/ Man Month)			Budget (Taka in crore)		
		Budget (2010-11)	Revised (2010-11)	Budget (2011-12)	Budget (2010-11)	Revised (2010-11)	Budget (2011-12)
(C.2) Miscellaneous Funds: Social Empowerment							
1.	Fund for the Welfare of Acid Burnt and Disabled	0.80	0.80	0.40	2.00	2.00	1.50
2.	Fund for Assistance to the Small Farmer and Poultry Farms	1.00	1.00	1.00	100.00	100.00	100.00
3.	Swanirvar Training Programme	0.10	0.11	0.09	1.25	1.35	1.16
4.	Shamaj Kallyan Parishad	0.14	0.14	0.18	9.26	9.26	11.95
Subtotal: Lac-Man & Taka (C.2) =		2.04	2.05	1.67	112.51	112.61	114.61
(C.2) Miscellaneous Funds: Social Empowerment							
1.	Fund for Climate Change	17.00	17.00	17.00	700.00	700.00	700.00
2.	Allowances for Urban Low-income Lactating Mothers	0.48	0.68	0.78	30.00	28.50	32.60
3.	Block Allocation for Various Programme	37.00	25.06	28.02	1508.64	1011.45	1330.68
4.	Employment Generation Programme for the Ultra Poor	42.00	42.00	42.00	1000.00	1000.00	1000.00
5.	National Service	9.48	10.23	15.22	190.00	200.00	305.00
6.	Special Prog. for Irrigation and Water Logging	4.16	4.16		120.00	165.00	250.00
7.	Skill Development Fund for Expatriate Returnees and New Entrants to Labor market	0.50	0.50	0.00	70.00	70.00	0.00
8.	Child Development Center	0.02	0.00	0.00	5.41	1.00	3.00
9.	Service and Assistance Center for Disabled	0.42	0.00		9.45	5.50	7.25
10.	Rehabilitation and Creation of Alternative Employment for People Engaged in Begging				6.32	6.32	7.00
Subtotal: Man-Month & Taka (C.3)=		111.06	99.63	103.02	3639.82	3187.77	3635.53
(C.4) New Fund: Social Protection							
1.	Universal Pension Insurance Scheme				0.00	0.00	11.50
2.	Construction of Sweeper Colony at District and Metropolitan Cities				0.00	0.00	10.00
Subtotal: Man-Month & Taka (C.4) =		0.00	0.00	0.00	0.00	0.00	21.50
Total: C (Taka) =		176.10	164.68	183.89	4111.83	3640.40	4094.65
Total: Protection - Lac-man (A.1.1+B) =							
		389.74	527.66	465.94	8991.43	10289.59	10783.80
Total: Protection - Man-Month (B+C3+C4) =							
		283.68	272.25	275.64	6416.74	6474.99	7030.89
Total: Empowerment: Lac-man (A.1.2+A.2.1+C1+C2) =							
		91.35	91.36	107.18	542.14	522.76	508.33
Grand Total (A+B+C) =							
					15950.31	17287.34	18323.02
Total Non-development Budget =					86,266.00	92,837.00	116,313.00
Percentage to Non-development Budget =					18.49%	18.62%	15.75%

SI	Programmes	Coverage (Persons in lac/ Man Month)			Budget (Taka in crore)		
		Budget (2010-11)	Revised (2010-11)	Budget (2011-12)	Budget (2010-11)	Revised (2010-11)	Budget (2011-12)
(D) Development Sector Programmes: Social Empowerment							
D.1	Running Development Programmes						
1.	Stipend for Primary Students	78.00	78.17	78.17	750.00	865.00	879.99
2.	School Feeding Programme	3.15	3.10	5.69	18.00	17.74	32.50
3.	Stipend for Dropout Students	3.50	6.57	5.00	65.00	122.00	104.52
4.	Char Livelihood	0.03			0.97	0.89	0.00
5.	"Ashrayan" (Housing)	0.01	0.00	0.22	9.07	7.05	0.00
6.	Stipend and Access Increase for Secondary and Higher Secondary Level Students (including Secondary	36.00	38.92	37.05	677.30	672.89	634.11
7.	Maternal Health Voucher Scheme	1.80	1.79	2.44	66.40	66.20	90.00
8.	National Nutrition Programme	2.28	2.18	1.83	225.00	215.00	181.00
9.	Protection of Children at Risk	0.13	0.09	0.09	15.39	10.48	10.25
10.	Economic Empowerment of the Poor	40.07	40.04	39.11	110.34	110.26	107.71
11.	Fundamental Education for Urban Working Children	1.20	1.36	0.61	45.00	51.00	23.00
12.	Employment for Ultra-Poor in Northern Region	0.13	0.13	0.02	7.15	7.15	8.00
13.	Participatory Rural Development (2nd Phase)	1.29	0.97	2.38	8.26	6.20	15.23
14.	Rural Employment Opportunity for Public Asset	0.25	0.25	0.22	77.69	77.69	37.83
15.	"Gucchagram" (Climate victims rehabilitation project)	0.38	0.36	0.26	62.08	58.94	43.00
16.	Rural Employment and Rural Maintenance Programme	0.46	0.46	0.69	140.00	140.00	134.00
17.	Preliminary Education for Development of Children	1.66	1.34	1.22	15.80	12.72	11.62
18.	Vulnerable Group Development for Ultra Poor (Women)	0.49	0.47	0.12	61.30	58.20	2.12
19.	Construction of Flood-Shelter in Flood Prone and River-Erosion Areas	0.07	0.00	0.00	6.23	5.52	0.00
20.	Disaster Risk Mitigation and Reduction	3.47	2.12	1.61	28.00	17.12	13.00
21.	Small Farmers Development Foundation	0.60	0.60	0.60	10.00	10.00	10.00
22.	Regional Fisheries and Livestock Development	0.46	0.39	0.43	38.05	33.14	41.71
23.	Projects Undertaken for Fisheries Development	1.03	0.85	1.13	61.32	46.96	65.18
24.	Jatka (Fish)Protection and Alternative Employment for Fishermen	0.28	0.35	0.35	6.04	7.49	7.50
25.	Micro-Nutrient Supplementation				24.00	22.00	0.00
26.	Post Literacy Education Project for Human Resource Development				55.00	75.00	158.08
27.	One Household One Farm	6.35	6.34	6.17	269.77	192.14	343.03
28.	* Revitalisation of Community Health Care Initiative in Bangladesh				330.00	210.00	430.00

SI	Programmes	Coverage (Persons in lac/ Man Month)			Budget (Taka in crore)		
		Budget (2010-11)	Revised (2010-11)	Budget (2011-12)	Budget (2010-11)	Revised (2010-11)	Budget (2011-12)
29.	Sisimpur Outreach Project				10.52	7.50	12.00
30.	National Sanitation Project				20.00	20.00	15.00
31.	Pulse and Oil Seed Project				20.01	19.44	20.35
32.	Community Based Adaptation to Climate Change through Coastal Aforestation in Bangladesh	0.08	0.04	0.05	11.77	6.06	8.00
33.	Comprehensive Village Development	2.19	1.48	2.56	20.00	13.50	13.50
34.	Comprehensive Disaster Management Program				60.50	50.70	50.70
35.	Urban Public Environment Health Development Program				69.43	15.00	112.51
36.	Poverty Eradication and Ensuring Livelihood for the People Living in Economically Backward Areas.	0.07	0.07	0.19	11.00	11.00	30.00
37.	Poverty Eradication through Social Aforestation.	0.32	0.31	0.55	9.42	9.15	16.25
38.	Improvement and Quality Seed Production of Rice, Wheat and Maize.				109.73	120.04	49.70
39.	Promotion of Legal and Social Empowerment				21.14	24.01	40.00
	Subtotal: Lac-Man & Taka (D.1)	185.75	188.75	188.76	3546.68	3415.18	3751.39
D. 2	New Development Programmes						
1.	Ashrayan-2 Project		0.18	0.22	0.00	163.00	254.31
2.	Rehabilitation of AILA Affected Rural Infrastructure			0.06	0.00	0.00	24.00
3.	Mujibnagar Integrated Agricultural Development Project			1.07	0.00	0.00	53.40
4.	Greater Comilla Rural Infrastructure Development Project		0.08	0.08	0.00	28.00	28.00
5.	Vulnerable Group Development for Ultra Poor (Women)			4.86	0.00	0.00	121.93
	Subtotal: Lac-Man & Taka (D.2) =	0.00	0.26	6.29	0.00	191.00	481.64
	Total: Lac-Man & Taka (D) =	185.75	189.01	195.05	3546.68	3606.18	4233.03
	Total: (Social Protection - Taka) =				15408.17	16764.58	17814.69
	Social Protection (% to Budget)=				11.66	12.89	10.89
	Social Protection (% to GDP)=				1.97	2.12	1.98
	Total: (Social Empowerment - Taka) =				4088.82	4128.94	4741.36
	Social Empowerment (% to Budget)=				3.09	3.18	2.90
	Social Empowerment (% to GDP)=				0.52	0.52	0.53
	G. Total: Beneficiary (Lac-man) =	666.84	808.03	768.17			
	G. Total: (Man-Month) =	283.68	272.25	275.64			
	G. Total: (Annual Lac-Man) =	23.64	22.69	22.97			
	G. Total: Taka (Social Protection & Empowerment) =				19496.99	20893.52	22556.05
	Total Budget =				132170	130011	163589
	Percentage to Budget =				14.75%	16.07%	13.79%
	GDP =				780290	790366	899670
	Percentage to GDP =				2.50%	2.64%	2.51%

Source: Ministry of Finance

CHAPTER 10: ENVIRONMENT, CLIMATE CHANGE AND DISASTER RISK MANAGEMENT

SECTORAL OVERVIEW

Despite substantial initiatives taken by the Government of Bangladesh, development partners and the NGOs, the state of environment, climate change and disaster occurrence in Bangladesh is quite alarming. The Ministry of Environment and Forests has taken several environmental management initiatives to facilitate sustainable development including National Environmental Management Action Plan, Sustainable Environment Management Program, Climate Change Strategy and Action Plan, National Plan for Adaptation to climate change, biodiversity strategy and action plan for persistent organic pollutant (POPs) management. In addition, actions relating to the phasing out of Ozone Depleting Substances, control of air pollution, social forestry, coastal afforestation, promotion of smokeless brick kiln have been taken. At the same time, the Ministry of Food and Disaster Management has been successful in shifting the paradigm from relief culture to risk reduction management involving comprehensive disaster management program, cyclone preparedness program in coastal areas, and a huge safety net support program. All these initiatives have yielded a number of encouraging results in terms of environmental protection and disaster management. Nevertheless, the challenge for environmental management remains huge and requires continuous efforts over the longer term.

With a view to achieving the goal of sustainable development, the SFYP is focusing on integrating poverty, environment and climate change into the process of planning and budgeting. In this context, appropriate policy and institutional capacity building for sustainable land-water management, biodiversity conservation and climate resilient development are crucial. Environment, climate change adaptation and mitigation, and disaster risk reduction must be addressed in a broader development context, recognizing climate change as an added challenge to reducing poverty, hunger, diseases and environmental degradation.

Building resilience to ongoing and future climate change calls for adaptation as well as mitigation measures by addressing existing problems in environment, land and water management. Climate change, and increased climate variability, impact primarily through water and biological processes with implications for land use. Disaster risk reduction and climate change adaptation efforts reduce people's exposure to climate-related disasters and, early warning and enhanced coping capacity limit their impact on people's lives. In this context, strengthening institutions for environment, disaster, land and water management is crucial for effective adaptation and such effort should build on the principles of participation of community.

In international negotiation, Bangladesh being the most vulnerable country should raise voice on adaptation as an additional development challenge. Additional and substantial increase in financing is needed to improve adaptive capacity of rural households and land and water management systems. Development budgets are already under high pressure from severe and frequent cyclones and global financial and economic crisis. There is a need to influence and ensure the development of financing mechanisms capable of generating sufficient resources and delivering them in a manner that minimizes complexity and supports the integration of adaptation concerns into broader development agenda.

Understandably, the adverse interactions of environmental degradation and climate change could have severe consequences on citizen's welfare, especially for the poorer segment that may not have adequate access to coping mechanisms. Indeed, degradation of land, water, frequent flooding and cyclones, rising levels of sea water can easily threaten the sustainability of poverty reduction strategies unless appropriate measures are taken to protect the environment and address climate change issues. Similarly, effective disaster management strategy for tackling natural disasters is also crucial for the welfare of the poorer segment of the society.

Environment Issues Linked to Poverty Reduction and Sustainable Growth

In the last two decades Bangladesh has made significant progress in terms of reducing population growth to 1.7% per annum, increasing economic growth to about 6% per annum, and almost halving the percentage of population considered hard core poor. Despite such achievements, Bangladesh faces serious challenges in the context of sustainability. The population is set to be doubled by 2050, reaching some 270 million and it is predicted that most of the additional people will live in the rapidly growing urban areas. In addition, climate change is predicted to raise average sea levels by around 30 cm by 2050, and could make an additional 14% of the country extremely vulnerable to floods by 2030.

Given its demographic, socio-economic and resource context, Bangladesh can be said as a test case of sustainable development. Such efforts can be undermined both by poverty and economic growth-induced pollution. With lack of access and property right to natural resources like land and water, the poor often live on marginal lands and degrade the environment to meet their basic needs. On the other hand, growth-induced environmental degradation affects the livelihoods and health of the poor as they find work or low cost living space in vulnerable locations. While emphasizing that economic growth is essential to reduce poverty, a careful balancing act must be orchestrated where economic growth is maximized without compromising environmental protection. Maintaining this balance, through selected trade-offs, is vital to the poor for three reasons:

Livelihoods: The livelihoods of the poor of Bangladesh depend crucially on natural resources like land, water, agricultural products, forests etc. Over two-thirds of the labor force directly depends on a variety of environmental resources for their livelihood support. However, population-induced pressure as well as growth-induced degradation of the limited natural resources of the country, particularly land (high population density, loss of 1% of cropped area per year, soil erosion, loss of nutrients), water (declining dry season surface water area and quality), fisheries (declining inland capture fisheries, loss of wetland habitat) and forests (only about 10% of the country, with much degraded) is having adverse consequences on the livelihoods of the poor.

