

Journey with Green Climate Fund

Bangladesh's Country Programme for Green Climate Fund

2018



NDA Secretariat
Economic Relations Division
Ministry of Finance
Government of the Peoples' Republic of Bangladesh

In partnership with:



Forward

1. Country Profile

Geographical location	South Asia
Land area	147,570 sq. km
Population	159.9 million (1,063 people per sq. km)
Types of climate	Tropical Savanna (Aw) ¹
GHG emissions profile	0.98 tCO ₂ per capita
Key emitter sectors	For the year 2011, it was estimated that the three key emitting sectors emitted 64 MtCO ₂ e, with the power sector emitting 21 MtCO ₂ e, the transportation sector 17 MtCO ₂ e, and the industrial sector 26 MtCO ₂ e ²
Key climate risks	Floods and drought, sea level rise (related salinization processes and erosion), intensified cyclones, increasing temperatures
Vulnerable sectors	Agriculture, water, energy resilience, coastal and riverside infrastructure
NDA/FP	UN Wing, Economic Relations Divisions (ERD), Ministry of Finance (MoF)
National/Regional AEs	Infrastructure Development Company Limited (IDCOL), Palli Karma Shohayak Foundation (PKSF)
International AEs	ADB, AFD, EIB, FAO, GIZ, HBSC, IFAD, IFC, IUCN, JICA, KfW, UNDP, UNEP, WFP, WMO, and World Bank
Potential AEs nominated	Bangladesh Bank, Bangladesh Climate Change Trust Fund (BCCTF), Department of Environment (DoE), and Local Government Engineering Department (LGED)

1.1 Development profile

Bangladesh, located in South Asia, has a land area of 147,570 km² with an extensive coastline and large deltaic floodplains that cover 80% of the country and is overlapped by over 310 rivers^{3,4}. Except for hilly regions in the northeast and southeast and some highlands in the north and north-western parts, the country is predominantly flat and low-lying⁵. The mean elevation is 4 to 5m above sea level and only about 10 per cent of the land stands at 1m above sea level⁶. Bangladesh is, with around 1,063 people per square km², considered to be the tenth most densely populated countries in the world^{7,8}. Furthermore, the country, is ranked at 8th position globally in terms of total population of approximately 160 million (2.18% of the total world population) as of 1st January 2017 of which 88.4% are Muslims⁹. The intercensal growth rate is 1.37 (based on the population census of 2001 and 2011)¹⁰, whereas the fertility rate has reduced from 6.3 births per woman in 1975 to 3.4 in 1994 and 2.1 in 2016¹¹. The median age of the population is 26 years. Despite the reduced birth rate, overpopulation is still considered as a development challenge. The demographics and geographic characteristics of the country are shaping the development trajectory and potential of the country.

¹ Climate-Data.org, 2017, 'Bangladesh Climate'. Retrieved from: <https://en.climate-data.org/country/166>

² INDC, DoE 2015

³ Social Progress Imperative, 2015, 'Social Progress Index'. Retrieved from:

http://www.socialprogressimperative.org/system/resources/W1siZiIsIjIwMTUvMDUvMDc0MTcvMjkwMzEvMzI4LzlwMTVfU09DSUFMX1BSt0dsRVNTX0IOREYVX0ZjTKFMlnBkZlJdXQ/2015%20SOCIAL%20PROGRESS%20INDEX_FINAL.pdf

⁴ Planning Commission, 2012, 'Public Expenditure for Climate Change: Bangladesh Climate Public Expenditure and Institutional Review', Dhaka, Government of Bangladesh.

⁵ Government of the People's Republic of Bangladesh, Ministry of Environment and Forests, 2012, 'Second National Communication of Bangladesh to the United Nations Framework Convention on Climate Change'. Retrieved from: <http://unfccc.int/resource/docs/natc/bgdnc2.pdf>

⁶ Climate Investment Funds (CIF), 2010, 'Strategic Programme for Climate Resilience (SPCR) Bangladesh'. Retrieved from: <https://www.cif.climateinvestmentfunds.org/sites/default/files/PPCR%205%20SPCR%20Bangladesh%20nov2010.pdf>

⁷ World Bank, 2015, 'World Bank Data: Population Density'. Retrieved from: <http://data.worldbank.org/indicator/EN.POP.DNST>

⁸ Ministry of Planning, Government of the People's Republic of Bangladesh, 2017, 'Report on Bangladesh Sample Vital Statistics 2016'.

⁹ Ministry of Planning, Government of the People's Republic of Bangladesh, 2017, 'Report on Bangladesh Sample Vital Statistics 2016'.

¹⁰ Ministry of Planning, Government of the People's Republic of Bangladesh, 2017, 'Report on Bangladesh Sample Vital Statistics 2016'.

¹¹ Ministry of Planning, Government of the People's Republic of Bangladesh, 2017, 'Report on Bangladesh Sample Vital Statistics 2016'.

The development goals and aspirations of the government of Bangladesh are outlined and harmonized in a range of short, medium, and long-term development plans and strategies. The government's long-term development strategy, 'the Vision 2021', is directed to graduate out of the Least Developed Country category and upgrade to a Middle-Income Country by 2021. It is described in the document 'Outline Perspective Plan of Bangladesh (2010 - 2021): Making Vision 2021 a Reality' and informed the formulation and strategic perspective of the Sixth (2011 - 2015) and Seventh (2016 - 2020) Five Year Plans (FYPs) of Bangladesh, which are the key guiding plans for steering the country's development. Following the successful implementation of 'Vision 2012' the Prime Minister Sheikh Hasina meanwhile announced to reconfirm the political commitments of her government and intends to turn the 'Vision-2021' into the 'Vision-2041' as a long-term perspective plan. The plan is yet to be developed, but will envision that in the year 2041, Bangladesh will become a peaceful, prosperous and developed place after crossing the status of a middle-income country.

With the theme of "Accelerating Growth, Empowering Citizens", the 7th FYP is founded on three themes: (i) GDP growth acceleration, employment generation and rapid poverty reduction; (ii) a broad-based strategy of inclusiveness with a view to empowering every citizen to participate full and benefit from the development process; and (iii) a sustainable development pathway that is resilient to disaster and climate change; entails sustainable use of natural resources; and successfully manages the inevitable urbanization transition. It is apparent through this focus of the 7th FYP that climate change adaptation and mitigation are mainstreamed into key development planning in Bangladesh (for more information on climate change mainstreaming in government's planning see next section).

Over the past two decades the economy of Bangladesh has gone through major reforms and transformations and achieved remarkable socio-economic development progresses. These included an average growth in GDP between the fiscal year (FY) 2006-2007 and 2016-2017 of around 6.3% annually; moving up to the low middle-income status category. The country's GDP growth broke in 2015-2016 for the first time the mark of 7% and according to a provisional estimate by BBS the GDP growth reached to 7.28 percent in 2016-2017 fiscal year with per capita income rises to \$1,602, which was \$1,466 in the last fiscal year. Consistent GDP growth over the years contributed in making progress in human development; and reducing the head count poverty ratio from close to 60% in the early 1990s to 31.5% in 2010 and an estimated 23.2% in 2016^{12,13}. According to the International Monetary Fund, this places Bangladesh "among the top ten fastest growing economies in the World in the fiscal year 2016-17"¹⁴. See table 1 for more detailed basic socio-economic statistics of Bangladesh between 2010 until 2017.

The economic development of Bangladesh is driven mainly by a growing service industry and industrial sector, especially for garments. The service industry accounted for around 52% of Bangladesh's GDP in 2016, and the industrial sector for 28%¹⁵. The agricultural and fisheries sector contributes to around 16% of the national GDP. Despite this relatively lower contribution to the GDP, the agriculture sector is the main employment provider in the country with 47% of the total labour force being employed in the sector and more than 70% of the population being involved directly or indirectly in agricultural activities¹⁶. Agriculture remains the main source of income and provides 87% of rural employment¹⁷.

Despite the impressive achievements in economic development and poverty alleviation, there are still significant spatial differences in the pace as well as quality of development. In perspective to overall human development, Bangladesh was ranked 139th out of 188 countries in Global Human Development Index in 2015 and was categorized as being a "medium human development" country¹⁸. The country was able to progress from a HDI value of 0.51 in 2006 to 0.58 in 2015 (on a scale from 0 to 1, of which 1 is the highest development) (see table 1). The overall ranking of Bangladesh indicates that the country can still improve its performance to tackle income inequality (the gap between rich and poor grew in recent years) by strengthening the capacity of institutional and decision makers, secure political stability, fight corruption, and enable the existing and potential workforce taking up new skills and gain access to new opportunities.

The income disparity between urban and rural areas is still prevalent with headcount poverty levels of 35.2% in rural and 21.3% in urban areas in 2010¹⁹. The coastal belt of Bangladesh is considered as being among the poorest regions of the country (in 15 out of the 19 coastal districts) with a below national average GDP per capita. These regional differences in livelihood opportunities and living standards can be a driving force of rural-urban migration and impose extra stress on the services (e.g. utilities, education, health) of the already densely populated urban areas in the country. Considering that 87% of rural population is engaged in

¹²Bangladesh Bureau of Statistics, 2017, 'Statistical Year Book of Bangladesh 2017'.

¹³Ministry of Finance, 2016, 'Bangladesh's Economic Review 2016'.

¹⁴International Monetary Fund (IMF), Asia and Pacific Department, 2017, 'Bangladesh: Poverty Reduction Strategy Paper'.

¹⁵Bangladesh Bureau of Statistics, 2017, 'Statistical Year Book of Bangladesh 2017'.

¹⁶Bangladesh Bureau of Statistics, 2017, 'Statistical Year Book of Bangladesh 2017'.

¹⁷Bangladesh Bureau of Statistics, 2017, 'Statistical Year Book of Bangladesh 2017'.

¹⁸UNDP, 2016, 'Human Development Index 2016'. Retrieved from: <http://hdr.undp.org/en/2016-report>

¹⁹Bangladesh Bureau of Statistics, 2017, 'Household Income and Expenditure Survey (HIES) of 2010'.

agricultural activities for income generation, an emphasis on sustaining agricultural production capacities will be important to secure jobs for these people as well as strengthening food security. More private and public investments will be required to facilitate sustainable development to strengthen the resilience of the coastal belt of Bangladesh and enable the local population to identify and uptake new livelihoods.

The Government of Bangladesh undertook many strategic investments and improved their regulatory frameworks to facilitate a sustainable and climate change compatible (see next section) development. The macro-economic state of Bangladesh can be considered as being stable with a robust growth (on average 6.3 % between FY06-FY16), a declining inflation (5.92 % in FY15-16 from 6.41% in FY14-15), a rise in external reserves (they reached US\$ 30 billion mark by the June 2016), and moderate fiscal deficits (3.9% of the GDP)²⁰. The total government's revenue receipt in FY15-16 was 9.6% of GDP²¹. The total expenditure in the same FY rose by 11.54% (13.5% of GDP), leaving the overall budget deficit at an acceptable below 5% of GDP ratio²².

Table 1: Basic socio-economic statistics of Bangladesh between 2010 and 2016^{23,24}

	(FY) 2010	(FY) 2011	(FY) 2012	(FY) 2013	(FY) 2014	(FY) 2015	(FY) 2016	(FY) 2017*
Growth rate	6.46	6.52	6.01	6.06	6.55	7.11	7	7.28
GDP (US\$ million)	115.28	128.64	133.36	149.99	172.89	195.08	221.42	N/A
GDP/ capita (US\$)	780	860	880	976	1110	1235	1466	1609
GNI/ capita, Atlas method (US\$)²⁵	843	928	955	1054	1184	1314	1330	1602
Domestic credit as % of GDP	57.4	61.3	60.0	57.9	59.8	59.7	60.6	N/A
Ease of doing business²⁶	118	122	132	130	172	178	176	N/A
HDI²⁷	0.55	0.56	0.57	0.57	0.58	0.58	N/A	N/A
Population (in million)²⁸	152.15	153.91	155.73	157.57	159.41	161.20	162.95	N/A
Population growth rate²⁹	1.1	1.2	1.2	1.2	1.2	1.1	1.1	N/A
Poverty headcount ratio at national poverty lines (% of population)³⁰	31.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A

* As per provisional estimate by the Bangladesh Bureau of Statistics BBS (2017)³¹

Investments require, in many cases, an access to external finance at acceptable and competitive interest rates and terms. These rates and terms are determined by the country's overall performance with respect to economic growth, financial security, and political stability and translated into national credit ratings. According to Moody's, Government of Bangladesh's national credit rating is Ba3 issuer and senior unsecured ratings and maintained the stable outlook on the ratings³².

