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Technical Annex to Chapter 2

Full List of Support Measures for Least Developed Countries

I. General Support related International Support Measures

1. WIPO LDC country profiles;
2. LDC Parties to the UN Convention against Corruption;
3. Travel support to attend UN General Assembly meetings;
4. UNITAR Fellowships for Multilateral Diplomacy Programme;
5. Travel Support from Framework Convention on Tobacco control;
6. Convention on Biological Diversity (CBD);
7. WIP Patent Cooperation Treaty (PCT);
8. UN support for smooth transition strategy of graduating LDCs;
9. Financial arrangements under the Common Fund for Commodities;
10. LDC contributions to the regular budget and peacekeeping operations;
11. OWSD fellowship for female students from LDCs;
12. AAEA Travel Grants for Economists to Attend Annual Meetings;
13. ESMT Kofi Annan Fellowship;
14. Convention on Biological Diversity (CBD), Cartagena Protocol;
15. IUGA-Funded Research Opportunities for LDCs;
16. Convention on Biological Diversity (CBD), Nagoya Protocol;
17. AUTM Developing Economies Scholarship;
18. The IPCC Scholarship Programme;
19. United Nations International Law Fellowship Programme;
20. UNESCO/Republic of Korea Co-Sponsored Fellowships Programme;
21. Scholarships, Travel Grants and Research-related financial support;
22. Travel Support from UN Convention against Corruption;
23. Stockholm Convention on Persistent Organic Pollutants (POPs);
24. Montreal Protocol on Substances that Deplete the Ozone Layer to the Vienna Convention for the Protection of the Ozone Layer;
25. UNESCO/Israel Co-sponsored Fellowships Programme;
26. ITU Fellowships to attend TDAG meetings;
27. UNESCO/Japan Young Researchers' Fellowship Programme;
28. World Meteorological Organization (WMO) Programme for LDCs;
29. IELPO Scholarship Programme;
30. International Criminal Court (ICC);

31. United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea;
32. Travel support for official representatives of LDCs;
33. Travel support from UN Office of the High Representative for the LDCs, LLDCs and SIDS (UN-OHRLLS);
34. The World Academy of Sciences (TWAS) Research Professors;
35. HHL Leipzig Graduate School of Management offering full scholarships for students;
36. Berkeley Law School LDC Scholarship;
37. FIRST LDC Fellowship for IT professionals;
38. Caps and discounts on the contribution of LDCs to the United Nations system budgets;

II. Development Assistance-related International Support Measures

39. Untying aid;
40. United Nations Development Programme (UNDP);
41. Bilateral ODA;
42. Least Developed Countries Fund (LDCF);
43. UN Convention on the Law of the Sea;
44. FMO LDC Infrastructure Fund;
45. Grants and concessional loans from Germany;
46. Special ODA terms for LDCs: the average grant element;
47. GCCA Programmes on Climate Change;
48. Japanese Concessional ODA Loans;
49. UN Capital Development Fund (UNCDF);
50. Korean Concessional ODA Loans;
51. United Nations Population Fund (UNFPA);
52. Resource allocation by multilateral organizations for LDCs;

III. Trade related International Support Measures

53. The Food Aid Convention;
54. Agreement on Agriculture: Exemption from reduction commitments (Article 15.2);
55. Marrakesh Decision on Measures Concerning the Possible Negative Effects of the Reform programme on LDCs and NFIDCs;
56. LDCs and Net-food Importing Developing Countries;
57. Technical Assistance by WTO: Provisions for LDCs;
58. Provisions for LDCs in the Agreement on Subsidies & Countervailing Measures;
59. GATS: Technical Cooperation in Telecommunications with Developed Countries (6.d);
60. Agreement on Import Licensing: Allocation of non-automatic import licenses to traders in LDCs;

61. ASCM: Transitional period after reaching “export competitiveness” (Art. 27.5);
62. ASCM: Exemption from prohibition of export subsidies for Annex VII countries (Art. 27.2a);
63. Agreement on Agriculture: Provisions for LDCs;
64. SPS Agreement: The Application of Sanitary & PhytoSanitary Measures;
65. Preferential Market Access: Turkey GSP;
66. Preferential Market Access- Switzerland GSP;
67. Preferential Market Access- Japan GSP
68. South Asian Free Trade Area;
69. Asia Pacific Trade Agreement;
70. Global System of Trade Preferences among Developing Countries;
71. Preferential Market Access: Iceland GSP;
72. Preferential Market Access: Morocco’s preferential treatment for LDCs;
73. Preferential Market Access: China’s DFQF Scheme for LDC Products;
74. TPRM: Technical Assistance by WTO Secretariat (Section D);
75. TBT Agreement: Time-limited Exemptions from the Obligations of the TBT Agreement (Article 12.8);
76. TBT Agreement: Provisions for LDCs in the Agreement on Technical Barriers to Trade;
77. SPS Agreement: Equivalence (Article 4);
78. Provisions for LDCs in the Understanding on the Balance-of-Payments Provisions of the General Agreement on Tariffs & Trade;
79. Provisions for LDCs in the Trade Policy Review Mechanism;
80. Provisions for LDCs in the Dispute Settlement Understanding (DSU);
81. GATS: Increasing LDC participation through negotiated specific commitments (Art. IV:1);
82. Accession to WTO;
83. Preferential Market Access – Chile;
84. Provisions for LDCs in the General Agreement on Trade in Services (GATS);
85. TRIPS Agreement: Transitional period for implementing the Agreement (Article 66.1);
86. SPS Agreement: Technical Assistance by WTO Members (Art. 9);
87. TRIPS Agreement: Transitional period for pharmaceutical products;
88. SPS Agreement: Support from Standards and Trade Development Facility (STDF);
89. SPS Agreement: Participation in International Standard Setting Organizations (Article 10.4);
90. SPS Agreement: Technical Assistance by WTO Secretariat (Art. 9);
91. TBT Agreement: Participation in International Standard Setting (Article 11.2);