Health and the environment: The World Bank's recent Country Environmental Analysis (CEA) estimates that environmental factors account for as much as 22% of the national burden of diseases, particularly in the form of respiratory infections from indoor and urban air pollution and diarrheal diseases. High use of chemical fertilizers in agriculture, and release of untreated effluents into the open water bodies by a growing number of industries are also responsible in this regard. In addition, food safety of the country is challenged due to poorly regulated environment, production and processing, lack of sanitary storage facilities etc. The CEA argues that achievable goals for reduced exposure to environmental health risks could result in economic savings equivalent to as much as 3.5% of Bangladesh GDP.

Livelihood vulnerability: The geographical location of Bangladesh in the confluence and delta of three mighty rivers – Ganges, Brahmaputra and Meghna, at the head of the Bay of Bengal, and near the eastern Himalayas, has made it extremely vulnerable to natural hazards e.g. floods, cyclones and occasional earthquakes. These hazards are exacerbated by lack of land use zoning, indiscriminate filling of water bodies and wetlands, and in the long term by human-induced climate change.

Women and environmental issues: Women undertake crucial roles in environmental management such as water supply and sanitation, agricultural production, hygiene education at the household level etc. Thus women needs to actively participate in decision making during planning, operations and maintenance etc. through social mobilization and hygiene education in coordination with all relevant organizations and ministries, NGOs, CBOs, local government bodies and other related agencies. In urban slums and rural areas women are responsible for collecting water, fuel, fishing, home gardening, planting, feeding, etc. However in reality, most women are not included in policy decision even if such decisions often affect them in disproportionate and negative manners.

PROGRESS WITH ENVIRONMENTAL MANAGEMENT

Degraded environment implies that there are fewer resources available not only for the present but also for future generations, implying greater risk of unsustainability. It creates adverse impact on both production and consumption activities of the people. With this realization, the

Department of Environment (DoE) has been working for the conservation of environment and undertaking various activities to prevent environmental degradation.

Government Programs for Environmental Management

The DoE is formulating and implementing policies and programs that ensure a realistic balance between the existing livelihood requirement of the people and sound environmental resource management. A major part of its activities include environmental impact assessment carried out through the Environment Conservation Rules promulgated under the Environment Conservation Act 1997. These programs will be continued and would be strengthened during the SFYP. Programs undertaken by the GOB include raising awareness on environment, environmental management and its monitoring, implementation of the international conventions and protocols signed by the government and programs to implement existing environmental laws of the country.

Besides completing a large number of projects during the previous plans, GOB is engaged in implementing a number of programs to improve as well as to protect the environment. A brief listing of these programs is:

- Control of Air Pollution
- Controlling Industrial Pollution
- Conservation of Ecosystem
- Partnership Program for Environment Protection
- Conservation of Biological Diversities
- Protection of the Ozone Layer
- Measures toward Management of Wastes
- National Bio-Safety Framework
- Control of Noise Pollution
- Saving the River
- Generating electricity from waste
- Declaring Ecologically Critical Areas
- Reduction in the Production and Use of Black Polythene
- Poverty-Environment-Climate-Disaster Nexus Initiative in National Planning Process

Controlling Air Pollution

The Environment Conservation Rules, 1997 (ECA 97) have undergone amendment through incorporation of relevant sections towards effective control of various aspects of air pollution. To improve the rising trend of air pollution situation in Dhaka city two-stroke three-wheelers have completely been made off-road since 1 January, 2003. Air Quality Standards mentioned in Schedule-2 of ECR, '97 have undergone amendment on 19 July, 2005. Air Quality Index has been published on the basis of the state of day to day air qualities. On the same date of 2005, the Vehicular Emission Standards mentioned in Schedule-6 of the above rules have also

been amended. With the help of mobile monitoring vans equipped with testing systems, the Department of Environment is testing for emissions from on-road automobiles as per Revised Standards for Vehicular Emissions.

Five Continuous Air-quality Monitoring Stations (CAMS) have been set up in the country under the Air Quality Management Project (AQMP) implemented by the Department of Environment . Two of such CAMS are located in the city of Dhaka, while of the rest three, one each in the cities of Chittagong, Rajshahi and Khulna. Besides, a couple of Mobile Air-quality Monitoring Stations (MAMS) have also been acquired for measuring air pollution at local levels in various other areas. AQMP has opened a web-site to provide information and data pertaining to air pollution and to create and enhance public awareness of the Issue.

The Department of Environment is implementing Clean Air and Sustainable Environment (CASE) Project to address different air pollution issues to improve urban air quality. MoEF has also taken initiative to promote energy efficient brick-kiln in protection of air pollution and loss of valuable forest resources and crop land from degradation. To reduce the emission from brick kilns, DoE recently issued public notice that fixed chimney with 120ft stack will not be allowed after 2010 and Zigzag, Hibride Hoffman and Vertical Shaft Brick Kiln types of brickfields are being encouraged to replace the conventional one. A number of activities have been undertaken to control toxic emissions and for resolving the problem of traffic jams in Dhaka City. The activities include administering of mobile court at different points in the city.

Control of Vehicular Air Pollution

Vehicular emission is identified as one of the major sources of air pollution in urban air shed. To reduce the vehicular emission CASE project will undertake activities to improve traffic mobility and pedestrian safety enforce vehicular traffic mobility and pedestrian safety enforce vehicular traffic mobility and standards through road site monitoring of vehicles. The activities also include administering of mobile court at different point in the city.

Control of Noise Pollution

For the limitation about controlling noise pollution in Environment Conservation Act, 1995 Noise Pollution Control Rules, 2006 was enacted in the light of opinion of common people including government and non-government organizations. Among the multidimensional pollutions, noise pollution is one of the worst pollutions in some of the cities of Bangladesh including Dhaka City. The Ministry of Environment and Forests has set a target of reducing the noise pollution level 45-55 db from 90- 110 db by FY10

Managing Industrial Pollution

Environmental Clearance Certificates (ECCs) are being issued from the Department of Environment to proposed industrial enterprises in pursuance of ECA, '95 and ECR, '97 only after getting ensured that the proposed sites of such industrial enterprises are acceptable and

also that the anticipated pollution loads due to such industries will be within acceptable limits. In case of highly polluting industries, ECCs is accorded only after construction of and establishing Effluent Treatment Plants (ETPs) within them and on the basis of proven efficacy of such ETPs.

During a survey covering 11,149 industrial units conducted during 2002-2005, the Department of Environment had identified 524 falling under the Red Category as per ECR, '97. Among the above-identified 524 red-listed industrial units, 417 were found to have constructed their ETPs in their own initiative while 105 had no ETP at all.

Conservation of Biological Diversities

The Government of Bangladesh in 1999 declared 8 areas of Cox's Bazar and Teknaf Peninsula, St. Martin's Island, Sonadia Island, Hakaluki Haor, Tanguar Haor and Marjat Baor, the Gulshan-Baridhara Lake and 10 km land ward periphery of Sundarbans as Ecologically Critical Areas (ECAs). Later in 2009, 4 rivers around Dhaka city (Buriganga, Shitalakha, Balu and Turag) were declared as ECA's making the total No. 12. The GEF/UNDP assisted project titled Coastal and Wetland Biodiversity Management at Cox's Bazar and Hakaluki Haor (CWBMP)' which is being implemented by the Department of Environment, has been undertaking various programs towards conservation of the biological diversities of 4 ECA's namely Cox's Bazar- Teknaf Peninsula, Sonadia Island, St. Martin's Island and Hakaluki Haor. The aim is to ensure conservation, management and sustainable use of the biological and other resources of the ECA's through establishing institutional arrangement.

Ecosystem

The Government has issued a notice to impose a ban on illegal hill cutting on March 2002 by considering the importance of hill for a balanced ecosystem and environment. Tendency for illegal cutting of hills has been reduced a lot as a result of gradual increase of awareness about hill cutting.

A notice declaring ecologically critical areas was issued on April 19, 1999. These areas include ten kilometers around the Sundarbans Reserve Forests, Cox's Bazar and Teknaf sea shore, Saint Martin's Island, Sonadia, Hakalukee Haor, Tanguour Haor, Marjat Haor and Gulshan Lake. Activities banned in these areas include felling or collecting trees from these areas; hunting, catching or killing wildlife; industrial development; fishing and other activities that might affect fish and other aquatic life; and any activity that could destroy or change the natural characteristics of soil or water.

Protection of Ozone Layer

Bangladesh has been among the few countries which have earned remarkable successes in her efforts related to relevant aspects of global action towards protection of the ozone layer. After accession of the Montreal Protocol on 'Substances that Deplete the Ozone Layer' Bangladesh

has ratified all of its amendments viz., London amendment, Montreal amendment, Copenhagen amendment and recently in 2010 Beijing amendment. Bangladesh has completely phased out CFCs (Chlorofluorocarbons) from aerosol sector, refrigerator and air-conditioning sector, and other commercial sector since 1 January 2010. In pharmaceuticals sector, small amount of CFCs are being used to manufacture metered dose inhalers (MDIs) for asthma and COPD patients under essential use nomination (EUN) of Montreal Protocol. By 2012, complete phase-out of CFC seems feasible. Transition strategy and conversion projects to facilitate the MDI producing companies to phase-out CFCs in the manufacturing of MDIs are being implemented.

Since 1 January 2010, Bangladesh has completely phased-out CTC (Carbon Tetra Chloride) and Methyl Chloroform (MCF) from solvent sector. In addition, from 1995 Bangladesh has stopped using MBr (Methyl Bromide) for quarantine and pre-shipment uses. It has been using heat treatment method as an alternative to MBr in quarantine and pre-shipment uses.

Besides CFC, CTC, MCF, it is a challenge for Bangladesh to phase-out hydro chlorofluorocarbons (HCFCs), comparatively low ozone depleting potential refrigerators and blowing agents (used in foam industry). Steps have been taken to design an HCFC Phase-out Management Plan (HPMP) to phase-out remaining ODSs while taking into account the issue of climate change

Management of Wastes

With the rise in population, especially in the urban areas, domestic and other forms of wastes have increased both in dimension and in quantities. Waste management programs are being implemented all over the world through reduction of volumes and quantities of wastes, waste re-use and waste recycling. In Bangladesh, National 3R (Reduce, Re-use and Recycle) Program has been under implementation toward reducing, re-use and recycling of various forms of wastes through the assistance of the United Nations Centre for Regional Development (UNCRD). A national strategy on Waste Reduce, Reuse and Recycle (3R) for Bangladesh has been formulated.

With the increase of livestock and poultry population in country, huge amount of cow-dung and poultry litters are produced everyday. These organic materials may be used as a good source of renewable energy and organic fertilizer.

Saving the River

The Department looked into how to reduce the levels of illegal encroachment on the banks of the Buriganga River and the amount of pollution in the river. As part of this program, the following activities were undertaken:

- Surveying different structures on the riverbanks and determining how the settlers acquired the land and formulating plans for future activities.

- Identifying polluting industries on both banks of the river, classifying and making recommendations to reduce pollution. Assessing the disposal rate and degree of pollution of tributaries of the Buriganga River and making recommendations for treatment.

Under this program, an inter-ministerial committee with two sub-committees has been formed. The role of these sub-committees is to remove people living illegally on the banks of the river (encroachers) and to control and reduce pollution of the river. The draft report of the sub-committee for removing the encroachers is now under consideration by the convener of the subcommittee. After thorough review, it will be sent to the Ministry of Environment and Forests for final approval. In addition, a demonstration project looking at pollution prevention and control in the Buriganga River is being carried out by the 'Bangladesh Environmental Management Project. Its focus is on conducting surveys and reviewing pollution levels in the river to establish baseline conditions; designing and implementing a strategic pilot monitoring and compliance action program for preventing and controlling pollution on a portion of the river to assess its effects. It can be applied to the entire river; developing a process for evaluating and revising pollution control standards; building enforcement and regulatory competency and capacity within Department; and after identifying the stakeholders, developing with them a strategy for implementing non-regulatory measures, including awareness-rising. The Inter-Ministerial Committee visited the Buriganga River around Dhaka City and removal of submerged waste has been started from January, 2010:

- Carryout river water quality monitoring program, observe water quality trend, figure out the causes, sources, and prepare and enforce action plan.
- Undertake surprise visit to industrial units to identify non compliance polluting industries and take necessary administrative and legal actions against them.
- Following the High Court verdict on a public litigation a draft guideline have been prepared for conservation of river surrounding Dhaka city and to declare as Ecologically Critically Area (ECA).

Ban on Polythene Shopping Bag

With effect from 1st March, 2002, the GoB has imposed ban on the production and use of all kinds of polythene shopping bags throughout the country. In the same year, a new section named “6 ka” was inserted into the Environment Conservation Act 1995. Afterwards, in consultation with different trading associations and chamber of commerce and industries and in consideration of the difficulties faced by them in marketing food items and other essential commodities, the government with its authority by “6 ka” of Environment Conservation Act, made waiver of using polythene shopping bags not less than 55 micron thickness for the purpose of packaging the materials. Moreover polythene shopping bag with 35 micron thickness is allowed for transportation of fish stock. The DoE is vigilant and frequently organizes mobile courts to enforce the ban on polythene.