From 2006 to 2016 Bangladesh's domestic credit as percentage of its GDP has increased from 50.10% to 60.62%³³. Similarly, a rise in domestic credit to the private sector was observed from a level of 31.2% of GDP in 2006 to 44.4% in 2016, out of which 44.3% of credit was provided to the private sector by banks³⁴. Overall, the level of domestic credit to sustain economic growth can be considered as being too low. The average in East Asia and the Pacific region of domestic credit to the economy and private sector, is

²⁰ Bangladesh Bureau of Statistics, 2017, 'Household Income and Expenditure Survey (HIES) of 2010'.

²¹ Economic Adviser's Wing Finance Division, Ministry of Finance Government of the People's Republic of Bangladesh, 2016, 'Bangladesh Economic Review 2016'.

²² Economic Adviser's Wing Finance Division, Ministry of Finance Government of the People's Republic of Bangladesh, 2016, 'Bangladesh Economic Review 2016'.

²³ Bangladesh Bureau of Statistics, 2017, 'Statistical Year Book of Bangladesh 2017'

²⁴ Economic Adviser's Wing Finance Division, Ministry of Finance Government of the People's Republic of Bangladesh, 2016, 'Bangladesh Economic Review 2016'.

²⁵ World Bank 2017, 'Data Bank: Bangladesh'. Retrieved from: <http://databank.worldbank.org/data/reports.aspx?source=2&country=BGD>

²⁶ World Bank, 2017, 'Ease of Doing Business 2017'.

²⁷ UNDP, 2016, 'Human Development Index 2016'. Retrieved from: <http://hdr.undp.org/en/2016-report>

²⁸ World Bank 2017, 'Data Bank: Bangladesh'. Retrieved from: <http://databank.worldbank.org/data/reports.aspx?source=2&country=BGD>

²⁹ World Bank 2017, 'Data Bank: Bangladesh'. Retrieved from: <http://databank.worldbank.org/data/reports.aspx?source=2&country=BGD>

³⁰ Bangladesh Bureau of Statistics, 2011, 'Population and Housing Census report 2011'.

³¹ Bangladesh Bureau of Statistics (2017): Retrieved from: <http://www.bbs.gov.bd/site/news/93edf04b-377f-454b-b2aa-26f4035b8b63/Gross-Domestic-Product--GDP-of-bd-2016-17--is-728>

³² Moody's Investors Service, Inc., 2017, 'Global Credit Research - 17 Apr 2017'. Retrieved from: https://www.moody's.com/research/Moodys-Affirms-Bangladeshs-Ba3-Rating-Maintains-Stable-Outlook--PR_364325

³³ Economic Adviser's Wing Finance Division, Ministry of Finance Government of the People's Republic of Bangladesh, 2016, 'Bangladesh Economic Review 2016'.

³⁴ Economic Adviser's Wing Finance Division, Ministry of Finance Government of the People's Republic of Bangladesh, 2016, 'Bangladesh Economic Review 2016'.

141% and 122%, respectively³⁵. Therefore, access to competitive financial products and services remains a barrier to scaling up climate solutions.

In addition to access to finance, creating enabling and conducive business environment is critical for attracting and leveraging private investments and resources. The World Bank in 2017 placed the Bangladesh at the 130th position out of 190 countries in their 'Ease of Doing Business' ranking³⁶. To improve on the ranking, Bangladesh will need to continue to address the infrastructure gaps, ensure a secured, reliable and sustainable energy supply, reduce bureaucratic and monetary barriers to register and operate businesses, and enhance the access to competitive financing, e.g. through further development of the financial sector and capital market.

The government lays the emphasis on fast tracking strategically important infrastructure and energy projects to enable a continuous rapid economic development. These projects have a total cost of approximately US\$ 43.6 billion and include the³⁷: (i) Payra Sea Port Infrastructure Development (US\$2 billion); (ii) Sonadia Deep Sea Port (US\$ 14 billion); (iii) Padma Multipurpose Bridge (US\$ 3.65 billion); (iv) Padma Bridge Rail Link (BDT 34,989 crore); (v) Dohazari-Cox's Bazar Rail line (BDT 18,304 crore); (vi) Dhaka Mass Rapid Transit Development (Metro Rail) (US\$ 2.5 billion); (vii) Rooppur Nuclear Power Plant 2 units of 2,400 MW; (viii) Rampal 1,320 MW Super Thermal Power Project (US\$ 2 billion); (ix) Matarbari 1,200 MW Coal Fired Power Plant (US\$ 4.6 billion); and (x) Kutubdia LNG Terminal (BDT 14,000 crore). A total of BDT 30,614 crore is budgeted in the Annual Development Programme (ADP) 2017-2018 (total volume BDT 153,331) to finance the six of these first track projects (Padma Bridge, Padma Rail Link, Metro Rail, Dohazari-Cox's Bazar-Gundum Rail Project, Matarbari Coal-fired Power Plant and Rooppur Nuclear Power Plant)³⁸. A total cost of BDT 161,268 crore is considered for financing and implementing the "economy transforming projects" in the special booklet titled "Mega Projects in Transforming Infrastructure: New Dimension in Accelerating Growth" placed in parliament, along with the proposed budget 2017-2018³⁹. Parts of this project are supposed to be financed through developing partners. Apart from these investments the government also considers promoting the expansion of economic zones and technology parks. Implementation of all these mega projects would require huge investment; the country also would require increased amount of investment to keep on GDP growth, poverty reduction and to progressively ensure socio-economic wellbeing to all its citizens.

These projects, once realised, can significantly contribute to attract private investments into productive industries and accelerate continued economic growth. The outlook for Bangladesh's main export volume is expected to increase with new emerging manufacturing sectors, such as, food and consumer durables, pharmaceuticals, leather and leather goods products, motor cycle and bi-cycle, shipbuilding, electronic products and information technology along with readymade garments and textiles. Apart from the export markets, the national purchasing power and demand is increasingly becoming a main driver of economic growths. The Boston Consulting Group (2017) estimated that "30 to 40 million [Bangladeshis] will make the leap from poverty to the entry rungs of the middle class by 2025"⁴⁰.

One bottle neck for continued growths, however, is the availability of competitive and reliable energy supply. An impressive 65% increase of generation capacity (up to 9,598 MW) from FY 2013 to FY 2010 baseline was achieved⁴¹. Currently, (October' 2017) Bangladesh's energy supply comes from fuel mix of gas (63%), heavy fuel oil (20%), hi-speed diesel (8%), imported power (5%), coal (2%) and hydro (2%)⁴². The most important strategic document for the development of Bangladesh's energy sector is the 'Power System Master Plan (PSMP) 2010'. With an annual GDP growth of 8% (aimed at to achieve the Vision 21), the PSMP 2010 aims to generate 23,000 MW by 2020 (end of 7th FYP), 24,000 MW by 2021, and 40,000 MW by 2030⁴³. An updated version of the Plan 2015 sets a target of 57,000 MW installed generation capacity by 2041, including imports of 8,500 MW⁴⁴. The PSMP from 2010 also recommended for fuel-mixed option, comprising of coal 30%, imported coal 20 %, natural gas (including LNG) 25%, liquid fuel 5%, nuclear, renewable energy and power import 20%⁴⁵.

³⁵ World Bank, 2017, 'The Data Blog'. Retrieved from: <http://blogs.worldbank.org/opendata/data-show-rise-domestic-credit-developing-countries>

³⁶ World Bank, 2017, 'Ease of Doing Business 2017'.

³⁷ Government of Bangladesh, 'The mega projects in structural change: new dimension in growth acceleration'.

³⁸ <http://www.thedailystar.net/frontpage/move-speed-fast-track-projects-1413235>

³⁹ <http://www.thedailystar.net/frontpage/focus-fast-track-projects-1233802>

⁴⁰ The Boston Consulting Group (BCG), 2017, 'Bangladesh: the surging consumer market nobody saw coming'.

⁴¹ Economic Adviser's Wing Finance Division, Ministry of Finance Government of the People's Republic of Bangladesh, 2016, 'Bangladesh Economic Review 2016'.

⁴² Bangladesh Power Development Board (BPDB), 2017, 'Key statistics'. Retrieved from: http://www.bpdb.gov.bd/bpdb/index.php?option=com_content&view=article&id=150&Itemid=16

⁴³ Power Division, Ministry of Power, Energy and Mineral Resources, 2011, 'The study for master plan on coal power development in the People's Republic of Bangladesh'; Power system master plan 2010 (PSMP2010)'.

⁴⁴ Energy and Power 2016.

⁴⁵ Power Division, Ministry of Power, Energy and Mineral Resources, 2011, 'The study for master plan on coal power development in the People's Republic of Bangladesh'; Power system master plan 2010 (PSMP2010)'.

This energy mix targeting an increased quota of renewable energy sources in the updated PSMP 2015 indicates the successful mainstreaming of climate change consideration in development planning. This strategic paradigm shift towards low carbon and sustainable development in development planning is also reflected in the 7th Five Year Plan, the Renewable Energy Policy 2008, the Energy Efficiency and Conservation Master Plan 2015, Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009, and the countries Intended Nationally Determined Contributions (INDCs). Some of these climate change related action plans will be discussed in more detail in section 1.3.

1.2 Climate change profile

Bangladesh has been repeatedly listed as being among the most vulnerable countries to climate change around the globe^{46,47,48,49}. The susceptibility and vulnerability of the country to climate change impacts is shaped by its geographic and climatic characteristics exacerbated by the socio-economic situation of large parts of the population living in poverty. About 88% of the landmass of Bangladesh consists of flood plain that sit in the world's largest delta, which makes the country predominantly flat and low-lying. Most of its area is less than 10m above sea level – with most of the coastal belt being less than 2m above sea level⁵⁰. The key climate change impacts projected to affect the nation are: (i) variations in air and ocean temperatures; (ii) changes in precipitation patterns; (iii) intensification of extreme weather phenomena, such as cyclones, and (iv) sea level rise. These observed and projected climate change impact in the country could undermine the gained development efforts and will hamper the Vision 2021 aspirations.

Climate change impacts

The mean annual **temperature increases** for the South Asian region, between 1990 and 2100, is projected to be around 4.8°C under a high emissions scenario (CMIP5 for RCP8.5)⁵¹ and 1.4°C if emissions decrease rapidly (RCP2.6)⁵². These projections are in line with an observed trend of temperature increases at the national level. Between 1948 and 2008, the minimum temperatures observed in winter (DJF) and in the monsoon season (JJA) rose by 0.45°C and 0.52°C respectively. During the same period, the maximum temperatures of the pre-monsoon season (MAM) increased by 0.87 °C and that of the post-monsoon (JJA) season by 0.42°C⁵³.

Higher temperatures in combination with **changing precipitation patterns** can increase the risks of floods and droughts in Bangladesh. The north-western region of the country is the most susceptible to **droughts**, as it receives lower rainfall than the rest of the country. The region already experiences seasonal droughts, which results in devastating impacts on crops, especially for subsistence farmers. During the last 50 years, Bangladesh was impacted by more than 20 droughts⁵⁴. Climate change is projected to result in increasing droughts. The moderately drought-affected areas will be turned into severely drought-prone areas within the next 20-30 years. Under a high emissions scenario, the number of days per year with very heavy precipitation (20 mm or more) could increase by almost 10 days on average from 1990 to 2100⁵⁵. Similarly the longest dry spell could increase from about 70 days in 1990 to about 85 days on average in 2100, suggesting a slightly greater persistence of droughts, with continuing large year-to-year variability⁵⁶.

The opposite extreme of droughts, **floods**, are similarly a common phenomenon in the country affecting around 25% of the country, especially in low-lying regions, annually. Rainfall variability in Bangladesh is extremely high. There is a large difference between the different regions of the country and large differences between seasons. Also, the inter-annual differences are large. This large variability makes it difficult to find significant trends in historical rainfall records. Studies focusing on recent changes in rainfall over

⁴⁶ Maplecroft, 2013, 'Climate change vulnerability index 2012'. Retrieved from: <http://maplecroft.com/themes/cc/>

⁴⁷ Maplecroft, 2014, 'Climate change vulnerability index 2013'. Retrieved from: <http://maplecroft.com/themes/cc/>

⁴⁸ Maplecroft, 2015, 'Climate change vulnerability index 2014'. Retrieved from: <http://maplecroft.com/themes/cc/>

⁴⁹ Intergovernmental Panel on Climate Change (IPCC), 2013, 'Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change'.