92. TRIMS Agreement: New notification period (Annex F of Hong Kong Ministerial Declaration);
93. TRIMS Agreement: Provisions for LDCs in the Agreement on Trade Related Investment Measures;
94. TRIMS Agreement: Transitional Period for new TRIMS-inconsistent Measures (Annex F of Hong Kong Ministerial Declaration);
95. TRIMS Agreement: Transitional Period for Notified TRIMS-Inconsistent Measures (Article 5 & WT/L/64);
96. TRIPS Agreement: Technical cooperation to implement the TRIPS Agreement (Art. 67);
97. TRIPS Agreement: Technology transfer (Art. 66.2);
98. SPS Agreement: Recognition of LDCs Interests when preparing or applying SPS measures (Art. 10.1);
99. Customs Valuation Agreement: Transitional Period & Extension (Article 20.1 and Annex III: 1);
100. DSU: Due restraint in disputes involving LDCs (Article 24.1);
101. Common Fund for Commodities (CFC);
102. International Tropical Timber Organization (ITTO);
103. Agreement on Agriculture: Fewer notification obligations in domestic support (G/AG/2);
104. Agreement on Agriculture: Recognition of interests in negotiations (Article 20 & the Preamble);
105. Customs Valuation Agreement: Delayed Application of the Computed Value Method (Article 20.2);
106. Customs Valuation Agreement: Reservation Concerning Application of Article 5.2 Whether or Not the Importer So Requests;
107. GATS: Technical assistance by WTO Members;
108. GATS: Technical assistance by WTO Secretariat (Article XXV.2);
109. TBT Agreement: Technical Assistance in Preparing Technical Regulations (Articles 11. & 12.7);
110. Customs Valuation Agreement: Provisions for LDCs;
111. Customs Valuation Agreement: Reservation Concerning Sequential Order of Articles 5 & 6 (Annex III: 3);
112. DSU: Assistance from the WTO Director-General or Chairman of the DSB (Article 24.2);
113. DSU: Technical assistance by WTO Secretariat (Article 27.2);
114. GATS: Establishment of Contact Points (Article IV.2);
115. TRIPS Agreement: Paragraph 6 system;
116. Preferential Market Access – European Union Everything but Arms Initiative;
117. Enhanced Integrated Framework;

118. Standards and Trade Development Facility;
119. Preferential Market Access: New Zealand GSP;
120. Preferential Market Access – Norway GSP;
121. Preferential treatment to services and services suppliers;
122. Preferential Market Access: Thailand GSP;
123. Preferential Market Access: India’s Duty-Free Tariff Preference Scheme for LDCs;
124. Preferential Market Access: Russian Federation, Kazakhstan and Belarus (Eurasian Customs Union);
125. Preferential Market Access- Australia GSP;
126. Preferential Market Access – Canada GSP;
127. Preferential Market Access – US GSP;
128. Preferential Market Access- Republic of Korea;
129. Provisions for LDCs in the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement);
130. Preferential treatment to merchandise exports;
131. Advisory Centre on WTO Law (ACWL);
132. Trade Facilitation Agreement, Special and Differential Treatment for LDCs;
133. Pacific Agreement on Closer Economic Relations (PACER Plus) – delayed tariff reductions for LDCs;

Source: Support Measures Portal for Least Developed Countries. <https://www.un.org/ldcportal/>

Technical Annex to Chapter 4

Table 5.A: LDC-specific Special and Differential Treatments (S&DT) by the WTO

Agreement/Decision Understanding on the Balance-of-Payments Provisions of General Agreement on Tariffs and Trade (GATT)	Support measure
Agreement on Agriculture	<p>Simplified procedures when invoking trade restrictions for balance-of-payment reasons (paragraph 8)</p> <p>LDCs and net food importing developing countries may provide certain export subsidies until the end of 2030 (article 9.4, most recent extension in G/AG/5/Rev.10)</p> <p>Longer repayment periods for export financing support (WT/MIN (15)/45-WT/L/980)</p> <p>Less frequent notifications to WTO regarding domestic support (G/AG/2)</p>
Sanitary and Phytosanitary (SPS) Measures	<p>Priority for technical assistance (article 9.1). The Standards and Trade Development Facility (STDF) has a target of dedicating at least 40% of total project financing allocated to LDCs or Other Low-Income Countries (STDF Operational Rules)</p> <p>Lower co-financing requirement for technical assistance. Beneficiaries from LDCs and OLICs contribute at least 10% of the requested STDF contribution to a project, as opposed to 20% for lower-middle-income countries and 60% for upper-middle-income countries (STDF Operational Rules)</p>
Agreement on Subsidies and Countervailing Measures	<p>LDCs (and other countries with GNI per capita below \$1,000 in constant 1990 dollars) are exempted from the prohibition of export subsidies (article 27.2 and Annex VII of the Agreement and paragraph 10.1 of the Doha Ministerial Decision on Implementation-Related Issues and Concerns (WT/MIN (01)/17))</p>
Trade Facilitation Agreement (TFA)	<p>Longer notification time frames: until 22 February 2020 for category B measures; until 22 February 2021 for indicative dates and definitive dates; by 22 August 2022 for category C measures (articles 15 and 16)</p> <p>Longer deadlines under the early warning mechanism, in case an LDC has difficulties in implementing categories B and C measures (article 17)</p> <p>Longer time frame (4 years rather than 18 months) for new implementation dates for measures shifted from category B to category C before approval from the Trade Facilitation Committee is required (article 19)</p> <p>Longer grace period from dispute settlement (until 22 February 2023 for category A measures, and 8 years from the date of implementation of category B or C measures (article 20)</p>

Trade-Related Aspects of Intellectual Property Rights (TRIPS)	<p>Exemption from applying all substantive TRIPS standards until 2021 (article 66.1, latest extension IP/C/64)</p> <p>Exemption from providing protection for pharmaceutical patents, from providing the possibility of filing mailbox applications and from granting exclusive marketing rights until 2033 (IP/C/73 and WT/L/971)</p> <p>Waiver from notification requirements for issuing compulsory licenses for exports of pharmaceutical products to LDCs or other countries with insufficient manufacturing capacities in the pharmaceutical sector (article 31 bis)</p>
Dispute Settlement Understanding (DSU)	<p>Article 24 of the DSU refers to “special procedures involving LDCs”. WTO Members are to “exercise due restraint both in raising matters involving LDCs and in asking for compensation or seeking authorization to suspend concessions or other obligations if nullification or impairment is found to result from a measure taken by an LDC” (24.1). LDCs can request the Director-General of the WTO or the Chairman of the Dispute Settlement Body to provide their good offices, conciliation and mediation services for settling disputes (24.2).</p> <p>Related: the Advisory Center on WTO Law (ACWL) provides Legal advice, support during WTO dispute settlement and training. LDCs have access to these services whether they have joined as members.</p>
Trade Policy Review Mechanism	<p>LDCs may have a longer period between trade policy reviews than other countries</p>

Source: WTO

Technical Annex to Chapter 6

Table A 6.1 List of products with Top Protective Rates, FY 2018-19, sorted by NPR*