Medical Waste Management

For safe and environment friendly management of medical wastes, the government promulgated Bangladesh Medical Waste (Management and Processing) Rules 2008 under Bangladesh Environment Conservation Act 1995. This rule properly addresses environmentally sound segregation in source packaging, storing, collection, transportation, treatment and final disposal of medical waste. Private specialized organizations are actively involved in this area in collaboration with City Corporation and Municipalities. Dhaka City Corporation is the pioneer in engaging private organization effectively to deal with the medical waste management in Dhaka city. With the support from JICA, Dhaka City Corporation is also undertaking a 20 year master plan for solid waste management. Department of Environment is providing overall guidance and regulatory requirements as per Environment Conservation Act and Rules.

NGO Activities for Conservation of Environment

In alliance with the Government, a number of NGOs have been working to address environmental problems and to improve environmental system of the country since 1980s. The NGOs play an important role in motivating people at the grass root level to protect environment and to take coordinated efforts in solving environmental problems. There are NGOs which are playing commendable role in projecting environment. Included among them are: International Union for the Conservation of Nature (IUCN), Centre for Sustainable Development (CSD), Bangladesh Centre for Advanced Studies (BCAS), Environmental Conservation Management Centre, Waste Concern, Bangladesh Paribesh Andolon (BAPA) and Bangladesh Environmental Lawyers' Association (BELA).etc.

Conserving Forestry Resources

The Forest Department plays an important role in the development of physical, socio-economic development, maintenance of environmental balance and sustainable land based production system. The forest management system of Bangladesh is an age-old system. At the beginning, the main task of the forest department was to protect the forest and to ensure sustained yield management. The present Government has taken up a plan to bring 20 percent of our land under afforestation programs by 2015 to attain self-sufficiency in forest resources and maintain ecological balance. Co- management has been initiated in 19 out of 28 protected areas to promote conservation of bio-diversity and the protection of wildlife.

Social forestry program is one of the important programs of the Forest Department. Since 1981, the Forest Department implemented four social projects with the financial assistance from the Asian Development Bank (ADB). The Forest department has been successfully implementing these social forestry programs. During the last three years, the DoF has provided training in social forestry to 46021 persons which have allowed the poor village people to benefit from common property.

Through different social forestry projects, 56,484 hectares encroached and degraded forest area has already been bought under social forestry. In the three coming years, activities will continue to control soil erosion and forest land erosion as well as to stabilize new char land. Also there will be activities for improvement of soil quality and for this purpose, block plantation in 51,000 hectares of land, strip plantation in 7,855 km, homesteads and institutional plantation and the sale and distribution of 43.80 lac seedlings among the people. The poor and marginal farmers are participating in the social forestry programs and there is a legally binding definite share of benefit for them. Currently, the Forest Department has been implementing 21 development projects and 13 development programs to increase the forest resources as well as poverty reduction in the country.

After joining the plantation program, the social restrictions on women employment has largely been removed. Social forestry is not only producing wood, fuel-wood and fruit and improving environmental condition, it is also playing a significant role in reducing poverty.

Environmental Health

Environmental health comprises those aspects of human health and disease that are determined by factors in the environment. It also refers to the theory and practice of assessing and controlling factors in the environment that can potentially affect health. Important sources of environmental health risks include industrial and medical waste, air emissions and water discharges, human waste, consumer products, living conditions, and ionizing and non-ionizing radiation. Health effects with known or suspected environmental etiologies include various health impacts of climate change, cancer, cardio-pulmonary diseases, asthma and other respiratory diseases, allergies, neuro-toxicity and neurological impairment, gastro-intestinal diseases, developmental and congenital abnormalities, and acute and chronic poisoning.

At present, Bangladesh is not fully aware of quantified estimates of the environmental-health burden. Given what is known about environmental health in other countries, it may be assumed that pollution and potentially environmental-related disease in Bangladesh is likely to be significant. But Bangladesh lacks sufficient expertise to assess this burden and has only limited environmental and health policies designed to reduce it. The core functional components of a national environmental health program should include an integrated research strategy, capacity development to monitor, assess and reduce environmental health risks and hazards, and academic and technical training for the expertise required to inform policy, develop regulatory standards, and guided decision-making. In order to create comprehensive environmental health capacity and a functional environmental health program in Bangladesh, there is need for improvement across sectors, including academia and research, government, industry and NGOs, as well as coordination and cooperation among these institutions.

The Bangladesh National Herbarium

The Bangladesh National Herbarium (BNH) is a research organization under the Ministry of Environment and Forest which deals with the exploration, collection, identification and preservation of plant resources of the country. All sorts of information of plant including diversity, abundance, locality, traditional uses etc. are preserved at Bangladesh National Herbarium. It plays an important role in the conservation of biodiversity and environment. The collection of the herbarium is a national property that goes down to the posterity through generations and work as reference materials on the flora of the country.

Since its creation in 1970, BNH has collected and preserved about one lac plant samples (including the duplicates). Detailed taxonomic descriptions with economic importance and botanical illustrations of 72 plant families in 60 fascicles have been published by the BNH under the Flora of Bangladesh. Other important works of the national herbarium include “Survey of Flora” under National Conservation Strategy (NCS), “Aquatic Angiosperms of Bangladesh”, “Red Book of Vascular Plants of Bangladesh” and many other books/research papers related to plant taxonomy. In addition National Herbarium has published “Traditional Uses of Ethno medicinal Plants of the Chittagong Hill Tracts” based on medicinal plants used by the tribal people of Chittagong Hill Tracts with the collaboration of the Ministry of Chittagong Hill Tracts. Apart from this, Bangladesh National Herbarium was actively engaged in the implementation of the project on the “Encyclopedia of Flora and Fauna of Bangladesh” sponsored by the Ministry of Environment and Forest. Furthermore, National Herbarium is preparing a database that will provide information on the collections of Bangladesh National Herbarium as well as of various plant species of the country.

Mainstream Poverty-Environment-Climate Nexus in National Planning Process

Poverty environment-climate mainstreaming aims to reverse environmental degradation in ways that will benefit the poor, and to enable sustainable economic development. Any poverty reduction effort must fully take into account the country’s vulnerability, susceptibility and capacity to manage environmental and climate risks and adaptation. This requires changing processes and decisions that impact on the environment. However, past experience suggests that many of these processes and decisions are outside the direct control of environment institutions. In Bangladesh, key institutions that impact on pro-poor environment outcomes include Planning Commission, Ministry of Planning, Ministry of Environment and Forest and Ministry of Finance. So it is vital that environment and climate issues that matter to the poor are “mainstreamed” into these institutions and their political and economic processes and decisions. The indicators for successful PECM are institutions, policies and investments that do not undermine pro-poor environment outcomes, instead positively contribute to livelihoods of both men and women.

Environmental Management Targets in the SFYP

- Increase productive forest coverage by 2 percentage points.
- Territorial coverage of protected area increased to 5% including Community Conservation Area (CCA) and Ecologically Critical Area (ECA)
- Improve air quality in Dhaka and other large cities and enacted Clean Air Act
- Treat all urban waste water by FY15 to clean river waters
- Promote Zero discharge of industrial effluents.
- Urban wetlands are restored and protected in line with Wetland Conservation Act
- At least 10% of the wetland in peak dry season is protected as aquatic sanctuary
- Jolmahal leasing system phased out in favour of pro-poor community based management
- Regeneration and afforestation of 25,000 hectares of fresh water swamp forest in haor basin.
- Risk Atlas for at least 7 cities/towns developed by 2015.
- 500 meter wide permanent green belt established and protected along the coast
- Eco-tourism promoted at least in 15 protected areas and ECAs
- Comprehensive Marine Resources Management Plan developed
- Land zoning for sustainable land/water use completed.
- Environmental, Climate Change and disaster risk reduction considerations are integrated into project design, budgetary allocations and implementation process.
- Canals and natural water flows of Dhaka and other major cities restored.
- Increase energy efficiency by 10%

Challenges for the SFYP

Overall Challenges: Despite progress made in strengthening the implementation of environmental protection program, there is a substantial unfinished agenda that will need to be addressed in the SFYP. The most challenging task before us is to create a nexus of poverty, environment, climate change and disaster in the project/program planning and implementation process. Poverty, growth and environmental sustainability are inextricably bound together in Bangladesh. Some 32% of the population are poor and depend on an over-exploited and degrading natural resource base. Industrial and urban growth will improve economic livelihoods but already there are serious threats to environment and human health. Meanwhile, the vulnerability of the poor in a hazardous environment is set to be worsened by climate change and disasters. Addressing poverty-environment-climate-disaster issues is critical in assisting Bangladesh to meet its commitment to ensuring environmental sustainability (as part of the Millennium Development Goals). Amongst the most important challenge is environmentally sustainable use of natural resources and proper waste management that continues to pose serious health risks. Bangladesh remains a very poor country with large slums and weak urban services. Accordingly, proper waste management is a serious challenge. The air pollution is another top health concern that requires more effort. The DoE needs to be considerably strengthened, particularly to enable it to undertake environmental

impact assessment as mandated by the Environment Conservation Rules promulgated under the Environment Conservation Act 1997. Enforcement of environmental standards is also a serious challenge.

Environmental Governance Challenges

Bangladesh in general is characterized by weak governance, and this is no different in the many aspects of environmental management. Institutional capacity is limited to ensure effective law enforcement, institutions have ill-defined responsibilities, transparency and accountability are also limited, and there are conflicting objectives in the extensive set of policies and plans that impinge on sustainable development. In response the government is working to reform the governance of the country, to reduce corruption and improve enforcement of the existing laws and standards. This offers opportunities for poverty environment mainstreaming. The governance is characterized by:

- a) *National government*: limited implementation with some recent improvements;
- b) *Local government*: decentralization being expanded, but poverty environment aspects need to be developed as a positive opportunity;
- c) *Civil society*: diverse but fragmented;
- d) *NGOs*: Over 12,000 NGOs in Bangladesh are part of a highly diverse sector ranging from vast service providers to small local welfare groups, pressure groups, and service contractors;
- e) *Private sector*: huge potential for increasing incentives and motivation; and
- f) *Development partners*: interest of most development partners on environmental issues is decreasing alarmingly

Challenges of natural resource management

Common Property Rights: Public commons includes natural resources such as land, open water resources in wetlands, forests, grasslands, grazing land, reed land, khas land, peat land, rivers, estuaries and the open seas. About 80 percent of the population depends directly or indirectly on the utilization of these resources. Increasing access to natural resources for rural poor is essential for reducing poverty. However, the resource base for poverty reduction are shrinking and degrading. The reasons are.

Integrated floodplain management: Agriculturist view floodplain as rice production fields. The fisheries sector sees floodplain as fish production grounds. Overall the national emphasis has been to produce more rice ignoring other benefits and products thus converting natural wetlands into rice fields. To the community dwelling in and around a floodplain it is their livelihood, not just a rice field. Floodplains provide many products and services which have

been utilized by many people in rural communities for generations. Wetlands also are significant for the local and regional environment, including for biodiversity conservation.

River and other water body encroachment: A lot of causes are responsible for river and other water body encroachment in Bangladesh. Around 80 percent people of rural area are dependent on the river and surface water sources but due to severe encroachment and pollution of these water bodies, they cannot fulfill their daily demand. Several fish species and their breeding grounds are already lost and many are losing drastically. As the destruction process increase the concerned stakeholders such as fishermen, potter men, boatmen and boat makers etc are shrinking and becoming jobless and poor.

Wetlands: Wetlands in Bangladesh include ox-bow lake or baor, haor, beel, jheel, etc. are rich in vegetations, aquatic plants, reeds, algae and other aquatic fauna including diversity of fisheries. Wetlands have significant ecological, economic, commercial and socio-economic importance. The rural poor people mostly depend on these habitats for their livelihoods through fisheries, tourism activities, extraction of reed, harvesting of edible aquatic vegetation and their products, medicinal herbs, shell etc. Over the past 30 years, fishermen's yields have decreased by 40 percent due to disappearing water sources.

Agricultural sustainability: Bangladesh has a total land surface of 12.31 million hectares, of which presently 7.85 million hectares are under agriculture, but this land is shrinking every year due to population growth. For example, in 1983-84, there was 20.0 million ha of total cultivable land, which dropped to 17.5 million ha in 1997. Modern agricultural development depends on HYV seeds, fertilizer, pesticide, herbicides which leads to build-up of toxicity. Clearing of vegetation, earth removal, road construction, shifting cultivation (Jhum) in the Chittagong hill regions, and cultivation practices in the Barind and Madhupur tracts etc. cause most of the land degradation. Increase in salinity of topsoil of the coastal districts has negatively affected agricultural production. Since the operation of Farakka barrage, the environment in the southwest region of Bangladesh has been adversely affected by increase in salinity.

Fisheries sustainability: Fisheries in Bangladesh are classified into capture fishers and aquaculture farmers. There are also culture-based inland fisheries, in which the natural productivity of the aquatic ecosystem is utilized, though fishermen need to acquire access rights. An estimated 1.3 million people depend on fisheries for livelihood. Poor fishermen in Bangladesh are disadvantaged by policies that favored powerful people leasing fishing rights. Coastal shrimp aquaculture of Bangladesh inside the embankments has been boosting the national economy, in particular the poverty prone coastal peoples. Development of shrimp aquaculture has created negative environmental impacts such as habitat destruction, pressure on fisheries resources, salinisation of agricultural land, pathogen intensity due to introduction of exotic species and nutrient pollution. Presently shrimp farming is the best option for providing relatively well paid employment to the poor. However the unplanned shrimp culture expansion has led to social conflicts over land tenure and user rights, leading to

marginalization of small rice farmers who have been forced to lease out their lands to large shrimp farmers.

Haor development: Northeastern part of Bangladesh especially Sunamganj, Sylhet and Netrokona districts are located in one of the depressed geographical regions of the country. Most of the rivers in these areas originated from nearby hilly areas of India. These rivers are extremely flashy and are characterized by sudden and wide variations in flow as a result of excessive rainfall. When heavy rainfall occurs in the hilly regions of India, water quickly moves towards the haor areas of Bangladesh through a number of rivers and canals. In such situation, standing crops generally cannot be harvested, communication disrupted and basic services and facilities become inaccessible for the affected community.