⁵⁰ Ministry of Environment and Forest, 2012, 'Second National Communication to the UNFCCC'. Retrieved from: <http://unfccc.int/resource/docs/natc/bgdnc2.pdf>

⁵¹ Representative Concentration Trajectories (RCPs) are four greenhouse gas concentration (not emissions) scenarios adopted by the IPCC in its fifth Assessment Report (AR5). These scenarios replace those published in 2000 in the Special Report on Emissions Scenarios (SRES) projections.

⁵² World Health Organisation (WHO) and United Nations Framework Convention on Climate Change (UNFCCC), 2015, 'Climate and Health Country Profile: Bangladesh'. Retrieved from: http://www.searo.who.int/entity/water_sanitation/ban_c_h_profile.pdf?ua=1

⁵³ Ministry of Environment and Forest, 2012, 'Second National Communication to the UNFCCC'. Retrieved from: <http://unfccc.int/resource/docs/natc/bgdnc2.pdf>

⁵⁴ World Bank, 2011, 'Climate Risk and Adaptation Country Profile', GFDRR.

⁵⁵ World Health Organisation (WHO) and United Nations Framework Convention on Climate Change (UNFCCC), 2015, 'Climate and Health Country Profile: Bangladesh'. Retrieved from: http://www.searo.who.int/entity/water_sanitation/ban_c_h_profile.pdf?ua=1

⁵⁶ World Health Organisation (WHO) and United Nations Framework Convention on Climate Change (UNFCCC), 2015, 'Climate and Health Country Profile: Bangladesh'. Retrieved from: http://www.searo.who.int/entity/water_sanitation/ban_c_h_profile.pdf?ua=1

Bangladesh and the Indian subcontinent show small reductions in total rainfall⁵⁷. This is probably partly caused by air pollution (aerosol and black carbon)⁵⁸. Several studies have shown, however, increases in the frequency of extreme events⁵⁹. A severe flood, inundating around 60% of Bangladesh's land area, hits the country every 4-5 years. While most of the country is typically susceptible to river and rainwater flooding, low-lying coastal areas remain vulnerable to tidal flooding⁶⁰. Climate change is projected to intensify the impacts of inundation events driven by changing rainfall patterns, temperatures, cyclone events, and sea level rise. Studies have shown that increased monsoon rainfall may lead to more frequent occurrence of high-intensity floods over the floodplains and that their duration will be prolonged by a significant number of days and inundation area, and inundation depth will be increased^{61,62}.

Sea level rise (SLR) is another climate change induced pressure affecting coastal areas. According to the International Panel on Climate Change (IPCC), the mean global sea level could rise to about one meter by 2100⁶³. This climate change related sea level rise is mainly driven by the thermal expansion of the oceans and the melting of glaciers and ice caps. Observed changes of global mean sea level since 1870 show an annual increase at a rate between 2.8 and 3.6 mm^{64,65}. An increased overall mean sea level exacerbates impacts of extreme tides and tidal surges leading to inundations of coastal areas with saltwater. A study by Climate Change Cell (CCC) of Bangladesh's Ministry of Environment, Forestry, and Climate Change (2016)⁶⁶, analysing 30 years (between 1980 and 2012) of tidal water data, found that the sea level rise in the coastal zone of Bangladesh has been 6-21 mm per year. The water level in the Ganges tidal floodplain was found to rise by 7-8 mm/year, in the Meghna Estuarine by 6-10 mm/ year and in the Chittagong coastal plain areas by 11-21 mm per year⁶⁷. Thus, the sea in the Bay of Bengal is rising faster than the global average.

Two thirds of Bangladesh are less than five meters above the sea level, making these coastal regions particularly vulnerable to tidal surges and incremental impacts, such as erosion and salinity, that are driven by a rising sea level. Bangladesh could experience a sea level rise of 14 cm, 32 cm and 88 cm by 2030, 2050, and 2100, respectively^{68,69}. According to CCC (2016), the current rate of SLR in the country ranges from 6 mm/yr to 21 mm/yr. Observations of tidal levels in Hiron Point, Char Changa and Cox's Bazar between 1977 and 1998 indicate a raise of 4 mm/yr, 6 mm/yr and 7.8 mm/yr respectively⁷⁰. Sea level rise will be a main driver of coastal inundations with saltwater amplifying current trends of salinity intrusion in ground and surface water aquifers, and soils. This leads to significant impacts on the agricultural productivity and fresh water availability of communities living in the coastal belt. These impacts associated with salinity intrusion will further be exacerbated through an intensification of extreme weather phenomena like cyclones caused by climate change.

Climate change projections suggest that the Bay of Bengal will not necessarily be frequent, but intensified cyclones⁷¹. This intensification of cyclones can lead to devastating impacts of agricultural dependent coastal communities. Currently, an estimated 8.3 million Bangladeshis live in cyclone high risk areas. This figure is expected to grow up to 20.3 million people by 2050 due to

⁵⁷ Intergovernmental Panel on Climate Change (IPCC), 2013, 'Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change'.

⁵⁸ Intergovernmental Panel on Climate Change (IPCC). Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change Stocker, T. F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA: 1535.

⁵⁹ Intergovernmental Panel on Climate Change (IPCC), 2013, 'Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change'.

⁶⁰ Ministry of Environment and Forest, (MoEF) (2009) Bangladesh Climate Change Strategy and Action Plan 2009, Ministry of Environment and Forests, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh. xviii+76pp.

⁶¹ Ahmed, A. U. 2006a. Bangladesh: Climate Change Impacts and Vulnerability a Synthesis. Climate Change Cell, Department of Environment, Component 4b, Comprehensive Disaster Management Programme, Bangladesh.

⁶² Climate Change Cell (CCC) ,2017, 'About Us'. Ministry of Environment and Forests. Retrieved from: <http://www.climatechangeccell.org.bd>

⁶³ Intergovernmental Panel on Climate Change (IPCC), 2013, 'Working Group I Contribution to the IPCC Fifth Assessment Report on Climate Change 2013: The Physical Science Basis: Summary for Policymakers'. International Panel on Climate Change, Stockholm.

⁶⁴ Church, J. A., & White, N. J., 2011, 'Sea-Level Rise from the Late 19th to the Early 21st Century', Surveys in Geophysics, 32(4-5), 585-602.

⁶⁵ Merrifield, M. A., Merrifield, S. T., & Mitchum, G. T., 2009, 'An Anomalous Recent Acceleration of Global Sea Level Rise', Journal of Climate, 22(21), 5772-5781.

⁶⁶ Climate Change Cell, 2016, 'Assessment of Sea Level Rise on Bangladesh Coast through Trend Analysis', Department of Environment, Ministry of Environment and Forests. Retrieved from: http://gobeshona.net/wp-content/uploads/2016/08/SLR-Report_final_July-2016.pdf

⁶⁷ Climate Change Cell (CCC) (2016). Assessment of Sea Level Rise on Bangladesh Coast through Trend Analysis. Department of Environment. Ministry of Environment and Forests.

⁶⁸ Ministry of Environment and Forest, 2005, 'National Adaptation Programme of Action (NAPA)'. Retrieved from: <http://unfccc.int/resource/docs/napa/ban01.pdf>

⁶⁹ Agrawala, S. et al. ,2003, 'Development and Climate Change in Bangladesh: Focus on Coastal Flooding and the Sundarbans', OECD. Retrieved from: <http://www.oecd.org/env/cc/21055658.pdf>

⁷⁰ SAARC Meteorological Research Center (SMRC) ,2003, 'The vulnerability assessment of the SAARC Coastal Region due to sea level rise: Bangladesh case study' Dhaka.

⁷¹ USAID, Bangladesh Climate Vulnerability Profile, 2012. Retrieved from: https://www.climatelinks.org/sites/default/files/asset/document/bangladesh_climate_vulnerability_profile_jan2013.pdf

climate-induced intensification of cyclones⁷². The primary damage from cyclones is caused by storm surge flooding. If cyclones make landfall during high tide, surges are higher. Available literature for cyclones between 1960-2013 shows associated storm surge ranging from 1.5 to 10.0m⁷³. Two recent tropical cyclones 'Sidr' and 'Aila' caused extensive damages as well. 'Sidr' struck the south-west coast of Bangladesh on 15 November 2007, affecting 2.3 million households and causing damage and losses estimated around US\$ 1.7 billion. 'Aila' struck the southern coast of Bangladesh on 25 May 2009, affecting nearly 5 million people and causing infrastructure damage of over US\$ 60 million⁷⁴. Salt water intrusion affected a rice growing area of about 72,000 ha. Cyclone *Sidr* (2007) and Cyclone *Aila* (2009) were accompanied with 3 to 5.5 m level of storm surge, which brought the saline water into the agricultural lands and inundated housings of many coastal communities.

Salinity intrusion in the coastal region of Bangladesh results from a combination of changing conditions and events, including sea level rise, cyclones, storm surges, decreases in upstream freshwater flow, and variability of rainfall. It is difficult to distinguish the relative contribution of the different factors that led to the current level of salinity in coastal regions, whereas models clearly show that sea level rise and climate-induced intensified cyclones are projected to increase the pace of salinization processes. Observed changes in 10 selected coastal districts shows an average increase by 27 per cent of saline areas between 1973 and 2009⁷⁵. These findings were confirmed in another study that observed a gradual increase of soil salinity⁷⁶.

Another investigation, undertaken for the World Bank, modelled future changes and predicted changes in river salinity across the coastal areas of Bangladesh for the year 2050 for two different IPCC scenarios (A2 and B1) using the 2012 salinity data as the baseline⁷⁷. The results show that due to sea level rise and other climatic conditions, salinity will move further inland. Bagerhat, Barguna, Bhola, Jessore, Khulna, Satkhira, Patuakhali, and Pirojpur will be extremely vulnerable with > 5ppt salinity level in the rivers under A2 emission scenario with 67 RMSLR⁷⁸. The study further projects that the fresh water river area (salinity level 0 to 1 ppt) will be reduced to 59 % by 2050 in thirteen coastal districts. It also indicates that the total salinity intrusion affected area (from 5ppt to 10 ppt) will be increased to 68% by 2050. Considering the current reliance of rural coastal communities on subsistence agriculture and fisheries, increasing salinity intrusion in surface water and soil resources will become a serious challenge and risk of the local population and a major driver for coastal-urban migration.

Vulnerabilities

The **vulnerability of Bangladesh to climate change** is mainly shaped by being a low-lying delta area divided by hundreds of rivers in combination with socio-economic status of large parts of the society, high dependency of the poor and rural communities on the agricultural sector which is likely being heavily impacted by climate change, rural-urban migration, as well as insufficiently developed infrastructure or infrastructure that is not fit for purpose to cope with increasing climate change related risks. The government of Bangladesh made significant progress in the recent years (see section 1.3 on responding to climate change) to enhance the resilience of the population and build-environment towards climate change both on a policy and environmental framework level as well as through project and program implementation. Regardless of this progress and efforts, Bangladesh vulnerability to climate change remains among the highest in the world. The climate change impacts are particularly being felt among the poor and marginalised people both in rural and urban areas. As outlined in section 1.1, Bangladesh's economy is based on the service and industrial sectors in terms of contribution to GDP, whereas the majority of population, particularly in the rural areas, are highly dependent on agriculture and fisheries as a source of income and for food security.

In the **rural areas**, the agriculture and fisheries sector are particularly impacted by climate change (see below), which can undermine the ability of local households to sustain their farming and income generating activities. Particularly in the aftermath of extreme weather phenomena, displacement and migration are common. In May 2009, for example, Cyclone Aila hit the region and affected nearly 4.82 million people⁷⁹ and displacing hundreds and thousands of people from the four severely affected upazilas - Koyra,

⁷² World Health Organization (WHO), 2015, 'Bangladesh "Climate-Proofs" to protect Health'. Retrieved from: <http://www.who.int/features/2015/climate-proofing-bangladesh/en/>

⁷³ Brammer, H., 2014, Climate Change, Sea-level Rise and Development in Bangladesh, (Dhaka: University Press Ltd)

⁷⁴ Climate Risk and Adaptation Country Profile, GFDRL, World Bank, 2011

⁷⁵ Climate Change Cell (CCC), 2016, 'Assessment of Sea Level Rise on Bangladesh Coast through Trend Analysis', Department of Environment, Ministry of Environment and Forests.

⁷⁶ Dasgupta S., Hossain M. M., Huq M., Wheeler D., 2015. Climate change and soil salinity: The case of coastal Bangladesh. *Ambio*. DOI 10.1007/s13280-015-0681-5

⁷⁷ Dasgupta S., Kamal F. A., Khan Z. H., Choudhury S., Nishat A., 2014, 'River Salinity and Climate Change: Evidence from Coastal Bangladesh'. Policy Research Working Paper No. 6817, Development Research Group, World Bank.