Category	Commercial Description	Tariff Rate in percentage, FY 2018-19		Foreign Trade in million US Dollar, FY 2017-18	
		TTI	NPR	Export	Import
CAP/FCG	Air-cooler & Air-conditioning machine	216.47	156.00	0.0086	2.8173
FCG	Confectionery items, Biscuits	130.81	113.44	63.6147	1.5222
FCG	Electric Lights and lamps	130.81	113.44		0.0976
FCG	Footwear- Rubber/plastic strap thongs	130.81	113.44	0.3034	0.4444
FCG	Plastic household articles, like tableware & kitchenware	130.81	113.44	19.7138	3.4547
FCG	Ceramic sanitary items	154.17	104.80	0.0016	4.5068
FCG	Ceramic tableware & kitchenware	154.17	104.80	33.5095	0.7471
FCG	Ornamental ceramic products	154.17	104.80	0.1618	0.5229
INT	Building stone- Tiles, cubes etc.	154.17	104.80	1.0694	7.3292
INT	Cigarette paper	216.47	104.80	0.0222	8.9295
FCG	Cosmetics- Hair dying/ colour	154.17	86.18	0.0581	6.4990
FCG	Electric fans	130.81	85.60	0.1002	15.0195
FCG	Lamps- Discharge lamps	130.81	85.60		0.4391
FCG	Chocolate	130.81	85.60	2.8136	10.7620
FCG	Confectionery items	130.81	85.60	6.8952	0.2548
FCG	Cosmetics- Beauty/make-up/ Skincare	130.81	85.60	0.0434	18.1080
FCG	Electric lights and lamps	130.81	85.60	0.4339	19.6548
FCG	Footwear-Leather and non-leather (6403)	130.81	85.60	774.4127	21.0833
FCG	Glass & glassware- Sheets, Table and kitchen	130.81	85.60	0.0051	9.1354
FCG	Potato Chips	130.81	85.60	2.3476	2.5602

Category	Commercial Description	Tariff Rate in percentage, FY 2018-19		Foreign Trade in million US Dollar, FY 2017-18	
		TTI	NPR	Export	Import
FCG	RMG- Knitwear and Woven wear	130.81	85.60	30,313.9557	802.2522
FCG	Sanitary Towels (pads) and tampons	130.81	85.60	0.0475	7.9767
FCG	Seats	130.81	85.60	2.0160	4.1443
FCG	Sugar Confectionery, Chewing gum & chock lets	130.81	85.60		1.9309
FCG	Textile- Fabrics	130.81	85.60		1.3372
INT	Glass & glassware- Sheets, tableware & kitchenware	130.81	85.60	0.1476	20.8663
INT	Plastic doors & windows	130.81	85.60	0.1384	0.0489
INT	Plastic packing materials	130.81	85.60	2.6411	26.7567
FCG	Shampoos	154.17	78.09	0.0467	6.0406
INT	Ceramic flags, paving & tiles	154.17	78.09		58.7317
INT	Plastic packaging materials	130.81	76.76	25.9342	14.4793
FCG	Carpets and floor coverings, jute and other textile materials	81.64	76.64	2.5138	3.8906
FCG	Pile fabrics- Other textile materials	81.64	76.64	0.4265	0.8925
FCG	Plastic household articles- Feeding bottles	91.88	76.64	0.2708	0.2019
FCG	Sanitary wear- Aluminum	91.88	76.64	0.0048	0.0193
FCG	Textile- Fabrics- Cotton	91.88	76.64	87.8247	3,980.9118
FCG	Cosmetics- Lips/ eye make-up etc.	130.81	68.73	0.0069	4.7709

Category	Commercial Description	Tariff Rate in percentage, FY 2018-19		Foreign Trade in million US Dollar, FY 2017-18	
		TTI	NPR	Export	Import
CAP	Mini bus and other public vehicles	107.45	66.40		34.5687
FCG	Confectionery items, Cereals	107.45	66.40	17.4247	8.8087
FCG	Matches- Fireworks & signals	107.45	66.40		0.3517
FCG	Other articles of plastic	107.45	66.40	0.1072	31.3930
FCG	Paper tissues	107.45	66.40	0.3951	2.4790
FCG	Perfumes	107.45	66.40	0.0007	1.8521
INT	Coconut oil	107.45	66.40	0.0279	1.0273
INT	Electric cables- Co-axial cable	107.45	66.40	0.0019	15.8403
INT	PVC Sheets- Printed	107.45	66.40		2.1409
INT	PVC Tubes & Pipes	107.45	66.40	0.1934	5.8053
FCG	Other ceramic sanitary items (excluding porcelain/china)	154.17	57.54	0.0016	4.5068
CAP/FCG	Batteries	91.88	53.60	39.9472	41.7114
CAP	Electric switches and holders	91.88	53.60	0.0005	13.3590
CAP	Engines- Three wheelers/ auto rickshaw	91.88	53.60		0.0408
CAP	Freezers & refrigerators	91.88	53.60	0.0009	46.9314
CAP	Lamps- Filament lamps	91.88	53.60		0.3543
CAP	Purifying machine	91.88	53.60	0.0028	10.9919
CAP	Recording tapes	91.88	53.60		0.0090
CAP	SIM card	91.88	53.60		0.0044
FCG	TV	91.88	53.60		1.3416
CAP	Transformers	91.88	53.60	0.2133	16.7313
FCG	Artificial flower	91.88	53.60	0.0104	1.2074
FCG	Bags, Trunks, suit-cases etc. of leather	91.88	53.60	234.4339	36.0157
FCG	Bicycles	91.88	53.60	85.6718	0.3370

Category	Commercial Description	Tariff Rate in percentage, FY 2018-19		Foreign Trade in million US Dollar, FY 2017-18	
		TTI	NPR	Export	Import
FCG	Carpets and floor coverings	91.88	53.60	14.4847	3.5137
FCG	Cereals	91.88	53.60	0.4504	41.0803
FCG	Children's Toys	91.88	53.60	32.1180	12.9227
FCG	Cooking appliances	91.88	53.60	0.1177	7.5883
FCG	Dentifrices	91.88	53.60	0.0005	7.7767
FCG	Food Preparation	91.88	53.60		5.2643
FCG	Footwear polishes	91.88	53.60		1.5053
FCG	Freezers & refrigerators	91.88	53.60	0.2874	60.9566
FCG	Furniture's	91.88	53.60	12.1915	18.7593
FCG	Glucose	91.88	53.60		1.7234
FCG	Home textile	91.88	53.60	541.9034	33.3208
FCG	Ice cream	91.88	53.60		0.2565
FCG	Imitation Jewelry	91.88	53.60	0.0051	7.5844
FCG	Matches	91.88	53.60		0.0001
FCG	Mattresses	91.88	53.60		0.0936
FCG	Motorcycles seats	91.88	53.60		0.5170
FCG	Office and school supplies	91.88	53.60	0.2617	3.9933
FCG	Ornaments of wood	91.88	53.60		0.4201
FCG	PVC sanitary goods	91.88	53.60	0.4352	4.3727
INT	Parts of Footwear	91.88	53.60	23.9202	86.6231
FCG	Parts of motorcycles and bicycles	91.88	53.60	0.9123	6.5710
FCG	Pile fabrics	91.88	53.60	48.2836	1,280.2851
FCG	Plastic floor coverings	91.88	53.60	0.6592	3.9454
FCG	Plastic shutters & blinds	91.88	53.60		0.2804
FCG	Preparations of vegetables, Jam & Jelly	91.88	53.60	0.6043	0.4828
FCG	RMG- Knitwear and Woven wear- Track suits	91.88	53.60	114.4458	0.3204
FCG	Razors	91.88	53.60	2.5663	8.5040