Livestock sustainability: Livestock rearing is one of the major means of earning for the poor people. As the population of the country is increasing the grazing land are becoming scarce. The nutrient cycling, soil organic contents and fertility for the production of the natural resources are also hampered. Thus dependency of the poor drastically decreases from this sector (i.e. rearing of goat, buffalo, cow, etc) particularly from the salinized coastal areas. This sector is now suffering from bird flu, malnutrition etc. The first officially announced bird flu outbreak in Bangladesh occurred in February 2007. AI has caused a loss of more than Tk 4,100 crore. A large number of peoples lost their livelihood due to bird flu outbreak and many more may lose their jobs.

Forest sustainability: Poverty reduction through social forestry is now success story within Forestry Sector of Bangladesh. About 0.335 millions rural poor are now engaged directly to the participatory co-management approach in the social forestry program. Total forestland of Bangladesh is about 2.53 million hectares covering about 17.14 percent of the country. However rapid deforestation is also taking place because of population increase, increased demand for forest products, conversion of forestland into agricultural, industrial land, urbanization and development of infrastructures. Forest coverage declined from about 15 percent of the total area to 5 percent. Deforestation rate was 0.9 percent in 1970, but rose to 2.7 percent in 1984-90. Bangladesh has less than 0.02 hectares of forest land per person, one of the lowest ratios in the world. If the current trend continues, forests are likely to disappear in the next 35-40 years.

Ecosystem and biodiversity loss: Population pressure, conversion of forestland and wetland into agricultural land, overexploitation of forest products and excessive withdrawal of water, relentless wetland depletion due to overexploitation of both flora and fauna are causing great harm to biodiversity. Agro-diversity has gone down and this limits potential of further growth in this sector. A large section of terrestrial diversity of plants and animals is being threatened due to deforestation. Similarly, aquatic diversity is also under pressure due to the drying up of rivers, reduction of flow of water, and accumulation of pesticide residues.

Protected area (PA): There are 16 Protected Areas in Bangladesh, of which 7 are National Parks, 8 Wildlife Sanctuaries and 1 Game Reserve. The total area of PA is 244,182 hectares which is 9.7 percent of the total forests areas of the country. Out of 16 Protected Areas, 15 are notified under the Bangladesh Wildlife Order 1973. The biggest protected area in Bangladesh is the Sundarbans (a World Heritage Site) West Wildlife Sanctuary with an area of 71502.13 hectares and the smallest Protected Area is the Ramsagar National Park with an area of 27.76 hectares. There are 4 Marine protected areas, of which 3 are wildlife sanctuaries situated in Sundarbans and one is Nizum Dweep National Park situated in the mangrove forests in Noakhali. Biological zoning approach has been adopted in PA to ensure the protection of wildlife species and floral habitats.

Ecologically critical areas: Government of Bangladesh has declared 11 areas as Ecologically Critical Area (ECA) under environmental conservation act, 1995. This is usually the development control zones to enhance the power of community based conservation initiatives as opposed to the complete protection in protected area systems around the country.

Coastal zone management: The coastal zone of Bangladesh is highly fertile and characterized by rich biodiversity and natural resources. Recently, coastal Bangladesh has also attracted attention for its high potential of inshore and offshore natural gas, minerals, aquaculture, food availability, tourism industry and tidal power. However, this zone is extremely susceptible to the impacts of natural disasters such as cyclones, sea level rise, storm surge and loss of habitable land mass. Coastal Bangladesh consists of 19 districts that comprise 2.85 million hectares in area, 200 km in length including 148,000 square km of crisscrossed rivers.

Land degradation, river erosion, and displacement: Land degradation is a serious problem for Bangladesh due to natural and human activities. Natural degradation is caused by flood, steep slopes, high rainfall, strong leaching in both humid and dry situation. Human activities causing degradation is mainly inappropriate land management practices. Rivers in Bangladesh are morphologically highly dynamic and form islands in between the braiding channels. These islands, many of which are inhabited, are extremely sensitive to changes in the river conditions. Erosions are highly unpredictable. Out of the 462 administrative units, more than 100 are subject to riverbank erosion and affected more than 2 million people annually.

Drought and floods: Drought causes water shortage that leads to stream flow reduction, depletion of ground water and soil moisture, and hence crop damage almost every year in different parts of Bangladesh mostly during the pre-monsoon and post-monsoon periods. In agricultural context, drought affects the rice production most. Bangladesh is also a land of many rivers and as a result the country is subject to inundation. Some 30 to 35 percent of the total land surface is flooded every year during monsoon. Although normal floods are considered a blessing for Bangladesh providing vital moisture and fertility to the soil, but abnormal floods are considered disastrous for widespread damage to crops and properties.

Ground water depletion: One of the root causes of drought is wide installation of shallow and deep tube wells for agricultural irrigation. This process does not run in an environmentally friendly manner and as a result ground water table has fallen. Groundwater situation is also experiencing difficulties because shallow aquifer level is disappearing due to fast depletion of groundwater table. Experts say regulation of water flow in the Ganges at Farakka point by India has caused a reduction of dry season flow. Decreased flow in the Padma and its distributaries has affected the pump irrigation.

Trans-boundary river linking plan: The proposed river linking project of India will involve rivers, many of which are also shared by Bangladesh. It is widely predicted that the proposed Indian River-linking project, if implemented, will bring catastrophic consequences for the people of Bangladesh. It will cause a major ecological disaster and desertification of the vast areas, and consequently, will lead to displacement of huge number of population of Bangladesh.

Hill cutting: The present illegal and unauthorized hill cutting in greater Chittagong especially in Rangamati, Bandarban and Khagrachhari is continued and as such unabated despite mudslides commenced during the monsoon with the run off. The poor inhabitants at the ground level of the mountains and hills is thus facing the disastrous soil erosion and landslide which again impacted as loss of their houses and other belongings.

Exotic plant, trees and aquatic organisms: Many tree and plant species have invaded Bangladesh, and some are threat to native varieties. Eupatorium odoratum (Ayapan) and Mikania cordata (Assam lata) are two invaders that overtop the canopy of shrubs and young tree saplings. Croton bonplandianum (Bon khira) and Lantana camara (Nak phul) grow along the edges of forest and wastelands and invade local vegetation. Moreover, there are at least 32 fish species have been introduced in the country. The impact of alien species on indigenous species has not been studied. Among the exotics, tilapia of two species, Oreochromis mosambicus and niloticus have caused concerns because these species have invaded all available habitats. Besides Eihhornia crassipes (Kachuri pana) is a notorious weed of fresh water ecosystem and zebra mussel of port areas which invaded to Bangladesh hundred years before.

Invasion through maritime zone: The Bangladesh boundary in the Bay of Bengal is not settled yet after 37 years of independence. This boundary dispute intensified due to its legal share of natural resources like fisheries, oil and gas, management of the Sundarbans, illegal dumping of hazardous wastes, etc. Delay in claiming its maritime territories, Bangladesh has allowed both India and Myanmar to creep into Bangladeshi territory in the Bay of Bengal.

Vector epidemic (virus such as bird flu, bacteria etc.): Various flues had been attacked in Bangladesh after certain intervals since centuries. The recently attacked bird flu is not new but of different dimension. There is a strong possibility of the virus mutating so that it can be transferred from bird to human and then human to human.

Environmental Management Objectives in the SFYP

In light of the long-run consequences of environmental degradation to the country's ecosystem and citizen's welfare, the Government has set a number of goals to attain a sustainable environment on the one hand and to address the fallout of climate change on the other. These goals are crystallized as the main objectives relating to environment and Climate Change under the SFYP as follows:

- To promote pro-poor and appropriate environment management system for sustainable development.
- To ensure conservation of biodiversity and its sustainable utilization.
- To promote indigenous and scientific strategies for mitigation and adaptation to climate change.
- To ensure active participation of the poor, especially the women and ethnic communities in environment management activities at all levels.
- To promote environment friendly activities in development interventions.
- To preserve, protect and ensure wise use of the natural resource base.
- To strengthen the capability of public and private sectors to manage environmental concerns.
- To monitor, control and prevent environmental pollution and degradation related to soil, water and air.
- To find integrated solutions that avoid 'development vs. environment' arguments, institutional tensions, and associated costs;
- To enable more efficient planning of environmental assets and environmental hazard management;
- To support technological innovation that is informed and inspired by nature;
- To support informed policy debate and formulation on big issues;
- To improve the productivity, resilience and adaptability of local, sectoral, national and indeed global social and economic systems – reducing the risk of collapses and the need for short-term 'bail-outs'.
- To initiate actions with regard to obligations under international treaties and conventions for minimizing adverse impact on global environment.
- To promote cooperation with regional and international institutions/organizations to address regional and global environmental problems.
- To undertake research and development for innovating technology in national perspective and application of modern technology, information exchange and benefit sharing with other countries.
- To create public awareness, in order to participate in environment promotion activities.
- To undertake Strategic Environmental Assessment of National Policies, Plans and Strategies for upstream analysis and ensure the Environmental Impact Assessment of Development Projects and Actions and environmental reporting.

- Upgrade environmental governance and accountability system in all development activities in Bangladesh.
- Mainstream Poverty, Environment, Climate Change and Disaster Nexus in the Development Planning, Budgeting and Implementation Process.
- To improve air quality through clean fuel and vehicle.
- To promote public-private partnership in environment management.
- To promote 3R (Reduce, Reuse and Recycle) strategy for waste management.
- To improve air quality in major cities through monitoring and prevention measure.
- To establish Environment Management System (EMS) in Industries for pollution control.
- To reduce dependency on fossil fuel by promoting solar/green energy.
- To ensure culture of resilience in all development activities across sectors.
- To ensure the capacity building of poor and vulnerable group and local government in sustainable natural resource management, climate change adaptation and disaster risk reduction.

Strategies in the SFYP

The agenda for attaining a sustainable environment for the long-term is daunting and it can hardly be over-emphasized. To translate the above objectives into reality, the Government is undertaking the following policies, strategies and programs for the environment sub-sector during the SFYP:

- National Environment Council headed by the Prime Minister and executive committee of National Environment Council headed by the Minister for Environment and Forests would be activated.
- Environment committees at Division, District and Upazila levels will be activated with the participation of all stakeholders.
- Existing environmental laws and regulations will be amended to address new environmental issues.
- Department of Environment will be strengthened in the light of existing Environment Policy, Environmental Act, Rules and Environment Management Action Plan in order to coordinate, monitor and implement these activities.
- Drafting of EIA guidelines for all sectors under the Environment Conservation Act (ECA) 1995 will be formulated.
- Sectoral legislations are to be reviewed and redrafted in light of Bangladesh's commitments expressed through signing and ratifying of a number of International Conventions and Protocols on environment.
- 'Polluters Pay Principle' will be followed in order to ensure strict compliance of environment legislation.
- Incentives, in the form of tax-rebate, tax-holiday etc. will be provided and incremental cost incurred by the Environment-friendly entrepreneurs will be met in various forms/sources.

- ‘National Environment Fund’ will be established in order to provide assistance to the victims of environment degradation caused by the natural disasters and anthropogenic activities.
- Environmental Impact Assessment will be made while processing each development project requiring approval of the Government.
- Enhance whole of government’s capacity to mainstream poverty-environment-climate nexus in the development project design, budgetary process, project implementation and monitoring process.

SUB SECTORAL STRATEGIES UNDER THE SFYP

Preparation of National Land Policy

The optimum use of land and water depends on planned use of land, water resources and natural environment which are the important sources of the growth. It is possible to ensure optimum use of scarce land resources by way of integrating the uses of these three natural resources. With this end in view, the Government has approved ‘National Land Use Policy, Bangladesh’ in June 2001. The Government has adopted various other national policies and measures to prevent land depletion. Notable among them include ‘The National Environment Policy’, ‘National Environment Act and Rules’, ‘National Forestry Policy’ and ‘The National Plan for Agricultural Research’.

In light of ‘National Land Use Policy 2001’ the Land Ministry has taken initiatives for specific policies as discussed below:

- An inter-ministerial committee has been formed for preparing a draft law on “Krishi Jomi Surakkha O Bhumi Zoning Ain 2010” (Protection of Agricultural Land and Land Zoning Law, 2010”.
- A draft of the policy on “Haat-Bazarer Khas Jomi Babosthapona O Bohutol Market Ba Bhaban Nirman Nitimala, 2010” (Management of ‘Khas’ Land of Bazars and Construction of Multistoried Market or Building Policies) has been prepared which will be placed in the Cabinet soon.
- “Balu Mohal O Mati Babosthapona Aain, 2010” (Sand Fields and Soil Management Act, 2010) has been tabled to the National Parliament as bill for necessary approval.
- An inter-ministerial committee has been formed for finalizing the draft act on “Gram Unnoyon Ain” (Village Improvement Act).
- “Jalmohal Babosthapona Niteemala” (Water Bodies Management Policy) - this policy has been made in order to efficiently manage the water bodies to benefit the poor fishermen and women for their income generation and livelihood improvement.
- The project on “Gucchogram (Climate Victims Rehabilitation Project)” is an ongoing project. 207 cluster villages will be constructed with a view to rehabilitate 10650 climate

victim land less families. They will be given houses, income generating training and microcredit. Implementation period of the project is January 2009-June 2012.

- “Krishi Khas Jomi Babosthapon Niteemala” (State-owned Agricultural Land Settlement Policy)-this policy is to distribute the state-owned agricultural land to the poor landless households for their rehabilitation and livelihood improvement.