⁷⁸ Dasgupta S., Kamal F. A., Khan Z. H., Choudhury S., Nishat A., 2014, 'River Salinity and Climate Change: Evidence from Coastal Bangladesh'. Policy Research Working Paper No. 6817, Development Research Group, World Bank.

⁷⁹ CDMP II, 2014. "Development of Four Decade Long Climate Scenario and Trend: Temperature, Rainfall, Sunshine and Humidity", Comprehensive Disaster Management Programme, Phase II, Ministry of Disaster Management and Relief, The Government of Bangladesh

Paikgacha, Dacope, and Batiaghata⁸⁰. In many cases the displacements are temporary⁸¹. Analysing the data of 14 districts across Bangladesh from a period of 1994-2010 suggests that crop failures have a significant impact on mobility. In a study by Centre for Environmental and Geographic Information Services, Bangladesh⁸² found that 42 per cent of households declared that they have been displaced because of single disasters while 48 per cent said they were forced to migrate due to multiple disasters. The study observed that of the displaced category nearly 87 per cent of the interviewed households have experienced displacement (temporary, permanent and in-between were collectively 87 per cent) and 13 per cent were never displaced⁸³. Estimates regarding the impact of climate change on migration in Bangladesh vary widely, however. Whereas some authors argue climate change will induce anywhere from 5 to 40 million migrants⁸⁴, others argue that migration is more complicated and not only will there be fewer people moving⁸⁵, but those displaced by environmental hazards are more likely to move short distances, for a short amount of time and will mostly be men with the women required to stay behind and manage their household. Regardless, climate change can be considered as being one additional factor fuelling rural-urban migration trends in Bangladesh, leading to increased pressure on urban areas and changes in the socio-economic structures in rural areas. Men are in most cases, partly due to cultural reasons, the first household members migrating to urban areas to seek new employment opportunities, leaving the women and children behind.

Urban population of Bangladesh is constantly growing and is projected to exceed 50% of the country's total population by 2050 (Revi et al., 2014, Islam, 2015). The annual growth rate of urban population in Bangladesh during the last decade of population census (2001-2011) was 3.5%, while for Dhaka mega city it was 4.7%⁸⁶. Rapid population growth and mass urbanization are pushing agricultural lands, water bodies, forest, wetlands and urban utility services (drinking water and sanitation facilities, drainage etc.) beyond their provisional capacities. These pressures are higher in larger cities because of its appeal as employment hubs. As demand for land has increased, large scale encroachment and conversion of land usage have been rampant. This is mostly attributable to weak enforcement of government regulations. However, both public and private sectors have been contributing to an unplanned urbanization process, which can lead to slum formations⁸⁷. The potential impacts of climate change on urban cities and their populations are identified in a wide range of pathways considering cities' adaptation capacity, sensitivity and exposure layers. Climate change has substantial impacts to modify the urban micro-climate potentiality with increasing extreme heat events, extreme hot day and night, consecutive dry and wet days, increasing energy consumption, etc. The climate change may affect human health of city dwellers in many ways, for instance, increasing urban heat island, floods, droughts, vector borne diseases, and malnutrition. In Bangladesh, many urban cities, particularly those located along the coast and mouths of rivers, are facing climate-induced inundations, flash floods, and salinization of fresh water reserves.

The vulnerability of females to climate change impacts is particularly high in Bangladesh. An international index shows that gender equality in Bangladesh is low; the country ranks 116 out of 137 countries in the Gender Inequality Index, which reflects the huge differences in the daily lives of men and women in the country, particularly in rural areas⁸⁸. The poverty rate of women headed households is higher than that of men in the agricultural districts and there is a difference between the sexes over the completion rate of primary and secondary education⁸⁹. Under the country's existing patriarchal system, which to a large extent determines women's roles and mobility, women have limited access to resources, property, education, and income-earning opportunities, as decision-making and control of resources at the household level are generally in the hands of men^{90,91}. In Bangladesh, as in global estimates, women are more affected and suffer more during and after disasters than men. Cyclones, affecting the coastal areas exemplify this gender disparities in vulnerability to hazards. During Cyclone Sidr for example, many of the female casualties in

⁸⁰ ECHO 2009

⁸¹ Gray and Mueller 2012

⁸² CDMP II, 2014. "Development of Four Decade Long Climate Scenario and Trend: Temperature, Rainfall, Sunshine and Humidity", Comprehensive Disaster Management Programme, Phase II, Ministry of Disaster Management and Relief, The Government of Bangladesh

⁸³ CDMP II, 2014. "Development of Four Decade Long Climate Scenario and Trend: Temperature, Rainfall, Sunshine and Humidity", Comprehensive Disaster Management Programme, Phase II, Ministry of Disaster Management and Relief, The Government of Bangladesh

⁸⁴ Saroar et al. 2015, Siddiqui 2010

⁸⁵ Brammer, H., 2014. Climate Change, Sea-level Rise and Development in Bangladesh, (Dhaka: University Press Ltd)

⁸⁶ Bangladesh Bureau of Statistics (BBS). 2014. Statistical Yearbook of Bangladesh. Statistics Division, Ministry of Planning, Dhaka, Bangladesh.

⁸⁷ Rahman et al. (2013) Shrimp Cultivation with Water Salinity in Bangladesh: The Implications of an Ecological Model Universal Journal of Public Health 1: 131-142. Available online at: <http://www.hrpub.org/download/201310/ujph.2013.010313.pdf>

⁸⁸ UN Women, Bangladesh Centre for Advanced Studies (BCAS), (2014). Baseline Study on the Socio-Economic Conditions of Women in Three Eco-Zones of Bangladesh. Available online at: <http://www.unclearn.org/sites/default/files/inventory/unwoman30112015.pdf>

⁸⁹ UN Women, Bangladesh Centre for Advanced Studies (BCAS), (2014). Baseline Study on the Socio-Economic Conditions of Women in Three Eco-Zones of Bangladesh. Available online at: <http://www.unclearn.org/sites/default/files/inventory/unwoman30112015.pdf>

⁹⁰ Ministry of Environment and Forests (2012). Second National Communication of Bangladesh to the UNFCCC. Available online at: <http://unfccc.int/resource/docs/natc/bgdnc2.pdf>

⁹¹ UN Women (2009). Fact Sheet: Women, Gender Equality and Climate Change. Available online at:

http://www.un.org/womenwatch/feature/climate_change/downloads/Women_and_Climate_Change_Factsheet.pdf

coastal Bangladesh occurred because women, who are in their majority homebound, were busy tending the family livestock when the cyclone struck and could not leave without prior preparations; others died because their traditional Sari clothing got trapped in trees and other objects while running and others perished trying to rescue or search for children who could not evacuate fast enough^{92,93}. The cyclone was announced by men to men (which is the way warning systems work in the region)⁹⁴ with many women lacking the necessary information to evacuate, remaining at home and facing serious risks⁹⁵. All these aspects lead to a higher vulnerability of women in Bangladesh to climate change compared to man. Apart from the above outlined direct climate change impacts, indirect impacts such as increases of infectious disease could create an additional burden for women as they are traditionally responsible to care for sick relatives.

Sectoral impacts

The climate change induced flood, cyclone, salinity, drought and other hazards pose huge impacts on almost all sectors in Bangladesh with varying degree of intensity and damage. A recent report written for the ADB estimated that without further action climate change would cause total economic losses of on average 9.4% of total GDP, which could rise up to 23%⁹⁶. Consequently, climate change is one of the major driver of change when considering longer term development and employment opportunities in the Bangladesh delta.

Fresh water availability: Bangladesh, as being a delta based country, faces a paradox of many areas facing increasing freshwater scarcity while having enormous amounts of water overall. The pressure on freshwater availability is caused, among other factors, by to growing population, water management practices, salinization and ground water contamination. Drinking water security is under further threat due to climate change impacts, particularly due to droughts in the higher areas and salinity intrusion in coastal areas from both sea level rise and increased height of tidal surges. The link between SLR and freshwater salinity has been clearly demonstrated, with climate change induced SLR increasing salinities and expanding the areas at risk, even without additional storm surge-related increases in salinity⁹⁷. Further storm surge related increases in inundation will further increase surface water salinity which will, over the long term, increase the salinity of soils and agricultural lands. During the dry seasons, melting glaciers in the Himalayas is a concern for Bangladesh's water supply. Due to high variability of seasonal water supplies, dry season water is vital for supporting ecosystems, agriculture and fisheries and water navigation. The IPCC (2014)⁹⁸ projected 45% and 68% Himalayan glacier loss by 2100 under RCP4.5 and RCP 8.5 scenario⁹⁹, respectively. However, due to melting, in the first few decades, water supplies will increase but later it will decrease due to shrinkage of the glacier mass. Droughts are further influenced due to increasing temperatures and changing precipitation patterns, which influences the rate of evaporation from the soil, open water, and plants, the ability of groundwater aquifers and soils to uptake water, as the upper limit of infiltration is limited by soil type (e.g. clayey soil)¹⁰⁰.

Agriculture: The impacts of climate change on the agricultural based sectors (agriculture, aquaculture, livestock), and associated livelihoods, are significant and pose a tremendous risk to Bangladesh's agro-based economy and food security. Particularly, climate-induced droughts in the north-western parts and salinity in coastal zones of the country lets communities experience direct damage of crop, decreasing fresh water fish stocks, and income loss, which leads to increased vulnerabilities¹⁰¹.

A study conducted by SRDI in 2009 showed that over 1 million hectares of cultivable land in the country are affected by salinity intrusion caused by slow- and rapid-onset events¹⁰². Under a moderate climate change scenario, the crop loss due to sea level rise

⁹²Kabir, R. et al. (2016) Climate Change Impact: The Experience of the Coastal Areas of Bangladesh Affected by Cyclones Sidr and Aila. Available at: <https://www.hindawi.com/journals/jeph/2016/9654753/#B26>

⁹³Alam, E. and Collins, A. E. (2010). Cyclone Disaster Vulnerability and Response Experiences in Coastal Bangladesh. *Disasters* 34(4):931-54 Available at: https://www.researchgate.net/publication/44685982_Cyclone_Disaster_Vulnerability_and_Response_Experiences_in_Coastal_Bangladesh

⁹⁴UN Women, Bangladesh Centre for Advanced Studies (BCAS), (2014). Baseline Study on the Socio-Economic Conditions of Women in Three Eco-Zones of Bangladesh. Available online at: <http://www.unclearn.org/sites/default/files/inventory/unwoman30112015.pdf>

⁹⁵Kabir, R. et al. (2016) Climate Change Impact: The Experience of the Coastal Areas of Bangladesh Affected by Cyclones Sidr and Aila. *Journal of Environmental and Public Health* Volume 2016: 1-9. Available online at: <https://www.hindawi.com/journals/jeph/2016/9654753/>

⁹⁶Ahmed and Suphachalasai, 2014

⁹⁷Bhuiyan, Dushmanta Dutta. 2012. Assessing impacts of sea level rise on river salinity in the Gorai river network, Bangladesh. *Estuarine, Coastal and Shelf Science* 96 (2012) 219-227 MJAN

⁹⁸https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf

⁹⁹The Representative Concentration Pathways (RCPs), describe four different 21st century pathways of GHG emissions and atmospheric concentrations, air pollutant emissions and land use.

¹⁰⁰Farquharson et al., 2007

¹⁰¹Huq, Nazmul, Huge, Jean, Boon, Emmanuel, Gain, K, Animesh, 'Climate Change Impacts in Agricultural Communities in Rural Areas of Coastal Bangladesh: A Tale of Many Stories,' *Sustainability* 2015, 7, 8437-8460; doi:10.3390/su7078437

¹⁰²Soil Resource Development Institute (SRDI) (2010) Saline Soils of Bangladesh, SRDI, Ministry of Agriculture, Dhaka, Bangladesh.

induced salinity intrusion could be about 0.2 million metric tonnes¹⁰³. Another study is supportive of this projection and estimates a climate-induced increase of salinity in irrigation water of 5ppt could lead to a reduction of farm productivity by up to 50%¹⁰⁴. It is projected that climate change impacts could lead to a decrease of the agricultural contribution to the country's GDP by 3.1% per year – or a cumulative \$36 billion in lost value-added for the period 2005-2050¹⁰⁵.