Category	Commercial Description	Tariff Rate in percentage, FY 2018-19		Foreign Trade in million US Dollar, FY 2017-18	
		TTI	NPR	Export	Import
FCG	Recording tapes	91.88	53.60		1.2702
FCG	Rubber floor coverings	91.88	53.60	0.0249	1.1540
FCG	Salt	91.88	53.60	0.0190	24.7964
FCG	Sanitary wear- Copper	91.88	53.60		0.0936
FCG	Sauces	91.88	53.60	0.5187	21.9322
FCG	Shavers	91.88	53.60		0.0370
FCG	Soap and toiletries	91.88	53.60	1.2008	15.4674
FCG	Sound Recording and reproducing apparatus	91.88	53.60		3.2028
FCG	Table, kitchen and sanitary wear	91.88	53.60	0.3913	10.9791
FCG	Textile- Fabrics	91.88	53.60	5.8402	1,699.6307
FCG	Tooth brushes	91.88	53.60	0.0766	1.8841
INT	Aluminum foil	91.88	53.60	0.0021	0.8888
INT	Cement	91.88	53.60	10.5255	2.3118
INT	Ceramic building materials	91.88	53.60	0.1409	2.6827
INT	Electric cables- Other	91.88	53.60	0.0003	15.8061
INT	Glass & glassware- Other	91.88	53.60	0.0004	14.1395
INT	Locks and parts	91.88	53.60	0.0756	17.4350
INT	Metallised yarn	91.88	53.60	0.0029	1.7849
INT	Mosquito coil	91.88	53.60		3.7846
INT	Motor vehicles tyres	91.88	53.60	0.0023	25.4970
INT	PVC Sheets- Other	91.88	53.60	0.6503	31.0599
INT	Paper and paperboard	91.88	53.60	1.4820	67.4247
INT	Petroleum Oil	88.88	53.60	2.5328	0.3346
INT	Plastic shutters & blinds	91.88	53.60	0.1852	0.8821
INT	Polychromic acids	91.88	53.60		0.9852
INT	Soap and toiletries	91.88	53.60	0.0967	31.5214
INT	Soap noodles	91.88	53.60		0.0001

Category	Commercial Description	Tariff Rate in percentage, FY 2018-19		Foreign Trade in million US Dollar, FY 2017-18	
		TTI	NPR	Export	Import
INT	Springs and leaves of iron	91.88	53.60	0.0055	6.4207
INT	Tubes and pipes	91.88	53.60	0.8619	122.5916

Note: Goods Category: INT=intermediate goods, CAP=capital goods, FCG- final consumer goods
Tariff Rates: TTI=Total Tariff Incidence, NPR= Nominal Protective Rate
(*): (excludes motor vehicle, cigarettes, alcoholic beverage and fire arms)

Technical Annex to Chapter 8

Annex 8.1: SAM Model Results

Table A8.1: Impacts on Real GDP by Broad Activities over the BAU (% change)

	Activity Classification	LES	MES	HES
1	Cereal Crop	-2.91	-5.83	-8.74
2	Commercial crop	-2.09	-4.17	-6.26
3	Livestock-poultry	-0.53	-1.06	-1.59
4	Fishing	-0.23	-0.46	-0.68
5	Forestry	-0.09	-0.19	-0.28
6	Other crop	-0.92	-1.83	-2.75
7	Mining	-0.02	-0.03	-0.05
8	Other Food	-0.19	-0.37	-0.56
9	Leather	-0.20	-0.40	-0.60
10	Textile-clothing	-0.89	-1.77	-2.66
11	Chemical-Fertilizer	-0.28	-0.57	-0.85
12	Machinery	-0.06	-0.11	-0.17
13	Petroleum	-0.15	-0.29	-0.44
14	Other industry	-0.14	-0.28	-0.43
15	Construction	-0.01	-0.02	-0.03
16	Utility	-0.60	-1.19	-1.79
17	Trade	-0.66	-1.33	-1.99
18	Hotel	-0.25	-0.50	-0.74
19	Transport	-0.78	-1.55	-2.33
20	Financial Service	-0.11	-0.21	-0.32
21	Public Administration	-0.03	-0.05	-0.08
22	Social Service	-0.15	-0.30	-0.45
23	Other Service	-0.66	-1.32	-1.98
	All	-0.44	-0.87	-1.31

Source: SAM Model

Table A8.2: Impacts on Factor Returns over the BAU (% change)

Factor Classification	LES	MES	HES
Labour Unskilled	-0.398	-0.795	-1.193
Labour Skilled	-0.396	-0.792	-1.188
Capital	-0.363	-0.727	-1.090
Land	-0.343	-0.687	-1.030

Source: SAM Model

Table A8.3: Impacts on Household Consumption over the BAU (% change)

Household Classification	LES	MES	HES
Small Farm	-0.313	-0.626	-0.940
Large Farm	-0.315	-0.631	-0.946
Non-Farm	-0.315	-0.629	-0.944
Low Education	-0.320	-0.640	-0.960
High Education	-0.337	-0.674	-1.011

Source: SAM Model

Annex 8.2: Description of the Dynamic CGE Model

Static Module of the DCGE Model

Production bloc

The equations of the production bloc are provided below. The description of the variables and parameters is provided below.