National Water Management

Bangladesh is endowed with a good number of water bodies scattered all over the country. WARPO maintains a National Water Resources Database (NWRD) established at WARPO under NWMP project that preserve and disseminate information/data of country's water sector including information data of other related sectors. There are analytical tools analyzing information. Different organizations use data of NWRD in their planning and research works. Updating and upgrading of NWRD will be done under Water Management Improvement Project (WMIP) to be implemented by December 2014. A 5- tier web-enabling database has been created for coastal zones. 5 layers of ICRD include Presentation, application server, data server, web server and spatial data engine.

Waste Management

The main strategy for ensuring better waste management is to establish accountable municipalities and city corporations that will have primary accountability to ensure that urban waste management is properly handled. This is admittedly a long-term challenge, yet progress with this important institutional reform holds the key to better management of urban waste. The underlying policies will include encouragement of private waste collection facilities, improving the slums, public education, strengthening the water and sanitation authorities, and better management and disposal of accumulated waste.

Forestry Sub-Sector

Past Performance of the Sector

There is an estimated 2.52 million ha of land as forest land which is only 17.49 percent of the total land area of the country. Out of this total forest land 2.25 million ha. is owned by the government as classified and unclassified forests and 0.27 million ha is owned privately. Government forest land, managed by the Forest Department, covers both natural and plantation forest. Out of 64 districts, 28 districts had no public forest in the past. But now almost all districts have been brought under forest coverage through social forestry program. In the past plans, the main emphasis was to expand forests and to increase supply of timber and wood. The ever increasing population of Bangladesh is creating pressure on existing government managed forest resources and has resulted in over exploitation of such resources. Such marginal land utilization through peoples' participation for forestry development has been launched in early eighties and continued till the last five year plan. Due to implementation of Social Forestry Program through people's participation, about 0.40 million

ha. of land has been brought under forest coverage. Nevertheless, wide-spread destruction, clearing of forest land for agriculture and settlement etc. has been a common scenario of this country that undermined the success of achieving 20 percent forest coverage by the end of 2015.

With a view to intensify forest management in the government managed forest area, number of Integrated Management Plans for different Forest Divisions has been produced. Number of feasibility study report, base line survey report and technical report has been produced for future activities. GIS/MIS have been established to keep pace with modern technology in the forest sector. GIS support has been extended up to sub-block map of the major forest divisions. PBMS has been created on pilot basis and ready for replication in the major forest divisions to facilitate digitization of information as part of MIS and data transfer in the forest administration through LAN/WAN. During the Fifth Five Year Plan due attention was given to afforestation of the newly accreted lands. Green belt was established in the coastal zone to serve as shelterbelt during cyclone and tidal surge. Qualitative improvement of natural forest through artificial regeneration was also given priority. In support of environmental and biodiversity conservation, extraction in the natural forest was discouraged. World Heritage Site has been declared in the Sundarbans. Emphasis was given and accordingly initiatives have been taken to establish national park, botanical garden and eco-park in selected areas. Establishment of regional botanical garden has been proposed in connection with biodiversity conservation in the country. Participation in the national and international seminar, workshop, symposium and conference period have further strengthened forestry knowledge. Also, human resources were developed and the efficiency and effectiveness of forest management has improved.

During the Fifth Five Year Plan Forest plantation was 65,632 ha against the target of 1,90,938 ha showing 34 percent achievement. Strip plantation was established about 23,000 km. against the target of 24,500 km. representing about 95 percent achievement during the Fifth Five Year Plan. Seedling raising for distribution and sale to the people as well as for institutional and homestead plantation was the best success out of different targets of the Fifth Five Year Plan. Total achievement in the seedling raising superseded the target. As per forest policy, NGOs were also encouraged to participate in the forestry program. Extension and training of the social forestry program might be termed as extensive one. Facilities for education and research including eco-tourism have been initiated. Such initiative will continue in the forthcoming 6th five year plan.. Botanical garden and eco-park was established to facilitate conservation activities in the country. Each year, during planting season, organization of Tree Fair Program has become as a regular national program. Infrastructural development, procurements of vehicles, equipments and other logistics have been developed through different projects and will continue in future. Institutional and legal reforms have also received due attention during Fifth Five Year Plan. Reorganization of Forest Department has been another success where the reorganization strength of Forest Department is 259 officers and 8422 staffs.

Plantation establishment in hill forest during plan period was 32,000 ha. against the target of 1,05,000 ha. Reason behind the less success of such plantation in hill forest was manifold such as inadequate allocation in the ADP, Non approval of projects and complexity of land tenure.

Coastal aforestation and enrichment plantation target for the plan period was 20,000 ha. This target was achieved in time. Redland, wetland and char-land plantation target was 15,000 ha. Achievement against this target was 1,000 ha. which was also far below the target. Reason behind such poor success was because of adjournment of the project on Reed Land Aforestation. Char land plantation target have been included in the Forestry Sector Project. But due to imposing condition by the ADB such activities have been delayed.

Agro-forestry, woodlot, and farm land aforestation target was 40,000 ha. In particular farm land aforestation program was done through external financing. But that was not successful. Conditions imposed by ADB on Forestry Sector Project were another factor that hampered to achieve the target of agro-forestry and woodlot plantation. Strip plantation is achieved 95 percent against the target fixed in the Fifth Five Year Plan.

To improve the non-timber forest products in the country, as outlined in the forest policy, the target for bamboo cane and murta plantation during the plan period was fixed to 8,000 ha. Achievement against this target was 3,528 hectare, which was only 44 percent and might be termed as poor. But reason behind such achievement was because of inadequate allocation in the ADP.

The target for raising plantation in the vacant land in the tea garden, around pond banks and in the Barind Tract gullies were 2,938 ha. But the achievement for such target was not notable. Limited activities have been initiated only for gully and pond banks.

There was a target to rehabilitate 3,000 Jhumia families in the Chittagong Hill Tracts. But it was seemed great challenge for this sector. Only 18 Jhumia families were rehabilitated. However ten thousand distressed freedom fighters were rehabilitated through establishing ten thousand nurseries in the country. Social forestry training has been provided to these distressed freedom fighters.

Achievements against the target of the Fifth Five Year Plan, in some cases, found to be less than success or poor success. But the fact was that as per ADP allocation during the financial year of the plan period was more than a success. The total allocation for the Fifth Five Year Plan including BFRI, BFIDC and National Herbarium was Taka 69,821.00 lac and the total ADP (1997-98 to 2001-2002) allocation was Taka 54,520.91 lac. The total of five year ADP allocation was only 78 percent to the Fifth Five Year Plan target. On the other hand total expenditure during the plan period was Taka 49235.96 lac which was 91 percent of the total five year ADP allocation and 72 percent to the plan allocation respectively.

Activities Taken Under PRSP (2002-2003 to 2009-2010)

Several initiatives were taken to increase forestry coverage and strengthen forestry management. For better management of Forest Resources, administrative Forest Divisions were divided into three administrative divisions. These are: (i) Chittagong Forest Division with oversight for Chittagong North Forest Division and Chittagong South Forest Division; (ii) Sundarban Reserved Forest Division with oversight for Sundarban East Forest Division (head quarter at Bagerhat) and Sundarban West Forest Division (head quarter at Khulna); and (iii) Cox's Bazar Forest Division with oversight for Cox's Bazar North Forest Division and Cox's Bazar South Forest Division. Each Forest Division is headed by a Deputy Conservator of Forests. These improved administrative arrangements are having a positive impact on forestry management.

To reduce encroachment and over-exploitation, the co-management concept was initiated in different protected areas in Bangladesh. Protecting and co-managing forests by developing and formalizing a collaborative arrangement between stakeholders of local communities of forests will provide the incentive to protect the common resources for social benefit. This was successfully demonstrated by implementing the Nishorgo Support Project funded by the USAID. Some 5 protected areas were included in this program. This program was extended to another 14 protected areas in Bangladesh under Integrated Protected Area Co- management (IPAC).

Emphasis was also placed on the implementation of social forestry programs. Through beneficiary participation huge amount of land have been brought under forest coverage. This was formalized by enacting the Social Forestry Rule, 2004.

Objectives under the SFYP

The main objectives during the Sixth Five Year Plan are to expand forest resources, make forests productive, develop institutional capabilities, and to encourage people's participation. About 20 percent forest coverage by the end of 2015 has been expected in the Twenty Years Master Plan (1995-2015) prepared for Forestry Sub Sector. Accordingly the plantation target had been fixed in the last Three Years Rolling Plan, MTBF and Fifth Five Year Plan. Under the present trend of allocation, it is not possible to achieve that target of 20 percent forest coverage by the end of 2015. Despite 91 percent utilization of allocation which was 72 percent of the planed allocation, only 1 percent new forest coverage has been created. Considering the allocation constraints this Sixth Five Year Plan has been estimated only with 4 percent target of new forest coverage that will be created through different types of forest plantations.

However this small target might be increased to 4 to 5 percent depending on the foreign investment. As the investment policy is favorable, investment from donors are still expected to increase the plantation target during the Sixth Five Year Plan. National responsibilities and commitments will be fulfilled by implementing various international efforts and government ratified agreements relating to global warming, clean development mechanism, desertification

and control of trade and commerce of wild life birds and animals. Tissue culture, root trainer nursery development, vegetative propagation etc will receive due attention:

- a. Conserve and protect the eco-system for bio-diversity and overall environmental stability;
- b. Watershed management and soil conservation;
- c. Ensure greater contribution of the forestry sector in the economic development;
- d. Continue and expand people-oriented afforestation program for poverty alleviation and increased employment opportunity including women;
- e. Achieve meaningful participation of local people, local government bodies, NGOs and government agencies in forestry program;
- f. Promote multiple land use technology like agro-forestry to ensure increased productivity and supplement agricultural production;
- g. Strengthen forestry extension activities to transfer improved technology and research information to end-users, e.g., local people and private homesteads;
- h. Increase facilities for education, need-oriented co-oriented research and experimental works;
- i. Human resources development;
- j. Encourage private plantation of rubber, teak, mango, jackfruit and other high-value trees;
- k. Facilities for eco-tourism and recreation;
- l. Mass initiative to be taken under Clean Development Mechanism and REDD;

Policies, Strategy and Program

In line with the above objectives, policies, strategies and programs for the forestry sub-sector during the Sixth Five Year Plan will be as follows:

- a. Moratorium on felling in the natural forest will continue. Existing scattered and denuded hill forests will be replanted to increase productivity. Scientific management principles will be strictly followed to restore productivity of these lands.
- b. An estimated 250,000.00 hectare land of hill forest and 7000.00 hectare of plain land forest will be planted during the plan period. Productivity of plantations will have to be increased manifold. Multi-purpose trees will receive special attention to increase the productivity of land under forest.
- c. People's participation will be incorporated in all forest development activities. Integration of tree plantation and crop cultivation will be practiced. Program to rehabilitate the sal forests will be taken up as part of important development activities.

- d. The existing coastal aforestation and enrichment plantation will also be continued. The existing mature coastal plantations will remain. An area of 40,000.00 hectare will be planted and replanted in the coastal areas. SRF is presently engulfed with severe ecological problems. Special attention will be given to the Sundarbans Reserve Forest (SRF) for its biodiversity conservation.
- e. To prevent the extent of damage by cyclones and tidal surges, Coastal Green Belt will be created and seedling will be raised to distribute or sale in the coastal zone.
- f. The redlands of Sylhet has long been lying unutilized. Under the Sixth Five Year Plan 5000.00 ha. of redlands will be planted.
- g. Development and establishment of different eco-parks and botanical gardens, safari park, national park have already been initiated during the Fifth Five Year Plan. Such activities will be continued under this Sixth Five Year Plan. Establishment of regional botanical garden will set uniform biodiversity conservation initiative in the country.
- h. Social forestry has now become a social movement in Bangladesh. Social forestry program will continue for expansion and strengthening of thana nurseries, union level nurseries, expansion and strengthening of forest extension and nursery training centers. Raising of 30,000.00 km. of strip plantations are estimated target for the plan period. Social Forestry Rule, 2004 is going to be changed to fulfill the current need. It is under process in the ministry. Local government bodies will co-ordinate the aforestation program at the grassroots level under this program. During the Sixth Plan, NGOs will be more directly involved in aforestation program. They will motivate people through informal training and other extension sources and will help the Forest Department to implement such program.
- i. Past record indicates that wood energy contributes 13 percent of the total fuel consumption of the country. Wood fuel is the most important form of energy for domestic use in rural areas. In Bangladesh, domestic cooking consumes 65 percent of fuel wood and the rest 35 percent is consumed by the industrial and commercial sectors. For the prevailing demand through social forestry, short/medium rotation fast growing tree species have been planted along the roads and embankments, and on marginal and follow lands with active participation of local people. BCSIR has developed efficient wood burning oven. Further research programs on development of wood fuel, efficient wood, etc., will be undertaken in the plan period to reduce strain on wood supply. Technical assistance may be required for this purpose.
- j. Non-wood forest products have substantial potentials for economic benefit. Bamboo, cane, murta, medicinal plants, honey, wax, gol-patta, etc. will be developed during the Sixth Five Year Plan in a systematic way. The Sixth Five Year Plan targets to cover 7500.00 ha. of Bamboo, cane and murta plantation. Honey, wax and gol-patta will also receive special attention for improvement during the plan period.

- k. Emphasis will be given for forest land survey and updating the land record. Initiative has been made through formulating project which is expected to be implemented during the Sixth Five Year Plan. Forest areas will be demarcated to avoid unlawful encroachments.
- l. Presently, only 1.70 percent of the total land area falls under protected land area category which is about 10 percent of the total forest land. The protected area will be increased to 15 percent of the total forest land during the Sixth Five Year Plan period. Effective management for all the protected areas will be established. Regional botanical garden will be established in the northern and southern region. People's participation will be effectively utilized in conserving resources in the respective zones. Ban on the use of fuel wood in brick fields will continue and be made more effective and other modes of efficient use of energy will be promoted, e.g., improved cooking stove. Moreover, programs will be developed and implemented to protect the threatened, endangered species of flora and fauna and the fragile eco-system. Wildlife farming of deer and reptile like crocodiles, iguana, snakes and frogs, etc., will be encouraged and promoted on a commercial basis through private initiatives.
- m. watershed management, wetland conservation etc. will be initiated in the new area and also will be intensified in the old area for better conservation of nature in the country during the plan period.