Although in the last four decades, the agriculture sector has made very significant progress in crop production and food insecurity management through interventions (agriculture and fiscal) in the risk prone areas, these gains could be threatened with further intensifying climate change impacts¹⁰⁶. This demands adaptive responses from both the industry, the government, and local people to reach a paradigm shift in livelihood choices and production patterns¹⁰⁷.

Aquaculture and fisheries: The fisheries and aquaculture sector of Bangladesh will be impacted by climate change in several ways. Increasing salinity in coastal fresh and brackish water river systems will negatively impact the current composition of fish species and ecosystems. Salinity intrusion is also expected to have severe impacts on freshwater fish species. A 2008 study in highly saline Paikgacha Sub-District in Khulna and moderately saline Rampal Sub-District in Bagerhat found that freshwater species during 1975-2005 had decreased by 59 per cent and 21 per cent respectively in those regions. The slight increase in salt-tolerant species did not compensate for the loss in diversity that is a serious threat to the local ecosystem and food supply¹⁰⁸. Another study applies 27 alternate climate change scenarios to extrapolate salinity trends in coastal rivers, between 2012 and 2050, to project the impact on stocks of 83 different fish species¹⁰⁹. These species are commonly consumed in Bangladesh's coastal zones and are an integral part of current nutrition of local communities. Increase in salinity is expected to adversely impact the reproductive cycle and capacity, spawning area and feeding, breeding and longitudinal migration of many of the fish species¹¹⁰. The results further indicate that brackish water expanding into fresh water habitats will cause the loss of fish species in 76 coastal upazilas, with most the poor households likely being in the areas that are projected to be worst-affected.

Similarly, temperature and changing precipitation patterns will influence the fish's physiology i.e. growth, reproduction, metabolism¹¹¹. High temperatures may also induce growth of aquatic microphytes. Higher production of microphytes can reduce productivity of water and could lead to habitat degradation and oxygen depletion. Indirect impacts of climate change on fish are the changes and effect on the fish habitat/ecology on which fishes depend for food and shelter¹¹². Temperature rise may also affect distribution patterns of some marine fishes and they may migrate to higher latitudes for cooler water¹¹³.

On the other side, increasing salinity and habitat changes in the coastal region could favour the expansion of aquaculture, e.g. crab and shrimp farming, whereas upscaling up such activities need to be handled with precaution due to potential environmental and diseases risks.

Livestock: The change of climate has both direct and indirect impacts on livestock. Increasing heat and changing weather patterns can directly impact livestock, while indirect impacts can occur due to a reduced availability and quality of grazing areas and fodder due to climate change¹¹⁴. As compared to other sectors, there are very few economic analyses done on the climatic effects on the livestock sector worldwide and even fewer in Bangladesh. A shift towards raising more climate resilient livestock, e.g. sheep who have a higher resilience against salinity than cows and buffaloes, could enable rural farmers reducing the vulnerability of their livestock.

¹⁰³ Mainuddin, Khandaker, Rahman Aminur, Islam, Nazria, Quasem, Saad, 'Planning and costing agriculture's adaptation to climate change in the salinity prone cropping system of Bangladesh,' Bangladesh Center for Advanced Studies, October 2011.

¹⁰⁴ Clarke, D., Williams, S., Jahiruddin, M, Parks, K., Salehin, M., 'Projections of on-farm salinity in coastal Bangladesh,' Royal Society of Chemistry, 2015.

¹⁰⁵ Economics and Adaptation to Climate Change - Bangladesh available at http://climatechange.worldbank.org/sites/default/files/documents/EACC_Bangladesh.pdf.

¹⁰⁶ Nationally Determined Contribution of Bangladesh, DoE, 2017

¹⁰⁷ Huq, Nazmul, Huger, Jean, Boon, Emmanuel, Gain, K, Animesh, 'Climate Change Impacts in Agricultural Communities in Rural Areas of Coastal Bangladesh: A Tale of Many Stories,' Sustainability 2015, 7, 8437-8460; doi:10.3390/su7078437

¹⁰⁸ Gain et. Al, 2008 Impact of River Salinity on Fish Diversity in the South-West Coastal Region of Bangladesh. International Journal of Ecology and Environmental Sciences 34 (1): 49-54, 2008 NATIONAL INSTITUTE OF ECOLOGY, NEW DELHI

¹⁰⁹ Dasgupta, Susmita, Huq, Mainul, Mustafa, Golam Md., Sobhan, Istiak Md., Wheeler, David, 'Impact of Climate Change and Aquatic Salinization on Fish Habitats of Poor Communities in Southwest Coastal Bangladesh and Bangladesh Sundarbans', World Bank Group, Development Research Group, Environment and Energy Team, March 2016.

¹¹⁰ Dasgupta, Susmita, Huq, Mainul, Mustafa, Golam Md., Sobhan, Istiak Md., Wheeler, David, 'Impact of Climate Change and Aquatic Salinization on Fish Habitats of Poor Communities in Southwest Coastal Bangladesh and Bangladesh Sundarbans', World Bank Group, Development Research Group, Environment and Energy Team, March 2016.

¹¹¹ Chowdhury NT. 2010. Water management in Bangladesh: an analytical review. Water Policy. 12:32-51.

¹¹² Mustafa, 2010.

¹¹³ Chowdhury NT. 2010. Water management in Bangladesh: an analytical review. Water Policy. 12:32-51.

¹¹⁴ Hatfield et al., 2008.

Forest, biodiversity, and ecosystems: All ecosystems and landscapes in Bangladesh are getting degraded due to the change in hydrological regimes, pollution, poorly managed and unsustainable tourism (e.g. St. Martin's Island, Lawachara National Park, Ratargul Swamp Forest, Madhabkundu Eco-park and Sundarban), unsustainable agricultural practices, urban expansion, and above all impacts of climate change¹¹⁵. The biodiversity and different ecosystems in Bangladesh, including those of forests, will be heavily impacted by climate change. Changing temperatures, precipitation patterns and fresh water availability, and soil quality, among other impacts, can lead to changing ecosystem compositions with some species migrating due to increasing difficulties to cope with a transforming environment, a decline of plant density, extinction of some species. IPCC projected that the climate change is worsening the state of tropical forest ecosystem. Increase in temperature, precipitation, salinity and extreme weather events such as floods, cyclones and droughts of a tropical country like Bangladesh will create negative impact on the forests¹¹⁶. According to a projection, by 2050 the Sundarbans will be permanently inundated due to rise in sea levels, which will cause a gradual decrease of swamped vegetation and mangroves, which currently are breeding beds and shelter for aquatic fauna. Cyclone induced inundations with saltwater can further negatively affect coastal vegetation and forests. Some experts project that a large part of the Sundarbans mangroves forest is highly threatened of destruction due to rise in sea level combined with anthropogenic stressors. Inland forests and ecosystems are similarly at risk, in particular, in the drought prone regions (north and west Bangladesh), climate change will affect the species variety and density.

GHG emissions profile

Bangladesh is a Least Developed Country (LDC) whose emissions are less than 0.35% of global emissions. However, Bangladesh recognises that in order to meet the 2 degrees objective all countries will need to undertake mitigation in line with the IPCC conclusion that meeting 2 degrees requires global reductions to reduce by 40 to 70% global anthropogenic GHG emissions reductions by 2050 compared to 2010 levels. Bangladesh's approach is driven by the long-term goal announced by its Prime Minister that its per capita GHG emissions will not exceed the average for developing countries. Therefore, Bangladesh's approach focuses on putting itself on a pathway which will avoid an increase of emissions per capita beyond this level, while pursuing national development goals¹¹⁷.

For the year 2011, it was estimated that the three key emitting sectors emitted 64 MtCO₂e, with the power sector emitting 21 MtCO₂e, the transportation sector 17 MtCO₂e, and the industrial sector 26 MtCO₂e¹¹⁸. The emission development in the country under a business-as-usual (BAU) scenario (excluding LULUCF) projected that by 2030 these emissions could increase by 264% up to 234 MtCO₂e, considering population growth rate and continued economic development¹¹⁹. These figures are based on analysis carried out throughout 2015 using the best available data. However, data quality and availability is problematic in Bangladesh. If new and more robust data comes to light in the future, or if assumptions change (e.g. projections of population or economic growth) the Government will update its analysis accordingly. This will be coordinated with the next update of the BCCSAP and also embedded within the National Communication and Biennial Update Report reporting cycle.

GoB started to improve its regulatory framework and implement mitigation actions that will help limit the country's GHG emissions. These mitigation actions, which will be continued and expanded, will play a key role in realising the move to a low-carbon, climate-resilient economy, while becoming a middle-income country by 2021.

1.3 Climate change response

1.3.1 National frameworks

In order to enable Bangladesh to follow a climate compatible and low emissions development trajectory, the GoB developed a range of plans and frameworks that provide clear guidance to key stakeholder groups, national development planning, and sets ambitious targets. Climate change challenges are well recognized and remedial measures are appropriately articulated in the country's long-term vision and multiyear plan like the Vision 2021 and Seventh Five Years Plan. A number of acts, policies, plans, strategies, frameworks, instruments, and tools to tackle the current vulnerability and imminent risk of climate change were developed and

¹¹⁵ GED (2017). Bangladesh Delta Plan (BDP 2100), Forest and Biodiversity. General Economics Division, Bangladesh Planning Commission, 2017.

¹¹⁶ Ministry of Environment and Forest 2016, Assessment of Sea Level Rise on Bangladesh Coast through Trend Analysis. Climate Change Cell. Department of Environment.

¹¹⁷ Ministry of Environment and Forest 2015, Intended Nationally Determined Contributions (INDC), Ministry of Environment and Forest, Government of the People's Republic of Bangladesh.

¹¹⁸ Ministry of Environment and Forest 2015, Intended Nationally Determined Contributions (INDC), Ministry of Environment and Forest, Government of the People's Republic of Bangladesh.

¹¹⁹ Ministry of Environment and Forest 2015, Intended Nationally Determined Contributions (INDC), Ministry of Environment and Forest, Government of the People's Republic of Bangladesh.

enacted. This guiding and regulatory frameworks are constantly being further improved and developed in order to incorporate international best practices and bring them in conjunction with national realities.

Climate change acts, plans, and national targets

The following section provides an overview about key climate change related national plans and frameworks¹²⁰.

The Climate Change Trust Act 2010: The Government of Bangladesh has prepared and enacted the Climate Change Trust Act 2010¹²¹ to redress the adverse impacts of climate change. The trust act aims to:(i) make necessary action plan for capacity building for adjustment of the people or groups of people of the affected and risky areas resulting from climate change, upgrading their life and livelihood and facing the long term risk , and to take measures for implementation thereof; and(ii) take measures for adaptation, mitigation, technology development and transfer, capacity building and funds for facing adverse effect of climate change on man, biodiversity and the nature. The climate change trust act strives to use the fund of the Trust in facing the risk arising from climate change as a special case out of the development or non-development budget of the Government, initiate and implement suitable action plan for implementation of special programme regarding climate change and ensuring sustainable development, initiate projects or programmes regarding institutional and social capacity building of the local people and development of human resources in the grass root level for facing climate change, undertake necessary action research in the field of adaptation, mitigation, technology transfer and finance and investment for facing climate change and in the light of the research result, to initiate and implement pilot programmes with dissemination of such result etc.

According to the Trust Act the projects shall be prepared, adopted and implemented with the money of the Climate Change Trust Fund in accordance with the following procedures, namely: (i) in addition to the running development and non-development programmes of the Government, the short, medium and long term development projects shall be adopted through the Trust for the purpose of implementation of special programmes relating to climate change; (ii) the concerned Ministry or Division and the Non-Government Research Institute or Organization having experience in the concerned field shall, in the light of the Bangladesh Climate Change Strategy and Action Plan, 2009, made by the Government, prepare projects or programmes relating thereto and submit them to the Board of Trustees; (iii) the projects or programmes relating thereto shall be implemented by the concerned Ministry, Division or Organization in accordance with the guidelines relating to climate change and the projects or programmes shall have to be prepared complying with the directions of the Board of Trustees; (iv) funds shall be allocated to conduct research activities in accordance with the policy formulated by the Board of Trustees for adaptation, mitigation, technology transfer and finance and investment in order to face the effect of climate change; (v) necessary funds shall be allocated in accordance with the policy formulated by the Board of Trustees for publicity and advertisement in order to create public awareness of the effect of climate change; and (vi) funds shall be allocated following the policy formulated by the Board of Trustees for arranging seminar, symposium, workshop or training, etc. for sharing knowledge and experience with a view to attaining sustainable disaster recovery and disaster risk reduction.