- (1) $XS_j = Min \left[\frac{CI_j}{i\alpha_j}, \frac{VA_j}{v_j} \right]$
- (2) $VA_j = A_j^{KL} \left[\alpha_i^{KL} LD_i^{-\rho_i^{KL}} + (1 - \alpha_i^{KL}) KD_i^{-\rho_i^{KL}} \right]^{-1/\rho_i^{KL}}$
- (3) $LD_i = A_i^{LL} \left[\alpha_i^{LL} QL_i^{-\rho_i^{LL}} + (1 - \alpha_i^{LL}) NQL_i^{-\rho_i^{LL}} \right]^{-1/\rho_i^{LL}}$
- (4) $CI_j = i\alpha_j XS_j$
- (5) $DI_{i,j} = \alpha_{ij} CI_j$
- (6) $LD_i = \left(\frac{\alpha_i^{KL}}{1 - \alpha_i^{KL}} \right)^{\sigma_i^{KL}} \left(\frac{r_i}{w_i} \right)^{\sigma_i^{KL}} KD_i$
- (7) $NQL_i = \left(\frac{\alpha_i^{LL}}{1 - \alpha_i^{LL}} \right)^{\sigma_i^{LL}} \left(\frac{wq}{wnq} \right)^{\sigma_i^{LL}} QL_i$

Income and demand bloc

The equations are provided below:

- (8) $P_{index} TH_{k,j} + P_{index} TWH_k + DIV_k$
- (9) $YH_k = \lambda_k^{WQ} \cdot wq \sum_j QL_j + \lambda_k^{WQN} \cdot \sum_j NQL_j + \lambda_k^R \sum_{nag} r_{nag} KD_{nag} + \lambda_k^L \cdot \sum_{ag} r_{ag} KD_{ag} + P_{index} TG_k$
- (10) $YDH_k = YH_k - DTH_k$
- (11) $SH_k = v \cdot \psi_k \cdot YDH_k$
- (12) $YF = \lambda^{RF} \sum_i r_i KD_i + \lambda^{LF} \cdot rl \cdot LAND$
- (13) $SF = YF - \sum_k DIV_k - \theta \cdot DIV^{ROW} - DTF$
- (14) $YG = \sum_i TI_i + \sum_i TIE_i + \sum_i DTH_k + DTF$
- (15) $SG = YG - G - PINDEX \sum_k TG_k$
- (16) $TI_i = tx_i (P_i XS_i - PE_i EX_i) + tx_i (1 + tm_i) \cdot \theta \cdot PWM_i M_i$
- (17) $TIM_i = tm_i \theta \cdot PWM_i M_i$

$$(18) \quad TIE_i = t\theta_i P E_i EX_i$$

$$(19) \quad DTH_k = tyh_k YH_k$$

$$(20) \quad DTF = tyf.YF$$

International Trade

The equations are provided below:

$$(21) \quad XS_i = B_i^F \left[\beta_i^F EX_i^{k_i^F} + (1 + \beta_i^F) D_i^{k_i^F} \right] \frac{1}{\epsilon_i^F}$$

$$(22) \quad EX_i = \left[\left(\frac{PE_i}{PL_i} \right) \left(\frac{1 - \beta_i^F}{\beta_i^F} \right) \right]^{\epsilon_i^F} D_i$$

$$(23) \quad EXD_i = EXD_i^p \cdot \left(\frac{PWE_i}{PE_{FOB_i}} \right)^{\sigma_{last_i}}$$

$$(24) \quad Q_i = A_i^K \left[\alpha_i^K M_i^{-\rho_i^K} + (1 - \alpha_i^K) D_i^{-\rho_i^K} \right] \frac{-1}{\rho_i^K}$$

$$(25) \quad M_i = \left[\left(\frac{PD_i}{PM_i} \right) \left(\frac{\alpha_i^K}{1 - \alpha_i^K} \right) \right]^{\sigma_i^K} D_i$$

$$(26) \quad CAB = \sum_i PWM_i M_i + \lambda^{ROW} \sum_i r_i^K D_i / \theta + DIV^{ROW} - \sum_i P E_{FOB_i} EX_i$$

Price blocs

The prices equations are provided below. The nominal exchange rate is the numéraire in each period.

$$(27) \quad PV_j = \frac{P_j XS_j - \sum_i P C_i D_{i,j}}{VA_j}$$

$$(28) \quad r_i = \frac{PV_i VA_i - w_i LD_i}{KD_i}$$

$$(29) \quad w_i = \frac{wq_i QL_i - wnq_i NQL_i}{LD_i}$$

$$(30) \quad PD_i = (1 + tx_i) PL_i$$

$$(31) \quad PM_i = (1 + tx_i) \cdot (1 + tm_i) \cdot \theta \cdot PWM_i$$

$$(32) \quad PE_i = \frac{\theta \cdot PE_{FOB_i}}{1 + t\theta_i}$$

$$(33) \quad PC_i Q_i = PD_i D_i + PM_i M_i$$

$$(34) \quad P_i XS_i = PL_i D_i + PE_i EX_i$$

$$(35) \quad P_{inv} = \prod_i \left(\frac{PC_i}{\mu_i} \right)^{\mu_i}$$

$$(36) \quad P_{ind\&x} = \sum_i \delta_i PV_i$$

Equilibrium Condition

The equations are provided below:

$$(37) Q_i = DIT_i + \sum_k C_{i,k} + INV_i + Dstk_i$$

$$(38) EX_i = EXD_i$$

$$(39) LSQ = \sum_j QL_j$$

$$(40) LSNQ = \sum_j NQL_j$$

$$(41) IT + \sum_i PC_i Dstk_i = \sum_k SH_k + SF + SG + \vartheta . CAB$$

Dynamic Module of the DCGE Model

The equations of the dynamic bloc are provided below.

$$(42) KD_{i,t+1} = (1 - \delta)KD_{i,t} + Ind_{i,t}$$

$$(43) LSQ_{t+1} = (1 + ng) . LSQ_t$$

$$(44) LSNQ_t = (1 + ng) . NQL_t$$

$$(45) C_{i,k,t+1}^{min} = (1 + ng) C_{i,k,t}^{min}$$

$$(46) \frac{Ind_{i,t}}{KD_{i,t}} = A_i^{iK} \left(\frac{R_{i,t}}{U_{i,t}} \right)^2$$