Private Forests

In Bangladesh the village forest area is computerized of only 0.27 million ha. But this forest has been meeting most of the demand for forest products like timber, firewood etc. Over the years the village forests including the homesteads have grown into a major source of forest products especially with the initiative and involvement of local people. However, during the earlier plan periods, supports were preceded from the government mainly in terms of technical back-up and extension services. More support is necessary to establish this as a sustainable source of forest resources especially for promoting multi-purpose tree species for high productivity. Extension, training and credit facilities will be provided to encourage the private sector to undertake rubber, teak, jackfruit and other high value crop plantation on a commercial basis.

With the successful implementation of social forestry, thana afforestation, homestead forestry, farm forestry and agro-forestry programs/projects, increasing investment is coming up in the private sector as well as in the public sector. An amount of Tk. 5000.00 million is projected to be invested by the private sector for nursery development, seedling raising, plantation, maintenance etc., in the Sixth Plan period.

MANAGING CLIMATE CHANGE

Bangladesh is one of the most climate vulnerable countries in the world and will become even more so as a result of climate change. Floods, tropical cyclones, storm surges and draughts are

likely to become more frequent and severe in the coming years. It is argued that the signs of the future changes have already begun to become apparent. These changes will threaten the significant achievements Bangladesh has made over the last 20 years in increasing incomes and reducing poverty, and will make it more difficult to achieve the MDGs. It is therefore essential that Bangladesh prepares now to adapt to climate change and safeguard the future well-being of its citizen. Recently the issue of protection of the environment assumed special importance because of the accumulation of evidence of global warming and the associated climate change that it is likely to accompany. Climate Change is not the only problem of environmental degradation, the problem runs far deep and its reach in destabilizing many of the natural systems is potentially immense.

Over the past years, the Government of Bangladesh has invested over \$10 billion to make the country less vulnerable to natural disasters. These investments, in many cases supported by development partners, include flood management schemes, coastal polders, cyclone and flood shelters, and the raising of roads and highways above flood level. In addition, the GoB has developed state-of-the-art warning systems for floods, cyclones and storm surges, and is expanding community-based disaster preparedness. Climate resilient varieties of rice and other crops have also been developed.

The challenge Bangladesh now faces is to scale up these investments to create a suitable environment for the economic and social development of the country and to secure the well-being of the people, especially the poorest and most vulnerable groups, including women and children. The Government of Bangladesh's Vision is to eradicate poverty and achieve economic and social well-being for all the people. This will be achieved through a pro-poor Climate Change Management Strategy, which prioritizes adaptation and disaster risk reduction, and also addresses low carbon development, mitigation, technology transfer and the mobilization and international provision of adequate finance.

Implications of Climate Change in the Context of Bangladesh

Human-induced changes in the global climate and associated sea level rise are widely accepted by policy makers and scientists. The Intergovernmental Panel on Climate Change (IPCC) concluded that "the balance of evidence suggests a discernible human influence on global climate". The exact magnitude of the changes in the global climate is still uncertain and subject of worldwide scientific studies. It is broadly recognized that Bangladesh is vulnerable to these changes because it is low-lying, located on the Bay of Bengal in the delta of the Ganges, Brahmaputra and Meghna and is densely populated. Its national economy strongly depends on agriculture and natural resources that are sensitive to climate change and sea level rise.

Studies on climate change in Bangladesh report that the surface average temperature has been rising, though there is no agreement in these studies on the rate of change. Available literature suggests that a general warming is expected in future, where the rate of warming will be

higher for the winter months (i.e., December, January and February) than the monsoon months (i.e., June, July, August).

There is a great deal of local-level perception-based evidence that the rainfall pattern has become erratic in recent years, if not in recent decades. However, the official agency has ruled out any possibility of drastic change in rainfall patterns beyond climate change. Intriguingly, a bi-modal shift in rainfall behavior has already been reported and rainfall may contribute to recent shifts in hydrological peaks in various rivers of Bangladesh. Local level experience and anecdotal evidence clearly show that in both Gaibandha and Jamalpur, people now observe two to three flood peaks instead of one, as the latter had been regularly observed decades ago.

Increased susceptibility to natural disasters: All the above phenomena clearly highlight the increased hazard susceptibility in terms of flood, drought, storm surge and salinity ingress in Bangladesh. As it has been reported in many articles, floods will be more intense, will inundate more areas and occasionally will perhaps prolong to devastate people's livelihoods, national economy and infrastructure. Similarly, literature suggest that the central western region will be hit hard due to exacerbated drought and marginal farmers would not be able to maintain livelihood thrusts by switching technologies to offset moisture stress. Simultaneously, increased salinity would tend to reduce crop suitability throughout the southwestern region and perhaps appear to be a deterring factor for industrial activities in the affected areas.

Coastal impacts - water logging: A northward shift in isohaline lines under climate change would compound the already alarming effect of water logging in the southwestern region. It has been reported that the sea surface temperatures along the northern Indian Ocean (i.e., Bay of Bengal) has gradually been rising steadily. Though there is no evidence that the frequency of occurrence of cyclone along the Bay of Bengal has actually changed over the past five decades due to rising sea surface temperatures that cyclone intensity might be increased by as much as 10% due to increased warming. A devastating example that Bangladesh has been observing in this regard is the Aila affected areas in Satkhira, Khulna and Bagerhat district.

Coastal impacts-rough seas and cyclones: There is a strong correlation between increasing sea surface temperatures and the occurrence of too many rough sea events in the recent years. High wind actions have been causing economic damage to fisher folks by quickly damaging the traditional boats.

High wind actions have been eroding sea-facing coastal islands; even embankments located far inland than the open sea. Sudden breaches in embankments have been destroying standing crops, inundating crop lands with saline water, thereby diminishing economic potential of the coastal lands, and forcing poor people to out-migrate from the affected areas by destroying their livelihoods.

A potential implication would be that future storm surges might be even higher than those

observed currently. About 1.2 million hectares of arable land are affected by varying degree of soil salinity, tidal flooding during wet season, direct inundation by saline water and upward and lateral movement of saline ground water during dry season. Inundation of brackish water for shrimp farming is key causes for secondary salinisation of coastal lands. The severity of salinity problem has increased over the years and expected in increase in future due to sea level rise.

Increased drought posed higher risk: North-western region (Barind tract) of Bangladesh is normally drought prone. Droughts are associated with the late arrival or an early withdrawal of monsoon rains and also due to intermittent dry spells coinciding with critical stages of T. Aman rice. Droughts in May and June destroy broadcast *Aman*, *Aus* and jute. Inadequate rains in July delay transplantation of *Aman* in high Barind areas, while droughts in September and October reduce yields of both broadcast and transplanted *Aman* and delay the sowing of pulses and potatoes. *Boro*, wheat and other crops grown in the dry season are also periodically affected by drought.

Global Response to Climate Change & its Implication for Bangladesh

The first definitive action came in 1992 at the UN Conference on Environment and Development held in Rio de Janeiro. The Conference established the United Nations Framework Convention on Climate Change (UNFCCC, or, Convention) which came into force in 1994. Countries which have signed the Convention and ratified are called Parties (194 in number). A Conference of Parties takes place every year. Linked to the Convention, a protocol has been signed in 1997 in Kyoto (hence called Kyoto Protocol) which came into effect much later in 2005. The Kyoto Protocol is a legally binding instrument under which industrialized countries committed themselves to a lowering of emission on an average of 5% below the 1990 level. The first commitment period ends in 2012. Bangladesh is among the least responsible countries for polluting stratosphere with GHG but it is the worst recipient of stress from the climatic perturbations.

Bangladesh Climate Change Action Plan

Bangladesh prepared the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) in 2008 and revised it in 2009. This is now an approved document of the Government. This is expected to be the blue print for subsequent integration of climate change issues such as adaptation, technology transfer, mitigation and development, and capacity building into the mainstream planning process.

The BCCSAP takes the Bangladesh submission on Bali Road Map, particularly the 4 securities, as the starting point and develops a strategy of sustainable development centered on the issue of climate change. The programs mainly fall under development of crop varieties and development of technology suitable for agricultural production under various adverse climatic conditions that are likely to materialize in future. Three of the themes including food and livelihood security fall under adaptation which is the prime need of the country. The other two

adaptation programs relate to construction and maintenance of necessary infrastructure, particularly those related to water management. The third important area is disaster management as disaster risk reduction and post-disaster rehabilitation are going to engage a lot of energy and resources of the country due to climate change. Under the action plan, there are six major themes and 44 programs:

- Food Security, Social Protection and Health: The very first relates to ensuring food and livelihood security, especially for the poorest and most vulnerable in society, including women and children. It focuses on the needs of this group for food security, safe housing, employment and access to basic services, including health.
- Comprehensive Disaster Management: This is to further strengthen the country's already proven disaster management systems to deal with increasingly frequent and severe natural calamities.
- Infrastructure: This Action Plan is to ensure that existing assets (e.g. coastal and river embankments) are well-maintained and fit-for-purpose and that urgently needed infrastructure (e.g. cyclone shelters and urban drainage) is put in place to deal with the likely impacts of climate change.
- Research and Knowledge Management: This is to predict the likely scale and timing of climate change impacts on different sectors of the economy and socioeconomic groups; to underpin future investment strategies; and to ensure that Bangladesh is networked into the latest global thinking on science, and best practices of climate change management.
- Mitigation and Low Carbon Development: This is to evolve low carbon development options and implement these as the country's economy grows over the coming decades and the demand for energy increases.
- Capacity Building and Institutional Strengthening: This is to enhance the capacity of government ministries and agencies, civil society and the private sector to meet the challenge of climate change and mainstream them as part of development actions.

The requirements of the poor and vulnerable, including women and children, will be prioritized in all activities implemented under the action plan. The Climate Change Action Plan comprises immediate, short, medium and long-term programs.

The serious consequences of climate change, including especially the consequences for Bangladesh, lead naturally to the question of what should be our response. Two types of response need to be considered. The first relates to adaptation, i.e., measures that have to be taken given the very high likelihood that climate change will occur and will have adverse effects. The second relates to mitigation, i.e. steps to be taken that might reduce the extent of climate change.

Adapting to Climate Change

Supporting communities and people in rural areas to strengthen their resilience and adapt to climate change will remain a high priority in coming decades. However, with increasing urbanization and economic growth, the type of risks Bangladesh faces will change. New urban areas must be built to be climate resilient. This will call for better planning to ensure that the pattern of urbanization takes account of the likely risks from climate change.

The direct annual cost to the national economy of natural disasters over the last 10 years (damage and lost production) is estimated to be between 0.5% and 1% of GDP. As the economy grows, these costs are likely to increase in absolute terms and also as a proportion of GDP, if climate change is not factored into long-term economic planning.

Over the decades, the Government of Bangladesh, with the support of development partners, has invested in:

- Flood management schemes to raise the agricultural productivity of many thousands of kilometers of low-lying rural areas and to protect them from extremely damaging severe floods.
- Flood protection and drainage schemes to protect urban areas from rainwater and river flooding during the monsoon season.
- Coastal embankment projects, involving over 6,000 km of embankments and polder schemes, designed to raise agricultural productivity in coastal areas by preventing tidal flooding and incursion of saline water.
- Over 2,000 cyclone shelters to provide refuges for communities from storm surges caused by tropical cyclones and 200 shelters from river floods.
- Comprehensive disaster management projects, involving community-based programs and early warning systems for floods and cyclones.
- Irrigation schemes to enable farmers to grow a dry season rice crop in areas subject to heavy monsoon flooding and in other parts of the country, including drought-prone areas.
- Agricultural research programs to develop saline, drought and flood-adapted high yielding varieties of rice and other crops, based on the traditional varieties evolved over centuries by Bangladeshi farmers.
- Coastal greenbelt projects, involving mangrove planting along 9,000 km of the shoreline.

These investments in ‘climate proofing’ have resulted on major impacts on economic growth and poverty reduction. Over the last 10-15 years, the number of fatalities from natural disasters has declined, as the country’s ability to manage risks, especially floods and cyclones, has improved and community-based systems have been put in place.

Over the decades, Bangladesh has also learnt how to plan and implement these programs more sustainably (e.g. to integrate capture and culture fisheries into the design and operation of flood management projects) by involving communities in planning, construction and

management. We must undertake climate change investments with communities, learn from them, build on their knowledge of their local environments, and ensure that proposed investments meet their needs.

The Government recognizes that tackling climate change requires an integrated approach involving many different ministries and agencies, civil society and the business sector. There is also a need to strengthen the capacity of Government and other organizations to plan and implement development programs. Development organizations need to strengthen their capacity so that they can implement their regular programs more effectively and rise to the challenge of climate change.

Mitigation Activities

Even though Bangladesh's contribution to the generation of GHGs is miniscule, the country wishes to play its part in reducing emissions now and in the future. The mitigation activity must be consistent with the country's energy security as the demand for energy will increase with the quickening of the pace of development. GoB, therefore, encourages increased energy and cost efficiency in the development and utilization of conventional energy. Emphasis is also given to the development of renewable energy, particularly solar homes and biogas plants so that the emission is as small as possible without jeopardizing the access to energy. In partnership with civil society, a major nationwide program of social forestry has also been implemented and coastal 'greenbelts' has been planted as a key adaptation-mitigation strategy. As Bangladesh industrializes and develops coal reserves, the country will seek the transfer of state-of-the-art technologies from developed countries to ensure that the country follows a low-carbon growth path. Bangladesh is also committed to reducing GHG emissions from agriculture and urban waste management. The country is further committed to the development of forestry resources and in this regard is exploring all avenues including the mechanisms under REDD (Reducing Emission from Deforestation and Forest Degradation).