Intended Nationally Determined Contributions (INDC): INDC (now National Determined Contributions - NDC), lays out adaptation and mitigation strategies to increase climate resilience (see table 2). The government has identified interventions to address the most pressing vulnerabilities to the adverse impacts of climate change, including: water security; salinity intrusion control; and institutional capacity building. Adaptation actions are prioritized according to these identified vulnerabilities. INDC states that monitoring and evaluation of adaptation policies and programmes is also crucial to ensure that resources are efficiently utilized in order to increase resilience overall.

Bangladesh is committed to reduce GHG emissions in the power, industry and transport sectors by 5% below 'business-as-usual' GHG emissions by 2030 using only domestic resources, or by 15% below 'business-as-usual' GHG emissions by 2030 if sufficient and appropriate support is received from developed countries¹²². Bangladesh's mitigation contribution covers the power, transport and industry sectors. Under a BAU scenario, GHG emissions in Bangladesh in these sectors are expected to represent 69% of total emissions by 2030 (excluding LULUCF), an increase of 264% by 2030, from 64 MtCO₂e in 2011 to 234 MtCO₂e in 2030. The contribution Bangladesh is willing to make is set out below (see table 3).

This contribution is based on analysis carried out throughout 2015 using the best available data. However, data quality and availability is an issue in Bangladesh. If new and more robust data is being developed, or if assumptions change (e.g. projections of population or economic growth), the Government will update its analysis accordingly. This will be coordinated with the next update of the BCCSAP and also embedded within the National Communication and Biennial Update Report reporting cycle.

¹²⁰This policy overview is adapted from an analysis undertaken by UNDP for the feasibility study of MoWCA GCF project proposal.

¹²¹ Ministry of Environment, Government of Bangladesh 2016.

¹²² NDC, DoE 2017.

Table 2: Summary of INDC/NDC targets		Estimated resources required USD \$																											
Conditional	<p>Adaptation:</p> <table border="1"> <thead> <tr> <th>Adaptation measure</th> <th>Estimated cost (billion \$, 2015-2030)</th> </tr> </thead> <tbody> <tr> <td>Food security and livelihood and health protection (incl. water security)</td> <td>8.0</td> </tr> <tr> <td>Comprehensive disaster management</td> <td>10.0</td> </tr> <tr> <td>Salinity intrusion and coastal protection</td> <td>3.0</td> </tr> <tr> <td>River flood and erosion protection</td> <td>6.0</td> </tr> <tr> <td>Building climate resilient infrastructure</td> <td>5.0</td> </tr> <tr> <td>Rural electrification</td> <td>3.0</td> </tr> <tr> <td>Urban resilience</td> <td>3.0</td> </tr> <tr> <td>Ecosystem based adaptation (incl. forestry co-management)</td> <td>2.5</td> </tr> <tr> <td>Community based conservation of wetlands and coastal areas</td> <td>1.0</td> </tr> <tr> <td>Policy and institutional capacity building</td> <td>0.5</td> </tr> </tbody> </table>	Adaptation measure	Estimated cost (billion \$, 2015-2030)	Food security and livelihood and health protection (incl. water security)	8.0	Comprehensive disaster management	10.0	Salinity intrusion and coastal protection	3.0	River flood and erosion protection	6.0	Building climate resilient infrastructure	5.0	Rural electrification	3.0	Urban resilience	3.0	Ecosystem based adaptation (incl. forestry co-management)	2.5	Community based conservation of wetlands and coastal areas	1.0	Policy and institutional capacity building	0.5	\$40 billion					
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Table 3: Projected emissions reductions in the power, transport and industry (energy) by 2030¹²³

Sector	Base year (2011) (MtCO ₂ e)	BAU scenario (2030) (MtCO ₂ e)	BAU change from 2011 to 2030	Unconditional contribution scenario (2030) (MtCO ₂ e)	Change Vs BAU	Conditional contribution scenario (2030) (MtCO ₂ e)	Change Vs BAU
Power	21	91	336%	86	-5%	75	-18%
Transport	17	37	118%	33	-9%	28	-24%
Industry (energy)	26	106	300%	102	-4%	95	-10%
TOTAL	64	234	264%	222	-5%	198	-15%

¹²³ INDC, DoE 2015

Bangladesh Climate Change Strategy and Action Plan (BCCSAP): BCCSAP is the key climate change national plan and basis for climate investment in Bangladesh. BCCSAP provides an overall framework (see table 4) for action, recognizing the need for adaptation and highlighting the GoB willingness to follow a low carbon pathway towards achieving development¹²⁴. BCCSAP is a strategy/plan and a basic reference for aligning investments with climate change objectives. The programs are categorized under four timelines, from immediate to long-term, focusing on medium and long-term actions through pillars which draw on the areas set out in UNFCCC negotiations under the Bali Roadmap i.e. adaptation, mitigation, technology transfer and financing. Six thematic areas with 44 programs (and 145 actions) have been identified within these thematic areas (see **Error! Reference source not found.**). Regarding the needs of poor and vulnerable populations, BCCSAP emphasizes the inclusion of women and children in all the activities under the Action Plan.

Table 4: BCCSAP Themes

Theme 1: Food Security, Social Protection and Health:	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 for food security, safe housing, employment and access to basic services, including health.
Theme 2: 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.
Theme 3: Infrastructure:	This theme 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.
Theme 4: 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.
Theme 5: Mitigation and Low Carbon Development:	This theme 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.
Theme 6: Capacity Building and Institutional Strengthening:	This theme 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.

National Adaptation Programme of Action (NAPA) 2005: The NAPA (2005) identified 15 priority activities, including general awareness raising, capacity building and project implementation in vulnerable regions, with a focus on agriculture and water resources. The NAPA considered only urgent and immediate priorities for adaptation, and was not a plan. The NAPA was further updated in 2009 and identified 45 adaptation measures with 18 immediate and medium-term adaptation measures. However, an evaluation of the NAPA process in Bangladesh found that its technical legacy is only recognized within the high-level planning arena, and has led to few practical interventions¹²⁵, though it incorporates gender in a reasonably comprehensive manner.

National Adaptation Plan (NAP): Adaptation policy and implementation in Bangladesh is being driven by the NAP process. Nonetheless, this NDC Implementation Roadmap and the accompanying NDC Sectoral Action Plans for power, industry and transport, take account of adaptation by attempting to prioritise measures and actions that will have both mitigation and adaptation benefits, as well as by setting out how the three sectors are likely to be impacted by climate change and how they can take actions to address this. The NAP process was established under the Cancun Adaptation Framework. It enables countries to formulate and implement NAPs as a means of identifying medium- and long-term adaptation needs and developing and implementing strategies and programmes to address those needs¹²⁶. A roadmap for developing the NAP was prepared in 2015, supported by the Norwegian Government. Institutional arrangements have been set up for the NAP process, through the formulation of an Inter-Ministerial Steering Committee, a Technical Advisory Committee and a core NAP formulation team. In terms of current work, both UNDP and GIZ are supporting the GoB in developing their National Adaptation Plan.

¹²⁴ MOEF-GOB, 2009. Bangladesh Climate Change Strategy and Action Plan 2009, Ministry of Environment and Forest (MOEF), Government of the People's Republic of Bangladesh (GOB), Dhaka.

¹²⁵ COWI and IIED 2009. Evaluation of the operation of the Least Developed Fund for adaptation to climate change. GEF Evaluation Office and Ministry of Foreign Affairs. Evaluation Department Government of Denmark. <http://www.evaluation.dk>

¹²⁶ For more information, see http://unfccc.int/adaptation/workstreams/national_adaptation_plans/items/6057.php.

Considering the vulnerabilities, the government has identified the following areas of interventions to address adverse impacts of climate change:

Key areas to address adverse impacts of climate change	
1.	Food security, livelihood and health protection (incl. water security)
2.	Comprehensive disaster management
3.	Coastal Zone Management including Salinity Intrusion control
4.	Flood Control and Erosion protection
5.	Building Climate Resilient Infrastructure
6.	Increased Rural Electrification
7.	Enhanced Urban Resilience
8.	Ecosystem based adaptation (including forestry co-management)
9.	Community based conservation of wetlands and coastal areas
10	Policy and Institutional Capacity Building

Climate Change and Gender Action Plan (ccGAP): The underlying principle of the ccGAPs is the transformative nature of gender interventions. ccGAP also has the potential to enhance the effectiveness and efficiency of climate change and socioeconomic development responses. The development of ccGAP followed a participatory process that included in-country meetings, stakeholder consultations involving representatives from several ministries/ government departments, civil society, academia, research institutions, local NGOs and international organizations, a desk review of several key reports, publications, websites, surveys and in-person interviews.

The ccGAP integrates gender considerations into four of the six main pillars as identified in the BCCSAP: (i) food security, social protection and health; (ii) comprehensive disaster management; (iii) infrastructure and (iv) mitigation and low carbon development. The remaining two pillars of the BCCSAP, those of research and knowledge management and capacity building and institutional strengthening, were mainstreamed within the above four pillars as crosscutting topics.

Under the food security, social protection and health pillar, emphasis has been given to integrate gender and climate change concerns into policies and national documents concerning the agricultural sector, create an environment to lease land/water bodies to women, ensure crop insurance and/or other safety nets for poor female farmers, access to financial instruments and involvement of women applying alternative technologies e.g. bio-fertilizer and climate-resilient cropping practices.

Under the CDM pillar, some actions worth highlighting are the development of a gender responsive disaster management policy, increased participation of women in central and local disaster management councils (UDMC/UzDMC), allocating financial resources to address gender and DRR issues, participation of women in community risk assessments, vulnerability and capacity assessment activities, as well as activities to help women and men provide first aid and primary health care as first responders in an emergency.

In the context of Millennium Development Goals (MDGs), the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) (1979), and the Beijing Platform of Action (1995), Bangladesh has developed several policies and sectoral strategies to ensure gender equality, which include: (i) The Women's Development Policy (WDP), 2011 within the framework of CEDAW; and (ii) The National Action Plan (NAP) to implement the WDP.

Climate Action Plan: The Bangladesh Climate Action Plan addresses both adaptation and mitigation for the current decade (until 2018). It was developed in 2009 and recognizes the need to address climate induced hazards and their associated impacts on different sectors. This Climate Action Plan is embodied in the BCCSAP and identified a set of activities/measures under six major themes:

- Food security, social protection and health;
- Comprehensive Disaster Management;
- Infrastructure;
- Research and knowledge management;
- Mitigation and low carbon development and;
- Capacity building and institutional strengthening.

Bangladesh Environment, Forestry and Climate Change Country Investment Plan (2016 – 2021): The Bangladesh Country Investment Plan (CIP) for Environment, Forestry and Climate Change (EFCC) has been prepared by the Ministry of Environment and Forests through a process of review, joint effort and consultation that included multiple Ministries, agencies, experts, NGOs and civil society organizations as well as various stakeholders at the divisional, district and community level. The CIPCC provides a strategic framework for planning and coordination of national and international investments for the environment, forestry and climate change (EFCC) sectors in Bangladesh. It is a 5-year framework that identifies areas for investment under EFCC. It also discloses the actions and targets that the Government has submitted to the UNFCCC in pursuance of Paris Agreement. The overall goal of the CIPCC is to increase the contribution of the EFCC sectors to the sustainable development of the country, help reduce poverty, improve environmental and human health and increase resilience to climate change. Enhanced utilization of natural resources, pollution control, climate change mitigation and adaptation and efficient environmental stewardship will be the means through which the goals will be attained. The identified country needs in the CIP received particular attention in the development of this Country Programme and informed the selection and prioritisation of project ideas in the project pipelines.

Seventh Five Year Plan for Climate Change: In the Seventh Five Year Plan (SFYP) the Government of Bangladesh has taken a pro-poor Climate Management Strategy, which prioritizes adaptation and disaster risk reduction. SFYP also follows the path of low carbon development, mitigation, technology transfer and the mobilization and international provision for investments in coping mechanisms. The adaptation strategy encompasses various measures to adequately prepare for the inevitable consequences of climate change, whereas the mitigation efforts will cover activities aimed at reducing the carbon footprint.