$$(47) U_{i,t} = Pinvt_t (ir + \delta_i)$$

$$(48) IT_t = Pinvt_t . \sum_i Ind_{i,t}$$

$$(49) SG_{t+1} = (1 + ng) SG_t$$

$$(50) CAB_{t+1} = (1 + ng) CAB_t$$

$$(51) TG_{t+1} = (1 + ng) TG_t$$

$$(52) CG_{t+1} = (1 + ng) CG_t$$

$$(53) Dstk_{t+1} = (1 + ng) Dstk_t$$

$$(54) DIV_{t+1} = (1 + ng) DIV_t$$

$$(55) DIV_ROW_{t+1} = (1 + ng) DIV_ROW_t$$

$$(56) TWH_{t+1} = (1 + ng) TWH_t$$

$$(57) TH_{k,k,j,t+1} = (1 + ng) TH_{k,k,j,t}$$

$$(58) EXD_{t+1}^o = (1 + ng) EXD_t^o$$

Description of the Variables and Parameters of the Dynamic CGE Model

Endogenous variables

$C_{i,h}$	Household h 's consumption of good i (volume)
CF	Composite agricultural capital-labor factor (volume)
CI_j	Total intermediate consumption of activity j (volume)
CTH_h	Household h 's total consumption (value)
D_i	Demand for domestic good i (volume)
$DI_{i,j}$	Intermediate consumption of good i in activity j (volume)
DIT_i	Intermediate demand for good i (volume)
DTF	Receipts from direct taxation on firms' income
DTH_h	Receipts from direct taxation on household h 's income
EX_i	Exports in good i (volume)
G	Public expenditures
INV_i	Investment demand for good i (volume)
IT	Total investment
LD_j	Activity j demand for labor (volume)
M_i	Imports in good i (volume)
P_i	Producer price of good i
PC_i	Consumer price of composite good i
PD_i	Domestic price of good i including taxes
PE_i	Domestic price of exported good i
$Pindex$	GDP deflator
$Pinv$	Price index of investment
PL_i	Domestic price of good i (excluding taxes)
PM_i	Domestic price of imported good i
PV_i	Value added price for activity j
Q_i	Demand for composite good i (volume)

r_i	Rate of return to capital in activity i
rl	Rate of return to agricultural land
rc	Rate of return to composite factor
SF	Firms' savings
SG	Government's savings
SH_h	Household h 's savings
TI_i	Receipts from indirect tax on i
TIE_i	Receipts from tax on export i
TIM_i	Receipts from import duties i
VA_j	Value added for activity j (volume)
w	Wage rate
XS_i	Output of activity i (volume)
YDH_h	Household h 's disposable income
YF	Firms' income
YG	Government's income
YH_h	Household h 's income
LS	Total labor supply (volume)
KD_i	Demand for capital in activity i (volume)
CAB	Current account balance
$Ind_{i,t}$	Demand for capital in activity i (volume)
U_t	Capital user cost
$C_{i,h}^{\min}$	Minimum consumption of good i by household h

Exogenous variables

PWE_i	World price of export i
PWM_i	World price of import I
e	Nominal Exchange rate (numéraire)

Parameters

Production functions

A_i	Scale coefficient (Cobb-Douglas production function)
α_{ij}	Input-output coefficient
α_j	Elasticity (Cobb-Douglas production function)
$i\alpha_j$	Technical coefficient (Leontief production function)
v_j	Technical coefficient (Leontief production function)

CES function between capital and labor

A_i^{KL}	Scale coefficient
α_i^{KL}	Share parameter
ρ_i^{KL}	Substitution parameter
σ_i^{KL}	Substitution elasticity

CES function between skilled and unskilled labor

A_i^{LL}	Scale coefficient
α_i^{LL}	Share parameter
ρ_i^{LL}	Substitution parameter
σ_i^{LL}	Substitution elasticity

CES function between imports and domestic production

A_i^M	Scale coefficient
α_i^M	Share parameter
ρ_i^M	Substitution parameter
σ_i^M	Substitution elasticity

CET function between domestic production and exports

B_i^E	Scale coefficient
β_i^E	Share parameter
κ_i^E	Transformation parameter
τ_i^E	Transformation elasticity

LES consumption function

$\gamma_{i,k}$ Marginal share of good i

Tax rates

$t\theta_i$ Tax on exports i

tm_i Import duties on good i

tx_i Tax rate on good i

ty^h_k Direct tax rate on household h 's income

ty^f Direct tax rate on firms' income

Other parameters

δ_j Share of activity j in total value added

λ^L_k Share of land income received by household h

λ^{LF} Share of land income received by firms

λ^{LROW} Share of land income received by foreigners

λ^R_k Share of capital income received by household h

λ^{RF} Share of capital income received by firms

λ^{ROW} Share of capital income received by foreigners

λ^W_k Share of labour income received by household h

ψ_k Propensity to save

μ_i Share of the value of good i in total investment

ng Population growth rate

δ Capital depreciation rate

γ_{1i} Parameter in the investment demand function

γ_{2i} Parameter in the investment demand function

ir Real interest rate

List of Notable Publications by General Economics Division (GED) Bangladesh Planning Commission since 2009

1.	Policy Study on Financing Growth and Poverty Reduction: Policy Challenges and Options in Bangladesh (May 2009)
2.	Policy Study on Responding to the Millennium Development Challenge Through Private Sectors Involvement in Bangladesh (May 2009)
3.	Policy Study on The Probable Impacts of Climate Change on Poverty and Economic Growth and the Options of Coping with Adverse Effect of Climate Change in Bangladesh (May 2009)
4.	Steps Towards Change: National Strategy for Accelerated Poverty Reduction II (Revised) FY 2009 -11 (December 2009)
5.	Millennium Development Goals: Bangladesh Progress Report-2009 (2009)
6.	Millennium Development Goals: Needs Assessment and Costing 2009-2015 Bangladesh (July 2009)
7.	এমডিজি কর্ম-পরিকল্পনা (৫১ টি উপজেলা) (জানুয়ারি-জুন ২০১০)
8.	MDG Action Plan (51 Upazillas) (January 2011)
9.	MDG Financing Strategy for Bangladesh (April 2011)
10.	SAARC Development Goals: Bangladesh Progress Report-2011 (August 2011)
11.	Background Papers of the Sixth Five Year Plan (Volume 1-4) (September 2011)
12.	6 th Five Year Plan (FY 2011-FY 2015) (December 2011)
13.	Millennium Development Goals: Bangladesh Progress Report-2011 (February 2012)
14.	Perspective Plan of Bangladesh 2010-2021: Making Vision 2021 a Reality (April 2012)
15.	Public Expenditure for Climate Change: Bangladesh Climate Public Expenditure and Institutional Review (October 2012)
16.	Development of Results Framework for Private Sectors Development in Bangladesh (2012)
17.	ষষ্ঠ পঞ্চবার্ষিক পরিকল্পনা (২০১১-১৫) বাংলা অনুবাদ (অক্টোবর ২০১২)
18.	Climate Fiscal Framework (October 2012)