Currently Bangladesh has two Clean Development Mechanism (CDM) projects concerned with solar energy and waste management. It looks forward to increasing the number of similar programs and experimenting with new instruments to generate carbon credits and facilitate carbon market financing in the future.

Benchmarks and Targets for the SFYP

It is important to recognize that climate change is not something for which any quantitative benchmark in physical terms can be set. The agenda is large and involves creation and management of knowledge, formulation policies, and development of institutions. It also requires coordination and collaboration with regional and global partners. The BCCSAP 2009 provides a very convenient framework to build on the climate change agenda for the SFYP. Given the large agenda, it would be prudent to prioritize the urgent tasks that need to be taken up and may be completed, by and large, within the next five years. As such, the following may form part of target programs of the SFYP, listed in accordance with approved themes (Table 1).

The Climate Change impacts that Bangladesh may face present a daunting challenge for policymakers. Adaptation is the prime need right now as any delay will create havoc with the growth prospects of the economy and deny millions of people even their basic necessities. International support might come eventually but may be woefully inadequate given Bangladesh's enormous requirement of resources annually to combat the menace of Climate Change.

In this situation, the Sixth Plan will place first priority on the repair and maintenance of coastal polders and defenses which have been washed away by Sidr and Aila. As the coastal belt is expected to be adversely affected by climate change, the SFYP targets to develop a comprehensive plan in this regard. The second priority will be to mainstream Climate Change issues of adaptation, mitigation and capacity building based on the actions identified in Table 10.1.

Bangladesh will continue its active dialogue and participation in international forum to ensure compliance with the agreed global agenda while at the same time ensuring that Bangladesh's rights to seek progress with economic growth and social development are protected. Similarly, Bangladesh will work hard to ensure that equitable solutions are found to help Bangladesh finance appropriate adaptation measures resulting from past global actions. Nevertheless, it is recognized that the financing needs for proper adaptation are large and that global funding will be limited. Proper funding of priority adaptation programs will be a key policy focus in the SFYP.

Implementing the Strategies

The Government recognizes that it needs to strengthen existing institutions and may also need to create and develop new ones to respond effectively to the enormous challenges of climate change. A National Steering Committee on climate change has been established to coordinate and facilitate national actions on climate change. It is chaired by the Minister of the Ministry of Environment and Forests and comprises the Secretaries of all climate-affected Ministries and Divisions, and representatives of civil society and the business community. It reports to the National Environment Committee, chaired by the Prime Minister.

The National Steering Committee on Climate Change also provides guidance on international climate change negotiations, including bilateral, multilateral and regional programs for collaboration, research, exchange of information and development. A Climate Change Unit will be set up in the Ministry of Environment and Forests, to support the National Steering Committee on Climate Change. It will work with Climate Change Focal Points to be set up in all ministries. In fact, eight are already in place.

Table 10.1: Sixth Plan Benchmark and Proposed Target Programs

Theme	Program	Benchmark	Target
<i>Food security, social protection and health</i>	Institutional capacity for research on climate resilient cultivars and dissemination	Capacity exists; certain new varieties released recently	Extension service to be geared up
	Adaptation against drought, salinity resistance and heat	Very limited experience	To be started
	Adaptation in fisheries sector	Very limited experience	Initial studies for ideas on adaptation
	Adaptation in livestock sector	Very limited experience	Initial studies for ideas on adaptation
	Adaptation in health sector	Very limited experience	Initial studies for ideas on adaptation
	Water and sanitation programs for climate-vulnerable areas	Limited experience	Immediate actions needed
	Livelihood protection in ecologically fragile areas	Little experience	Initial interventions to be made
	Livelihood protection of vulnerable socio-economic groups	Major experience	To be made immediately
<i>Comprehensive disaster management</i>	Improvement of cyclone and storm surge warning	Limited experience	Needs review for improvement
	Awareness raising and public dissemination	Some experience	Needs review for improvement
	Risk management against loss of income and property	Limited experience	Needs review and pilot intervention
<i>Infrastructure</i>	Repair and maintenance of existing flood embankments	Limited activity	To be taken up immediately
	Repair and maintenance of existing cyclone shelters	Limited activity	To be taken up immediately
	Repair and maintenance of existing coastal polders	Limited activity	To prioritize and taken up immediately
	Urban drainage needs assessment	Limited activity	To prioritize and taken up immediately
	Adaptation against Floods and constructing new embankments and flood shelters	Limited activity	Needs review for improvement & construction
	Adaptation against tropical cyclones and storm surges through land use planning	Limited activity	To be taken up immediately
	Planning & Design of river training and bank erosion mitigation works	Major experience with limited success	Needs review for significant improvement
	Resuscitation of rivers and khals through dredging	Limited activity	To prioritize and taken up immediately
	Earthquake resilient structure and land slide protected structure have to be constructed and retrofitted	Limited activity	To prioritize and taken up immediately
<i>Research and knowledge management</i>	National Centre for research, knowledge management and training on disaster and climate change	Limited activity	Scope to be extended immediately
	Climate change modeling and their impacts	Limited human and institutional capacity exists	Training to be arranged for imparting skill

Theme	Program	Benchmark	Target
	Preparatory studies for adaptation against SLR	Capacity exists; limited experience of adaptation	To be initiated and continued
	Research on the climate change adaptation for knowledge and technology generation	Capacity exists, some technologies are in use	To be expanded the scope and ongoing effort
<i>Low carbon development</i>	Renewable energy development	Limited experience	To be expanded
	Management of urban waste	Limited experience	To be taken up immediately
	Aforestation and reforestation	Some experience	To be taken up immediately
	Rapid expansion of energy saving devices	Some experience	To be taken up immediately
	Improving energy efficiency in transport sector	Limited experience	To be introduced in phases
<i>Capacity building</i>	Revision of sectoral policies for climate resilience	-	Immediate need
	Mainstreaming CC in national, sectoral and spatial development programs and policies	-	Immediate need BCCSAP to be part of National Plan
	Strengthening human resource capacity	Limited capacity	To be started
	Gender considerations in CC	-	To be started
	Strengthening institutional capacity	Limited capacity	To be started
	Mainstreaming CC in media	Limited experience	To be started

The Bangladesh Climate Change Strategy and Action Plan was originally developed through a participatory process involving all relevant ministries and agencies, civil society, research organizations, the academia and the business community. Programs funded under the Action Plan will be implemented by the line ministries and agencies, with participation, as appropriate, of other stakeholder groups, including civil society, professional and research bodies and the private sector.

While adaptation and mitigation are the main tasks, finance and technology are the means to achieve them. The two areas have therefore attracted much attention during the climate change negotiations from the beginning. The broad principles are clear. First, the present day climate change is the result mainly of historical GHG emission by Western and other industrialized countries. The finance for adaptation and mitigation therefore has to come mainly from these countries which does not preclude national action by the affected countries on their own. How the funding may be generated is a matter of international negotiation. However, Bangladesh wishes that it be under a new financial architecture in which LDCs, G-77, China and other groups will have voice in generating, allocating and disbursements of the funds.

All funds for adaptation has to be on a purely grant basis as the need for adaptation arise because of climate change due to the historical emission of GHGs by the industrialized countries Mitigation depends mainly on energy production, distribution and consumption technology. Often the most efficient technologies are expensive. Bangladesh wishes to do her bit, however small, in the global effort to minimize GHGs emission by adopting such energy-efficient technology. However, unless the additional costs of adopting efficient technology is not paid for through the international financial mechanism, Bangladesh will not be able to

adopt them. Like adaptation, this part of the additional cost of procuring efficient technology should be financed on a grant basis.

The Government has established a National Climate Change Fund. The Government desires that all development partners who so wish will contribute to this fund. Exactly what would be the operational modality may be worked out by the government and the particular development partner. But the cardinal principle of the operation of the fund shall be that it will be used solely to finance activities under the Action plan. Secondly, this contribution will not be a substitute for other normal funding for development by the development partners.

DISASTER MANAGEMENT

Bangladesh, because of its geo-physical location, topography and high population density is at risk of recurring natural and human induced hazards with an average 10 million people affected every year. Frequent floods, cyclones, river bank erosion, water-logging, drought and tornadoes significantly disrupt Bangladesh's economy and the lives and livelihoods of its population. Bangladesh is in the top of the list of 10 most disaster affected countries. During 1990-2008 the country incurred annual loss of US\$2,189 million (1.8% of annual GDP) from disasters. Climate change is adding a new dimension to the current risk environment with global predications suggesting that the country could expect more intense cyclones, storm surge and flooding (disaster)-and that a rise in sea levels could have a significant impact on the lives and livelihoods of up to 30 million people.

About 75% of all disasters are originated by weather-climate extremes and because of global warming and climate change Bangladesh had already experienced some significant impacts especially in terms of coastal inundation and erosion, saline intrusion, deforestation, loss of bio-diversity and agriculture, and large scale migration. It is estimated that about 830,000 million hectares of arable land is affected by varying degrees of soil salinity. During the period 1973-1987 about 2.18 million tons of rice was damaged due to drought and 2.38 million tons due to flood. Drought affects annually about 2.32 million hectares and 1.2 million hectares of cropped land during the Kharif (November to June) and Rabi (July to October) seasons respectively, while soil salinity, water logging and acidification affect 3.05 million hectares, 0.7 million hectares and 0.6 million hectare of crop land, respectively in the country.

In addition to crop losses, Bangladesh is experiencing other adverse impacts of global warming and climate change with summers becoming hotter, monsoon becoming irregular, untimely rainfall, heavy rainfall over short period causing water logging and landslides, very little rainfall in dry period, increased river flow and inundation during monsoon, increased frequency, intensity and recurrence of floods, crop damage due to flash floods and monsoon floods, crop failure due to drought, prolonged cold spell, salinity intrusion along the coast leading to scarcity of potable water and redundancy of prevailing crop practices, coastal erosion, riverbank erosion, deaths due to extreme heat and extreme cold, increasing mortality, morbidity, prevalence and outbreak of dengue, malaria, cholera and diarrhea. All of these

impacts either independently or collectively are adding significant stress to our physical and environmental resources, our human ability, and economic activities.

Bangladesh Disaster Management Mission, Vision and Objectives

The Disaster Management Vision of the Government of Bangladesh is to reduce the risk of people, especially the poor and the disadvantaged, from the effects of natural, environmental and human induced hazards, to a manageable and acceptable humanitarian level, and to have in place an efficient emergency response system capable of handling large scale disasters.

The Mission is to bring a paradigm shift in disaster management from conventional response and relief practice to a more comprehensive risk reduction culture

The overall objectives are to reduce the underlying risks and to promote the climate change adaptation by

- integrating disaster risk reduction and climate change adaptation approaches in all ongoing and future development plans, programs and policies
- Enhancing professional skills and knowledge of key personnel on disaster and climate change risk reduction, preparedness, warning and forecasting system, and post-disaster activities
- Strengthening mechanisms to build disaster and climate change risk reduction capacities for the Community and Institutions at all levels
- Community based Programming for risk disaster and climate change risk reduction
- Promoting livelihood strategies and options for the most vulnerable that incorporate disaster and climate change risk reduction practices
- Strengthening capacities for disaster and climate change risk assessment for flood, cyclone, drought, river bank erosion, pest attacks, earthquake, epidemics, etc. to establish and strengthen the systems and procedures for effective response management through
- Creating a legal and institutional framework for effective response management
- Strengthening national capacity for response management with emphasis on preparedness and support to disaster management committees at district, upazila and union levels
- Improving the early warning and community alerting system
- Strengthening search and rescue capabilities of relevant agencies

- Introducing an effective response management coordination mechanism including a relief management logistic system to handle different levels of emergency response
- Establishing an electronic based information management system

Guiding Principles for Disaster Management

Disaster management is the responsibility of all sectors, all organizations and all agencies that may be potentially affected by a disaster. The key disaster management principles the country has adopted are as follows:

1. Disasters can either be natural, human induced or even arising out of technological causes. The DM policy is to provide guidance, plan and prepare for all types of hazards and disasters.
2. Disaster Management in Bangladesh is guided by a number of national and international drivers which among others includes Standing Orders on Disasters first introduced in 1997, Millennium Declaration of September 2000 to protecting the vulnerable from the consequences of natural disasters, Hyogo Framework for Action (HFA) 2005-2015, and SAARC Framework for Action (SFA) 2006-2015.
3. Disaster risk reduction should be an integral element of every national and sectoral policy at all levels to sub-serve the overall goal relating to economic and social development. Hence, policies on sustainable development should seek to reduce possible losses from disasters, as a matter of priority.
4. Risk is dynamic and always changing. Hence both scientific and community analysis is essential for defining and redefining risks. Risk analysis must be comprehensive and follow all hazards, all sectors and all risk approach. Need to consider both existing and future risks including climate change impacts analysis.
5. Disaster management activities in Bangladesh will be designed around a DM Model comprising of 2 elements namely Risk Reduction and Emergency Response Management
6. Effective response must be designed utilizing risk information and revised through lessons learned
7. Mainstreaming risk reduction efforts within government, NGOs and private sector is viewed as being the key to achieving sustainable all hazards risk reduction interventions across the whole country.
8. Disaster Management in Bangladesh will be enriched through applied research and knowledge management. Hence efforts will be made to strengthen research capability and institutionalize knowledge management across academia.

9. Women, children, elderly, the disable and other socially marginalized groups will be primary beneficiaries of all disaster management efforts.