Seventh Five Year Plan proposes a number of key activities to facilitate climate change mitigation and adaptation. These include to:

- Promote a whole-of government approach for climate change readiness - In order to design an effective CCA strategy, developing a national institutional framework for allocating roles and responsibilities for different ministries is paramount.
- Enhance understanding, knowledge, capacity and coordination - Implement training programmes and capacity development of civil servants and other stakeholders. Institutional capacity of units within different ministries and departments should be strengthened so that climate change may be integrated into development projects and initiatives.
- Prioritize programmes and projects – Project prioritized actions in annual, three years, five years and long-term budget framework to demonstrate demands of climate budget.
- Integrate Gender Sensitivity in project design – Revise modalities and criteria for ensuring incorporation of gender concerns in project design.
- Food security, social protection and Health – Climate smart agricultural practices and technologies focusing on climate resilient crop varieties will also be developed to ensure food security. Climate change resilient cropping systems will also be developed to ensure food security. Other aspects of food systems, such as storage, distribution, and access will be ensured.
- Managing hazards and disasters - GoB will further mainstream DRR and CCA in policy and planning frameworks of all relevant ministries and departments. Funding from national budget will be obtained for CCA and DRR, in addition to contributions from development partners. GoB will also strengthen national early warning systems regarding cyclones, storm surge and floods to enable more accurate forecasts.
- Infrastructural functioning and maintenance - GoB will repair and rehabilitate existing infrastructure, including river embankments and drainage systems, and ensure proper operation and maintenance. Steps will be taken to plan, design, and construct urgently needed new infrastructure.
- Curbing internal migration and displacement – The introduction of Integrated River Management Plan, River Management Improvement and Land development projects on right Bank of Jamuna at Sirajganj – Belkuchi will stabilize the river plan form and make room for efficient river channelization. Reclamation of land and enhancing the navigability of the river by reducing the width is possible by river training works to create conditions for sustainable development and poverty alleviation of the northern districts of Bangladesh.

Sector Development Plan (2011-25) for the water supply and sanitation sector: The Sector Development Plan is considered as the main strategic and planning document for the water supply and sanitation sector to achieve its national goal and targets. The plan is built on a set of principles related to cost recovery, which include: (i) operation and maintenance of the water supply and sanitation systems based on sound technical and financial management practices, (ii) adoption of cost recovery measures for WSS services in a manner that will ensure recovery of at least the operation and maintenance costs in the shortest possible time and then gradually recover capital costs and also generate funds for rehabilitation of degraded systems and expansion of facilities to meet future

demands, (iii) ensuring fairness and social justice among the customers and service providers while establishing service standards and tariff, and (iv) providing safety nets for the poor and address the needs of women, children and people with disability¹²⁷.

The National Plan for Disaster Management: According to the 6th Five Year Plan, over the decades, the Government, with the support of development partners, has invested in Comprehensive disaster management projects, involving community-based programs and early warning systems for floods and cyclones. GoB drafted the National Plan for Disaster Management (NPDM) 2008-2015 to comprehensively address Disaster Risk Reduction (DRR) and climate change adaptation (CCA) in all development plans, programmes and policies. The policy highlights priorities for DRR and adaptation through assessment of climate change risk, community-based programmes for risk reduction, public awareness, improving early warning systems, and strengthening communication facilities and emergency response systems. GoB has made significant progress in shifting its focus from traditional 'relief and rehabilitation' to a DRR approach that emphasizes cost effectiveness in approaches to DRR.

Although the Government has made considerable progress in establishing an institutional framework for DRR, many of the plans and policies are yet to be implemented. The transfer of knowledge about DRR and CC from science to project implementation within communities tends to be very limited and in general, as does the coordination among donors and NGOs. Although a detailed system for disaster management is in place (through CDMP) with Disaster Management Committees at different levels, they are inadequately funded to conduct their mandate effectively. There appears to be no broad-based ownership of community plans, resulting in different stakeholders implementing them in different ways, without a common national approach.

National Water Management Plan (NWMP) 2000: The National Water Management Plan provides a framework to plan and implement activities and projects in a coordinated manner, consistent with overall national and sectoral objectives. The goal of the Plan is for safe and sustainable water supply, sanitation and hygiene services for all, leading to better health and well-being. Starting in 2014 it will be reviewed annually and updated/revised after five years. The Strategy is based on guiding principles that include ensuring drinking water-security through integrated water resource management and recognizing the importance of gender in all WASH activities¹²⁸.

Policy and regulatory framework

The following section provides a, non-complete, overview about key policies and regulatory frameworks of importance to climate change response in Bangladesh¹²⁹.

The development of climate change policy in Bangladesh has been stimulated and promoted by the international dimension. Reciprocally, Bangladesh has helped develop LDC positions and particularly contributed to debates on climate finance. Bangladesh's vulnerability in an international context has given it moral voice within an international context and it has championed the LDCs. In the longer term, the country's economic development may lead it into the middle-income group - indeed that is the goal of political interests. In recent years therefore, whilst climate change policy is a new element at the national level, it is usually framed within this broader context. The country has its own policy framework that has direct and indirect bearing with the climate change perturbation and provide guidance for the policies and programmes for climate change.

As per the National Constitution of Bangladesh, the article 18A of the Bangladesh constitution¹³⁰ (Protection and improvement of environment and biodiversity) states, "The State shall endeavour to protect and improve the environment and to preserve and safeguard the natural resources, bio-diversity, wetlands, forests and wild life for the present and future citizens".

The Environment Policy (1992): The Environment Policy 1992 built upon the spirit of the Rio Conference and acknowledged that sustained development of the country is based on the well-being of the environment and ecosystems since they provide services necessary to fulfil the socio-economic needs of communities, which in turn contribute to climate mitigation and adaptation. The impact of environmental degradation on soil fertility, the quantity and quality of available water, air quality, forests, wildlife and fisheries were widely recognized. Whilst women face the greatest adverse impacts due to the degradation of natural resources on which they depend, the policy does not deal with the environmental impact on vulnerable women.

¹²⁷ Local Government Division, Ministry of Local Government, Rural Development & Cooperatives. GoB 2011. Sector Development Plan (FY 2011-25): Water Supply and Sanitation Sector in Bangladesh

¹²⁸ Ministry of Water Resources Government of the People's Republic of Bangladesh 1999, National Water Policy 1999. Retrieved from: <http://warpo.gov.bd/sliderdetails/c3674f62057bce14eb6a6a349000bba6.pdf>

¹²⁹ This policy overview is adapted from an analysis undertaken by UNDP for the feasibility study of MoWCA GCF project proposal.

¹³⁰ Government of Bangladesh, the Bangladesh Constitution.

Agriculture Policy (2010): The existing National Agricultural Policy was adopted in April 1999, and later re-drafted (Agriculture Policy 2010). It aims to enhance crop productivity, profitability and employment in rural areas and to improve the well-being of the poor. The new agriculture policy outlines strategies so that agricultural lands are protected, the decline of biodiversity is arrested, and natural disasters including droughts and floods affecting agriculture resources can be addressed. Thus, appropriate implementation of the agricultural policy is important for food and livelihoods security.

National Seed Policies (1993): The national Seed Policy 1993, The Seeds (Amendment) Act 1997, and The Seed Rules 1998 are mostly aimed at achieving self-sufficiency in food production. Thus, the instruments include provisions for liberalizing the import of seed and seed processing machineries, the strengthening of quality control and research systems and maintaining seed security. Unfortunately, these instruments do little to conserve indigenous or local crop diversity, and protect local ecosystems and habitats from invasion of foreign species. However, food security enhancement does reduce community vulnerability, and importantly the Policy promotes stress-tolerant seed varieties, such as saline and drought tolerant seeds such as BINA-10, BRRI-28, 29, 47 (Saline tolerant) and BRRI-56, 57 (drought tolerant) seeds.

Livestock Development Policy (1992): The livestock development policy emphasises enhancing livestock and poultry (meat and eggs) production to ensure a sustained supply of animal protein for the people. However, some of the objectives are relevant to biodiversity conservation. For instance, its target to produce biogas may contribute to reducing pressure (e.g. fuel wood collection by the rural community) on forest resources. The Policy, in conjunction with the National Agricultural Policy (1999, revised 2010) and National Fisheries Policy, is significant for livelihoods as it uses risk-based land use planning, which is critical for climate-resilient livelihoods in Bangladesh.

National Fisheries Policy (1998): The National Fisheries Policy aims to enhance production of fish from inland marine sources, and to increase foreign currency earnings (Bangladesh is one of the top six aquaculture producing countries in 2016), whilst maintaining environmental balance and biodiversity conservation (objective 5 of the policy). The policy identifies different threats to fisheries, such as (i) population pressure, (ii) construction of infrastructure in the floodplains, (iii) pollution by chemical fertilizers, insecticides and pesticides. It attempts to stem the illegal act of collecting shrimp fry from the river and by doing so, killing national species and affecting biodiversity and fisheries' livelihoods. It indirectly promotes the production of specific fry for entrepreneurs.

National Policy for Safe Water Supply and Sanitation (1998): The policy calls for a transition from traditional service delivery arrangements, recognizing that water has an organic, social and an economic value. The policy states "as water is increasingly considered to be an economic good as well as a social good, water supply services shall be provided based on user demand and cost sharing". It emphasizes viable service provision where the price of services is reflected in its economic value, with the eventual objective of covering the cost of production and supply. It also suggests that the transition from the current level of subscription to new payment rates should be gradual and there should be a safety net for ultra-poor communities.

National Water Policy (1999) and National Cost Sharing Strategy: Governance in the water sector has made bold steps through the National Water Policy which provides a comprehensive outlook of how water resources are managed in Bangladesh. The Policy provides short-, medium- and long-term outlooks on these resources. Section 9.4 of the Policy refers to the importance of water in wildlife and fisheries whereas subsections 12 and 13 respectively focus on the importance of water for the environment and wetlands.

Pro-Poor Strategy for Water Supply and Sanitation in Bangladesh (2005): The strategy was developed in recognition of two major needs. The first need is for 'direct attack on poverty' as the benefits of growth are not distributed equitably, and the second need is for providing a 'safety-net' for the ultra-poor in conjunction with reducing subsidies over time, which is also recommended by the National Policy for Safe Water Supply and Sanitation 1998. The strategy emphasizes the existing policy of the government that the community, irrespective of whether the beneficiary household is poor, ultra-poor or non-poor, is required to contribute 10 per cent of the capital cost of water supply projects as the 'beneficiary's share'.

Coastal Zone Policy (2005): The Coastal Zone Policy recognizes the importance of ecosystems and biodiversity conservation, and that the coast contains several ecosystems that have important conservation value. A large portion of these resources include fisheries in the estuaries and in the Bay of Bengal, which provide livelihoods for millions of vulnerable coastal inhabitants. The policy supports coastal people to pursue their livelihoods in a sustainable manner without impairing the integrity of the natural environment. Amongst several objectives it identifies the following: the creation of sustainable livelihoods; intensifying the coverage of safe drinking water facilities; reducing vulnerabilities (including to Climate Change) and closing the gender gap. The Coastal Development Strategy (CDS) is based on the Coastal Zone Policy 2005. Its prime goal to reduce poverty through development of sustainable livelihoods and the integration of the Coastal Zone into national processes.

National Land Use Policy (2001): The National Land Use Policy has little direct focus on climate change. However, components to reduce illegal and use-conversion to ensure that land use activities are attuned with environmental conservation, which indirectly links to climate change adaptation and mitigation. The policy advocated tree plantation in riverine and coastal islands to increase forest cover in the country, which may contribute in protecting people and resources in those areas from climate change induced hazards, particularly cyclone-induced winds and rising storm surges.

Gender and the Women's Development Policy (2011): The objective of this policy is to take special measures to enhance the overall safety and security of women and children, helping them deal with disasters; rehabilitation of those affected; special consideration for disabled women; ensuring food distribution and extending support and assistance to eliminate bottlenecks created due to extreme climate events and disasters. Incorporating gender and gender-sensitive policy and planning is an important aspect to understanding climate change impacts and the way effective, sustainable responses are developed at local, national and international levels, as articulated in the UN Conference of the Parties (COP)-18 in Doha (2012).

1.3.2 Regional engagement

The Government of Bangladesh does currently not engage in any regional climate change adaptation or mitigation related projects or programmes. The only multilateral initiative is the close coordination with the Government of India on the management of the Sundarbarn mangrove forest and its conservation as a protected area.