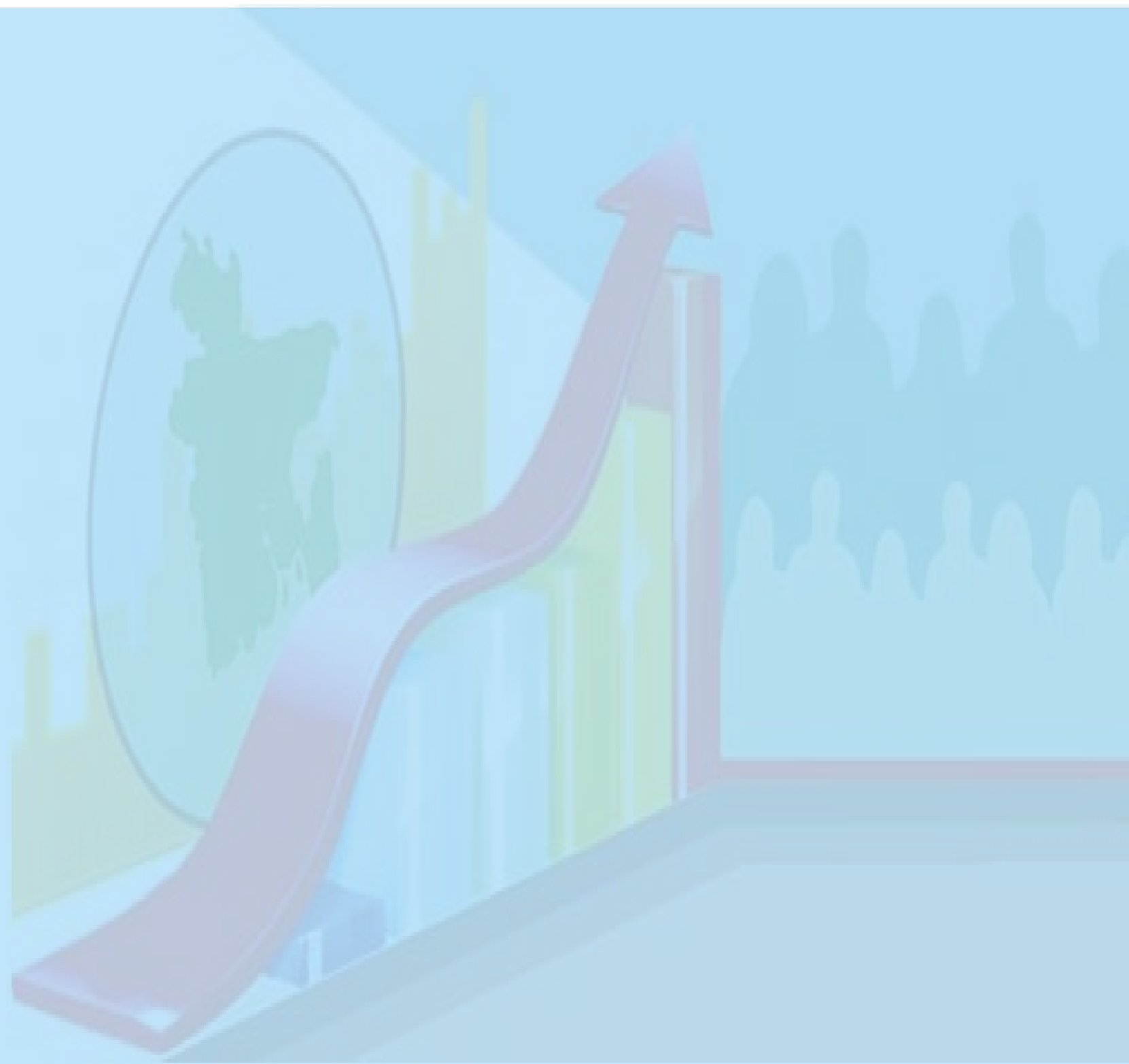
19.	Public Expenditure for Climate Change: Bangladesh CPEIR 2012
20.	First Implementation Review of the Sixth Five year Plan -2012 (January 2013)
21.	বাংলাদেশের প্রথম শ্রেণিকৃত পরিকল্পনা ২০১০-২০২১ রূপকল্প ২০২১ বাস্তবে রূপায়ণ (ফেব্রুয়ারি ২০১৩)
22.	National Sustainable Development Strategy (2010-2021) (May 2013)
23.	জাতীয় টেকসই উন্নয়ন কৌশলপত্র (২০১০-২০২১) [মূল ইংরেজি থেকে বাংলায় অনূদিত] (মে ২০১৩)
24.	Millennium Development Goals: Bangladesh Progress Report-2012 (June 2013)
25.	Post 2015 Development Agenda: Bangladesh Proposal to UN (June 2013)
26.	National Policy Dialogue on Population Dynamics, Demographic Dividend, Ageing Population & Capacity Building of GED [UNFPA Supported GED Project Output1] (December 2013)
27.	Capacity Building Strategy for Climate Mainstreaming: A Strategy for Public Sector Planning Professionals (2013)
28.	Revealing Changes: An Impact Assessment of Training on Poverty-Environment Climate-Disaster Nexus (January 2014)
29.	Towards Resilient Development: Scope for Mainstreaming Poverty, Environment, Climate Change and Disaster in Development Projects (January 2014)
30.	An Indicator Framework for Inclusive and Resilient Development (January 2014)
31.	Manual of Instructions for Preparation of Development Project Proposal/Performa Part-1 & Part 2 (March 2014)
32.	SAARC Development Goals: Bangladesh Progress Report-2013 (June 2014)
33.	The Mid Term-Implementation Review of the Sixth Five Year Plan 2014 (July 2014)
34.	Millennium Development Goals: Bangladesh Progress Report 2013 (August 2014)
35.	Population Management Issues: Monograph-2 (March 2015)
36.	GED Policy Papers and Manuals (Volume 1-4) (June 2015)
37.	National Social Security Strategy (NSSS) of Bangladesh (July 2015)
38.	MDGs to Sustainable Development Transforming our World: SDG Agenda for Global Action (2015-2030)- A Brief for Bangladesh Delegation UNGA 70th Session, 2015 (September 2015)