The past achievements

Bangladesh recognizes that disaster management which includes both risk reduction and response management is the responsibility of all sectors, all organizations and all agencies. Therefore, mainstreaming risk reduction efforts within government, NGOs and private sector is viewed as being the key to achieving sustainability in all hazards risk, reduction interventions across the whole country.

Paradigm Shift: Response to Risk Reduction

During 2004-2009 Ministry of Food and Disaster Management had implemented the Comprehensive Disaster Management Program (CDMP) to make a paradigm shift in disaster management from a response and relief focus to a broader and more encompassing risk management framework. The Program was implemented through a range of strategic, technical and implementation partnership arrangements with more than 100 regional, national and local organizations. Followed an all hazard, all risk and all sector approach, the Program was designed around the following strategic focus areas:

1. Professionalizing the disaster management system;
2. Mainstreaming disaster risk management within development and investment planning processes;
3. Strengthening community institutional support systems;
4. Expanding mitigation and preparedness to a wider range of hazards and geographical areas; and
5. Operationalizing response management systems.

Policy, Planning and Strategic Framework

Government has created the required policy and legislative frameworks in order for laying the foundations for institutionalizing comprehensive disaster management approach within and among its institutional partners. The Standing Orders on Disasters (SOD) was revised and the National Plan for Disaster Management 2010-2015 (NPDM) was introduced. Last April 2010 the National Disaster Management Council approved the Revised SOD and NPDM which will guide Government sectoral ministries and departments, NGOs, civil society organizations and public representatives to carry out disaster risk reduction and climate change adaptation functions. Disaster management has become an integral part of the educational curricula at primary, secondary and tertiary levels as well as major training courses of all public training institutions. The Executive Committee of the National Economic Council (ECNEC) on 8th October 2007 meeting approved the decision to include information on “lessons learnt from the previous project” as well as “Risk Identification and Risk Mitigation” in all Development

Project Proposal (DPP) and Working Paper for the ECNEC as the first milestone achieved to ensure the integration of risk management in the development activities.

Bangladesh has also achieved a number of other milestones. The country has established a planning and strategic framework with the following seven strategic goals which were set as the basis of action matrix under the NPDM:

- Professionalizing the disaster management system
- Mainstreaming disaster risk reduction and climate change adaptation
- Strengthening institutional mechanisms
- Empowering at risk communities
- Expanding risk reduction programming across all hazards and all sectors
- Strengthening emergency response systems
- Developing and strengthening regional and global networks.

The country builds the risk reduction, preparedness and emergency management capacities based on the people's indigenous knowledge, experiences and the capacity to cope with disasters.

Comprehensive Program Adopted

To further reduce country's vulnerability the Disaster Management and Relief Division launched the CDMP Phase II (2010-2014) with donor fund to be directly implemented by 16 departments of 12 ministries. The program is planned to achieve the following 6 outcome:

- Development of strong, well-managed and professional institutions in Bangladesh able to implement a comprehensive range of risk reduction programs and interventions at the national level, as well as contributing to regional actions and international learning and best practice.
- Reduced risk to rural populations through structural and non-structural interventions, empowerment of rural communities and improved awareness of, and planning for, natural hazard events, including the likely impacts of climate change
- Reduced risk to urban populations through structural and non-structural interventions, improved awareness of natural hazard events and the piloting of urban community risk reduction methodologies that target the extreme poor
- Improved overall effectiveness and timeliness of disaster preparedness and response in Bangladesh by strengthening early warning systems, national management capacity and coordination facilities at all levels.

- Improved disaster-proofing of development programming, and to enhance technical capacity and positive long-term changes in planning and investment decisions in targeted ministries.
- Improved management of community-level adaptation to disaster risks from a changing climate.

Disaster Management Strategy in the SFYP

The SFYP will carry forward the implementation of the approved National Disaster Management Plan 2010-2015. It will continue the comprehensive all hazard, all risk and all sector approach and be built on the foundations laid in the last several years and learn from the positive experiences. The Bangladesh Disaster Management Model which made the basis for revising the disaster management policy and planning documents has mainly comprised of two inter-related elements: Disaster Risk Reduction and Emergency Response. The plan will focus more on Disaster Risk Reduction (DRR) in order for reducing the relief and recovery needs and also be prepared to deal with any emergencies.

The government accords the focus on community level preparedness, response, recovery and rehabilitation emphasizing the following three broad-based strategies:

1. Disaster management would involve the management of both risk and consequences of disasters that would include prevention, emergency response, and post disaster recovery.
2. Community involvement for preparedness programs to protect lives and properties would be a major focus. Involvement of local government bodies would be an essential part of the strategy. Self-reliance should be the key for preparedness, response, and recovery.
3. Non-structural mitigation measures such as community disaster preparedness training, advocacy, and public awareness must be given a high priority; this would require an integration of structural mitigation with non-structural measures.

The priorities on DRR during the SFYP will broadly include:

- Professionalizing the Disaster Management systems and institutions through execution of the Disaster Management Regulatory Framework already established.
- Strengthening the Disaster Management Bureau's capacity to monitor and take part in cross-government mainstreaming of disaster risk reduction through pre, during and post disaster assessment.
- Strengthening institutional capacity of government sectoral ministries, departments and other technical and academic actors in ensuring inclusion of DRR and Climate Change Adaptation (CCA) issues and agendas within their respective sectoral policies, plans, programs and allocations of businesses.

- Empowering at risk communities to withstand and cope up with the disastrous situations through community and household level risk reduction interventions and livelihood support services.
- Reducing vulnerabilities of at risk communities through social safety nets – ensuring protection of women, children, the aged and differently able people giving due attention to their special needs.
- Preparedness for Earthquake and Tsunami risks through
 - vulnerability and risks assessments and mapping,
 - hazard land zoning,
 - Land use planning
 - contingency planning,
 - strengthening search and rescue capacity of fast responding institutions and
 - mass public awareness
- Building Knowledge on DRR and CCA through
 - piloting and adaptation research
 - Establishing an Integrated Approach to disaster management including Climate Change and climate variability impacts
 - Developing climate change scenarios and accordingly anticipated hazard risks following climate change
 - Updating hazard maps such as flood, cyclone, drought, earthquake and tsunami
- Strengthening national capability to reduce the risks of Chemical, technological and biological hazards; Infrastructure collapse; Fire; Road accidents; Launch capsized and Landslide.
- Strengthening national capacity for erosion prediction and monitoring.
- Developing and establishing policy and planning frameworks to incorporate all hazard (including anticipated risks of climate change) risk reduction perspectives into sectoral policies and development plans, such as: Agriculture, livestock and fishery; Industry; Education (primary, secondary and Madrasa); Rural and urban housing; Construction of roads, bridges and culvert; Water transportation; Health; Water resources; Power, energy and mineral resources; Environment and forestry; Science and Technology; Telecommunication; Water Supply and Sanitation and Food Security.
- Establishing public - private partnerships for disaster risk reduction.
- Supporting regional and global risk reduction initiatives and ensure representation that is consistent with the government integrated all sector risk reduction approach at all levels.

The Emergency Response Priorities during the SFYP will broadly include:

- Strengthening and improving an all Hazard Early Warning Systems through technical, technological and physical capacity strengthening of Bangladesh Meteorological Department and Flood Forecasting and Warning Center.
- Establishing and strengthening regional networks for real time data/information sharing.
- Establishing an effective Community Alerting System through capacity strengthening of Cyclone Preparedness Program and Disaster Management Committees (DMC) at District, Upazila and Union levels.
- Introducing Contingency Planning and Disaster Preparedness across all sectors and at all levels.
- Establishing and improving Search and Rescue Mechanism by: (i) preparing a potential search and rescue scenario; (ii) strengthening Search and Rescue capability of first responding institutions by providing training and equipments support; (iii) establishing an all hazard volunteer groups for Search and Rescue operations; (iv) establishing an effective command and control system and, (v) construction and maintenance of sufficient multi-purpose disaster shelters.
- Strengthening GO-NGO and private sector co-ordinations on relief and emergency management.
- Developing and establishing a well coordinated multi-sectoral post-disaster recovery and reconstruction mechanism.
- Establishing and operational a National Disaster Management Information Centre connected with all the 64 Districts and high-risk Upazila DMCs to: (i) archive and share disaster risk reduction information; (ii) to produce and share policy briefs; (iii) to receive and disseminate early warning information; and (iv) to receive and disseminate information on emergency need assessments and management.
- Ensuring protection and support to the most vulnerable, especially women and children

The Post-Disaster Recovery Priorities during the SFYP will broadly include:

- Incorporating early recovery into the disaster response mechanism
- Developing mechanisms for damage and losses assessment to be the basis for recovery planning
- Developing and establishing post disaster recovery and reconstruction mechanisms
- Incorporating disaster and climate change risk reduction measures into post-disaster recovery and rehabilitation processes and use opportunities during this phase to address the underlying factors of the disaster and climate change risks

- Linking post disaster recovery efforts with the development plans and programs

Strengthening institutional capacity: Various government and non-government organizations are working in the field of disaster management and mitigation. A key effort in the SFYP will be to strengthen the inter-ministerial coordination as well as coordination with the NGOs.

As per the revised SOD and NDMP the Disaster Management and Relief Division, Ministry of Food and Disaster Management is the focal agency for disaster risk reduction and emergency management. The focal point for disaster management is the Ministry of Food and Disaster Management and the Disaster Management Bureau under the Ministry. The Bangladesh Meteorological Department (BMD) is responsible for forecasting natural disasters, particularly cyclones, droughts, storms etc. The Bangladesh Space Research and Remote Sensing Organization (SPARRSO) is responsible for providing satellite images while the Flood Forecasting and Warning Centre (FFWC) of Bangladesh Water Development Board is entrusted with the responsibility of forecasting flood. A number of institutions and Bureaus under different ministries such as the National Disaster Management Council headed by the Prime Minister, the Directorate of Relief and Rehabilitation, the Directorate General of Food, Department of Public Health Engineering, The Local Government Engineering Department, Water Resources Planning Organization (WARPO) and Armed Forces Division are involved in disaster management. Given these multitude of governmental organizations, better coordination will increase the effectiveness of the response as well as cut inefficiencies and wastage.

Challenges for the SFYP

Throughout the SFYP the following challenges will likely to persist and post hindrance to the attainment of the goals set therein:

1. *Lack of policy coherence*: The risk governance is, by and large, a byproduct of the overall governance of the country. The fragmented policy framework and weak local capacity will likely to continue for the next couple of years. In the intervening time, the disaster and climate change risk reduction will also subjected to the sectoral fragmentation in spite of the presence of the National Plan on Disaster Management and the Standing Orders on Disaster Management. A set of policies at the higher hierarchy, i.e. the Disaster Management Policy and Disaster Management Act formulation would be of primary requirement.
2. *Trans-boundary nature of disaster hazards and climate change*: Natural elements such as water, land, and air are transboundary. And thus any measures to address them would also have to take into consideration the transboundary solutions. This will likely to involve the combined and coordinated through at least the scientific and technology front, community of practice front, regional and international diplomacy fronts.

3. *Policy – reality gap*: The discrepancy between the norms and principles articulated in the disaster and climate change risk reduction policy framework and the actual implementation will remain formidable. The pervasive cross-cutting nature of disaster and climate change subject matter making it difficult to produce results, to extract compliance, and to impose accountability to actors and authorities.
4. *Risk reduction – relief – recovery gap*: The fragmentation of disaster management with overbearing priorities to relief has been ameliorated with the paradigm shift towards risk reduction. There is, notwithstanding, the remaining gap between relief and recovery. The disconnect between disaster relief and recovery poses the danger that reconstruction efforts will not be fortified with the required additional risk reduction investments. As result government and communities will continue to rebuilding risks instead of reducing them.
6. *Risk accounting and public investment*: Disaster and climate change risks are still at the normative level with elusive quantification. This making it impossible to estimate the value of the disaster and climate change risks, the required investment, the losses from adverse events, and the requirement for recovery and re-development. Without the discipline risk accounting it is also difficult to determine the baseline, benchmark and accomplishment of objectives.
7. *Mainstreaming disaster risk reduction and climate change adaptation across hazards and sectors*: to contribute to meaningful poverty reduction efforts the revised SOD refers to formulate a range of sectoral DRR and CCA mainstreaming guidelines the development of which would take at least 2-3 years.

DEVELOPMENT RESOURCE ALLOCATION FOR ENVIRONMENT, CLIMATE CHANGE AND DISASTER MANAGEMENT IN THE SFYP

In light of the long-run consequences of environmental degradation to the country’s ecosystem and citizen’s welfare, the Government has set a number of goals to attain a sustainable environment and to address the fallout of climate change. Substantial resources will be needed to achieve these targets. The resource mobilization strategy includes collaboration with private sector, mobilization of international funding, especially to manage climate change issues, and allocation of own resources. Indicative allocations of development resources to carry out the strategies and programs for environment, climate change and disaster management over the Sixth Plan period is shown in current and constant prices in Table 10.2 and Table10.3. These indicative allocations will be reviewed on an annual basis in light of actual resource availability, progress with implementation and changing government priorities in light of global and national developments.

Table 10.2: Development Resource Allocation for Environment and Disaster Management in the Sixth Plan
(Taka Crore; current price)

Ministry/Sector	FY2011	FY2012	FY2013	FY2014	FY2015
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Ministry of Environment & Forest	243	259	185	220	252
Ministry of Land	115	125	154	196	243
Disaster Management & Relief Division	1310	1780	2041	2427	2772
Total	1667	2164	2381	2844	3267

Table 10.3: Development Resource Allocation for Environment and Disaster Management in the Sixth Plan

(Taka Crore; FY2011 price)

Ministry/Sector	FY2011	FY2012	FY2013	FY2014	FY2015
Ministry of Environment & Forest	243	241	161	180	194
Ministry of Land	115	117	134	160	187
Disaster Management & Relief Division	1310	1656	1775	1981	2135
Total	1667	2013	2070	2322	2516