39.	7 th Five Year Plan (2015/16-2019/20) (December 2015)
40.	সপ্তম পঞ্চবার্ষিক পরিকল্পনা ২০১৫/১৬-২০১৯/২০ (জুন ইংরেজি থেকে বাংলা অনুদিত) (অক্টোবর ২০১৬)
41.	জাতীয় সামাজিক নিরাপত্তা কৌশলপত্র (অক্টোবর ২০১৬)
42.	Population Management Issues: Monograph-3 (March 2016)
43.	Bangladesh ICPD 1994-2014 Country Report (March 2016)
44.	Policy Coherence: Mainstreaming SDGs into National Plan and Implementation (Prepared for Bangladesh Delegation to 71st UNGA session, 2016) (September 2016)
45.	Millennium Development Goals: End- period Stocktaking and Final Evaluation Report (2000-2015) (September 2016)
46.	A Handbook on Mapping of Ministries by Targets in the implementation of SDGs aligning with 7 th Five Year Plan (2016-20) (September 2016)
47.	Data Gap Analysis for Sustainable Development Goals (SDGs): Bangladesh Perspective (January 2017)
48.	Environment and Climate Change Policy Gap Analysis in Haor Areas (February 2017)
49.	Integration of Sustainable Development Goals into the 7th Five Year Plan (February 2017)
50.	Banking ATLAS (February 2017)
51.	টেকসই উন্নয়ন অর্জন, লক্ষ্যমাত্রা ও সূচকসমূহ (মূল ইংরেজি থেকে বাংলায় অনুদিত) (এপ্রিল ২০১৭)
52.	EXPLORING THE EVIDENCE : Background Research Papers for Preparing the National Social Security Strategy of Bangladesh (June 2017)
53.	Bangladesh Voluntary National Review (VNR) 2017 : Eradicating poverty and promoting prosperity in a changing world, (June 2017)
54.	SDGs Financing Strategy: Bangladesh Perspective (June 2017)

55.	A Training Handbook on Implementation of the 7th Five Year Plan (June 2017)
56.	7th Five Year Plan (FY 2015/16-FY 2019/20): Background Papers Volume 01: Macro Economic Management & Poverty Issues (June 2017)
57.	7th Five Year Plan (FY 2015/16-FY 2019/20): Background Papers Volume 02: Socio-Economic Issues (June 2017)
58.	7th Five Year Plan (FY 2015/16-FY 2019/20): Background Papers Volume 03: Infrastructure, Manufacturing & Service Sector (June 2017)
59.	7th Five Year Plan (FY 2015/16-FY 2019/20): Background Papers Volume 04: Agriculture, Water & Climate Change (June 2017)
60.	7th Five Year Plan (FY 2015/16-FY 2019/20): Background Papers Volume 05: Governance, Gender & Urban Development (June 2017)
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63.	Monitoring and Evaluation Framework of Sustainable Development Goals (SDGs): Bangladesh Perspective (March 2018)
64.	National Action Plan of Ministries/Divisions by Targets for the implementation of Sustainable Development Goals (June 2018)
65.	Bangladesh Delta Plan 2100: Baseline Studies: Volume 1: Water Resources Management (June 2018)
66.	Bangladesh Delta Plan 2100: Baseline Studies: Volume 2: Disaster and Environmental Management (June 2018)
67.	Bangladesh Delta Plan 2100: Baseline Studies: Volume 3: Land use and Infrastructure Development (June 2018)
68.	Bangladesh Delta Plan 2100: Baseline Studies: Volume 4: Agriculture, Food Security and Nutrition (June 2018)
69.	Bangladesh Delta Plan 2100: Baseline Studies: Volume 5: Socio-economic Aspects of the Bangladesh (June 2018)

70.	Bangladesh Delta Plan 2100: Baseline Studies: Volume 6: Governance and Institutional Development(June 2018)
71.	Journey with SDGs, Bangladesh is Marching Forward (Prepared for 73 rd UNGA Session 2018) (September 2018)
72.	এসডিজি অভিযাত্রা: এগিয়ে যাচ্ছে বাংলাদেশ (জাতিসংঘ সাধারণ পরিষদের ৭৩তম অধিবেশনের জন্য প্রণীত) (সেপ্টেম্বর ২০১৮)
73.	Bangladesh Delta Plan 2100 (Bangladesh in the 21 st Century) Volume 1: Strategy (October 2018)
74.	Bangladesh Delta Plan 2100 (Bangladesh in the 21 st Century) Volume 2: Investment Plan (October 2018)
75.	বাংলাদেশ ব-দ্বীপ পরিকল্পনা ২১০০: একুশ শতকের বাংলাদেশ (সংক্ষিপ্ত বাংলা সংস্করণ) (অক্টোবর ২০১৮)
76.	Bangladesh Delta Plan 2100: Bangladesh in the 21 st Century (Abridged Version) (October 2018)
77.	Synthesis Report on First National Conference on SDGs Implementation (November 2018)
78.	Sustainable Development Goals: Bangladesh First Progress Report 2018 (December 2018)
79.	টেকসই উন্নয়ন অর্জনে এগিয়ে যাচ্ছে বাংলাদেশ অগ্রগতি প্রতিবেদন ২০১৮ (ইংরেজি থেকে অনূদিত) (এপ্রিল ২০১৯)
80.	Study on Employment, Productivity and Sectoral Investment in Bangladesh (May 2019)
81.	Implementation Review of the Sixth Five Year Plan (FY 2011-FY 2015) and its Attainments (May 2019)
82.	Mid-term Implementation Review of the Seventh Five Year Plan (FY 2016-FY 2020) May 2019
83.	Background Studies for the Second Perspective Plan of Bangladesh (2021-2041) Volume-1 June 2019
84.	Background Studies for the Second Perspective Plan of Bangladesh (2021-2041) Volume-2 June 2019
85.	Empowering people: ensuring inclusiveness and equality For Bangladesh Delegation to HIGH-LEVEL POLITICAL FORUM 2019 (July, 2019)
86.	Implementation Review of the perspective plan 2010-2021 (September 2019)
87.	Bangladesh Moving Ahead with SDGs (Prepared for Bangladesh Delegation to 74 th UNGA session 2019) (September 2019)
88.	টেকসই উন্নয়ন অর্জনে এগিয়ে যাচ্ছে বাংলাদেশ (জাতিসংঘ সাধারণ পরিষদের ৭৪তম অধিবেশনে বাংলাদেশ প্রতিনিধিগণের জন্য প্রণীত) (সেপ্টেম্বর ২০১৯)
89	Prospects and Opportunities of International Cooperation in Attaining SDG Targets in Bangladesh (Global Partnership in Attainment of the SDGs) (September 2019)
90	Background Studies for the Second Perspective Plan of Bangladesh (2021-2041) Volume-3 October 2019

91	Background Studies for the Second Perspective Plan of Bangladesh (2021-2041) Volume-4 October 2019
92	Background Studies for the Second Perspective Plan of Bangladesh (2021-2041) Volume-5 October 2019
93	Background Studies for the Second Perspective Plan of Bangladesh (2021-2041) Volume-6 October 2019
94	Monograph 4: Population Management Issues (December 2019)
95	Monograph 5: Population Management Issues (December 2019)
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97	Impact Assessment and Coping up Strategies of Graduation from LDC Status for Bangladesh (March 2020)



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