1.3.3 Access to finance

Since the early 2000s, GoB intensified its action to address risks associated with climate change, including utilizing financial and technical support from international sources, including multi-lateral sources such as the Least Developed Country Fund (LDCF), Special Climate Change Fund (SCCF) and Adaptation Fund (AF). The 2005 National Adaptation Programme of Action (NAPA) highlighted adaptation projects needed on an immediate and urgent basis¹³¹. GoB also implemented two national climate change funds:

(i) Bangladesh Climate Change Trust Fund (BCCTF): Bangladesh was the first government to set up a trust fund to create a national resource for climate change investments with the aim to support implementation of the BCCSAP by allocating about US\$100 million in 2009-10 from the non-development budget. A similar amount has been budgeted for FY 2010-11 demonstrating ongoing financial commitment. This move was intended to demonstrate the importance that GoB attached to climate change and was enabled by primary legislation in Parliament. The fund was initially Taka +300 crore, which was later, increased to Taka 700 crore – approximately US\$100m annually. In early 2009, the government approved Climate Change Trust Fund Policy. Of the total amount of the fund, 66 per cent are allowed to be spent on Climate Change related project activities and the remaining amount, 34 per cent has to be invested or used for emergencies.

(ii) Bangladesh Climate Change Resilience Fund (BCCRF): Bangladesh Climate Change Trust Fund (BCCRF) was created with an amount of USD 110 million, funded principally by DFID (USD 87 million), and also Denmark (USD 1.6 million), Sweden (USD 11.5 million), the EU (USD 10.4 million) and Switzerland. The purpose of the BCCRF is to support BCCSAP and provide funding for climate change management, primarily adaptation, but also mitigation. Its benefits are also intended to include high-level coordination, thus reducing the risk of overlaps, and to provide donor harmonization, flexible fund management and transparency. It aims to attract additional funding with the potential to be the “one-stop” mechanism.

Over the last three decades, the Government of Bangladesh has invested over \$10 billion (at 2007 constant prices) to make the country more climate resilient and less vulnerable to natural disasters. Flood management embankments, coastal polders and cyclone shelters have been built, and important lessons learnt on how to implement such projects successfully in the dynamic hydrological conditions of Bangladesh and with active participation of communities¹³². Another estimate states that around \$1 billion are spent by the Government of Bangladesh each year for climate-related activities, especially for adaptation to climate change (this corresponds to approximately 6-7% of the total budget including Official Development Assistance – ODA – contributions). Around 77% of the funds come from national sources, while approximately 23% are from development partners (CPEIR, 2012). While the BCCTF, with \$100 million per year, has provided about 10 % of the annual climate finance in Bangladesh for the years 2010-12, the BCCRF and the PPCR each account for only about 2-3 % of climate-related expenditures per year. Climate change responses, or development programmes with a climate change dimension, already exist as part of the government's regular development processes i.e. via the Annual Development Programme (ADP), which includes the development budget (capital expenditures) and non-development budget (recurrent expenditures). With the completion of the Climate Public Expenditure and

¹³¹ Ministry of Environment and Forest, Climate Change Trust, 2016. Retrieved from: <http://www.bcct.gov.bd/images/notice/k.pdf>

¹³² Third National Communication, DoE, 2017

Institutional Review (CPEIR) of 2012, the Ministry of Finance (MoF) and the Planning Commission of Bangladesh are able to detect climate-related government spending in the national budget for the first time. UNDP is also successfully supporting relevant government entities to monitor and plan climate change related investments.

There is a desire to improve the flow of funds and to ensure that climate change is reflected properly in implementation. There are mutual interfaces between all three mechanisms, between Finance Division and Planning Commission in the funding of ADP, between the Planning Commission and MoEF in the development of policy and between the Finance Division and MoEF through implementation of MTBF. Currently, the main responsibility to foster adaptation lies with the lead institution, MoEF, which is limited by the context of an overlapping mandate and weak legal framework, specifically referring to their Rules of Business.

Over several decades the Government, with the support of development partners, invested in:

- Flood management schemes to raise agricultural productivity of many thousands of kilometres of low-lying rural areas and to protect them from extremely damaging floods;
- 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 refuge for communities from storm surges caused by tropical cyclones and 200 shelters from river floods;
- Comprehensive Disaster Management(CDM) 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;
- Agricultural research programs to develop saline 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 nearly 9,000 km of the shoreline;
- An Energy Efficiency labelling programme to promote sales of high efficiency products in the market;
- Energy Efficiency measures for buildings, such as heat insulation and cooling measures, and a revised code on energy efficiency of new buildings;
- The Solar Homes Programme, providing off-grid electricity access to rural areas;
- More than 1.5 million Improved Cook Stoves (ICS) and 4.0 million Solar Home Systems have been distributed;
- Construction of Combined Cycle Power Plant (CCPP) by the Government of Bangladesh and utilities companies;
- Under the Solar roof-top program around 14 MW of solar has been installed on the vacant roof-tops of Government and private buildings.

Table 5 provides an overview about climate change related finance the GoB is accessing through from different International funding sources. The international community generously provided Bangladesh with financial and technical assistance to address climate change related challenges. Despite these efforts and the government's own contributions this finance does not cover the total and upcoming costs of climate change response in the country, particularly under the current emission trajectories.

Table 5: Overview of pledged and received climate change related international finance for GoB through main funding bodies

Fund	Administered/ Sourced by	Pledged funding (US\$ m)	Approved funding (US\$ m)
Least Developed Countries Fund (LDCF)	Global Environment Facility (GEF)	79.964	79.964
Pilot Program for Climate Resilience (PPCR)	The World Bank	109.93	109.93
Special Climate Change Fund (SCCF)	Global Environment Facility (GEF)	138.52	138.52

1.4 Gaps and opportunities

Based on the analysis sections above, it can be concluded that the GoB is already taking proactive steps to address climate change in their development planning and budgeting, both on national and sub-national levels. However, there are still many barriers and gaps (policy, regulatory, institutional, technical, financial, business, social and cultural in nature) that need to be addressed in order to shift the paradigm to transform the development and address climate change into tangible solutions, pragmatic actions, investments and inclusive business opportunities on the ground in driving towards a resilient and low carbon economy, community, and nation. The constrained financial resources of the country and limited absorptive capacity in and coordination between government agencies and with the private sectors create additional challenges to successfully mainstream climate change and align development aspirations with climate change response strategies.

Adaptation:

Accurate and reliable geospatial data base is critical: There have been some studies conducted/being conducted on the impacts, vulnerabilities, and resilience, however, gaps are remaining and demand additional assessments. The GoB acknowledges the importance of a solid knowledge base in order to justify climate change related investments, provide evidence about climate change related threats and opportunities to involve the private sector and other important actors, and to make climate risk informed development decisions.

Assessing adaptation needs and gaps: Recognizing that climate change adaptation (CCA) is an incremental and dynamic process, it is important to set up a solid knowledge base taking stock of adaptation needs and gaps at national and subnational levels. Therefore, a management tool for monitoring and evaluation must be set up within the ongoing institutional mechanism. The importance of such M&E efforts is highlighted duly in the BCCSAP¹³³. A solid understanding of adaptation needs and gaps will enable decision makers to prioritise adaptation options and choose the most cost-effective and socially compatible action.

Alignment with disaster risk reduction agenda: Due to the geographical and socio-economic status of Bangladesh and its exposure to natural hazards, disaster risk reduction is widely mainstreamed in development planning mechanisms. It is of utmost importance to identify synergies between adaptation and risk reduction policies and regulatory frameworks and don't 'reinvent the wheel' for adequate adaptation responses and planning. At the core, it is about building resilient households, communities, and infrastructure. Currently, there is remain a political separation between disaster risk reduction and climate change adaptation planning and response in the country, which need to be overcome in order to enable a comprehensive response to hazards and other development challenges.

Mitigation:

Lack of data and information: A key barrier to including more sectors in the current NDC emission estimates was the availability of robust data. Currently, the available data is not statistically robust, and relies on extrapolation and interpolation. Bangladesh is, however, in the process to improve the data base and to produce solid estimates of sectoral greenhouse gas emission profiles, including for agriculture, land use and forestry, waste and buildings. For this, there is also a need to improve the capacity to apply key modelling methodologies, such as Marginal Abatement Cost Curves, the LEAP models. Based on the improved evidence base, an assessment of the abatement potential in these sectors will be made by the end of 2018 and decisions will be subsequently taken on the inclusion of quantified mitigation targets in the NDC. Data archiving - Lack of consistent archiving of data on mitigation, e.g. from NDC, National Communications, other reports etc. MoEF will initiate a system of electronic data archiving to keep all mitigation-related data in one place. This could form the basis for the eventual MRV system¹³⁴. The availability of solid emission profile and emission reduction potentials information will also enable the GoB to more proactively engage private sector and other actors in emission reduction and facilitate the identification of business opportunities and ways to leverage finance.

MoEF will seek international support for a comprehensive data review across all sectors, to identify the gaps and weaknesses and to help develop more robust data (e.g. through primary data collection surveys).

Capacity Development:

Considerable expertise about climate change response strategies exists, both within Government and among other stakeholders in the country. However, the Government will look for further opportunities to increase the technical capacity to interpret, identify and mainstream climate change responses into their development planning, budgeting, and implementation. An important next step will be for the Government to start designing specific policies to deliver the mitigation reduction targets outlined in the NDC. This will require knowledge of policy approaches such as feed-in tariffs, efficiency standards, and green procurement.

Overall, a range of capacities and skills will be needed to ensure effective governance and coordination of the NDC implementation process. A good deal of capacity already exists in the central NDC Coordination Team in MoEF and DoE, and they will play a key role in identifying capacity needs in other Ministries and supporting them to build the capacity.

The capacity of different agencies should be further developed in:

- ✓ Expertise in bankable project development and management especially for the Green Climate Fund (GCF), the Global Environment Facility (GEF) and other bi-lateral and multilateral agencies.

¹³³ MoEF 2017, A Roadmap for Developing a National Adaptation Plan for Bangladesh (Draft)

¹³⁴ MoEF 2017, NDC

- ✓ Capacity building on Monitoring, Reporting and Verification (MRV), including capacity development in GHG emissions assessment in different sectors including data generation system and management.
- ✓ Expertise in and understanding of good governance structures and processes, for example well-managed committees and working groups. For example, useful lessons can be learned from other countries that have previously set up such institutional structures.
- ✓ Understanding of wider government policy, for example economic and development plans, and sectoral master plans.
- ✓ Basic knowledge of climate policy across key ministries, in particular an understanding of how their core work areas link with the climate agenda and the UN's Sustainable Development Goals.

Lack of mutually reinforcing actions across local and national levels of government: There exist a gap both in terms of capacity and implementation between local and national levels of government. Top-down approaches to adaptation and mitigation planning need to be supported by bottom-up analysis of concrete options and actions. The local level government must be empowered with mandates, manpower, capacity, financial, and technical support.

Cross-cutting:

Developing a strong public private partnership: There is a need to forge a strong public private partnership to complement top down upstream policy and regulatory solutions with downstream bottom up financial and viable business approaches for scaling up climate adaptation and mitigation solutions to benefit the local community for generating long term and transformative impacts. This will help to build trust and confidence and break down any unintended 'silo' mentality between the public and private sector.

Leveraging private sector resources: There is a need to leverage private sector resources to partake and invest in gender responsive adaptation and mitigation projects through inclusive value chain and market based approaches so that value chain actors (including women, youth and disadvantaged groups and micro, small and medium enterprises) could be rewarded and incentivised to protect and improve their productive assets (land, soil, water, forest, rivers, marine) whilst generating ecosystem services for the local community.

Access to competitive and inclusive value chain financial products and services: Supporting value chain actors to access and utilise competitive financial products and services efficiently and effectively as start-up loans, matching rebate will enable and empower value chain actors to adopt, purchase and innovate on climate resilient and low carbon solutions. Value chain actors trained and certified in both technical and basic financial and business knowledge and skills will help in weaning beneficiaries away from the 'subsidy' and 'dependency' mentality and their full participation as value chain actors will be deemed as critical to the success of the solutions. Such exit strategy will enable the climate solutions to be scaled up and replicated beyond the life of GCF project.

2. Country Agenda and GCF Engagement

2.1 Institutional arrangements

There are wide and complex constituencies of interest in climate change, including central Ministries, line Ministries, local government, NGOs, the private sector (including households) and development partners. The Planning Commission is entrusted with preparing national plans and programmes according to the directives of the National Economic Council (NEC), with the MoEF CCU established to facilitate the financial and institutional mechanisms for implementation of the Bangladesh Climate Change Trust Fund. The importance of this proposed project for Bangladesh is highlighted by its being prioritized for inclusion in the country's GCF Country Work Programme, which is currently under development.

The National Environment Committee (NEC), headed by the prime minister, and a National Steering Committee on climate change, chaired by the Minister of MoEF, is tasked with harmonising the progress of all climate related activities in Bangladesh. The NEC has been set up to ensure effective top-level management of the environment and to integrate development and environment at the national level.

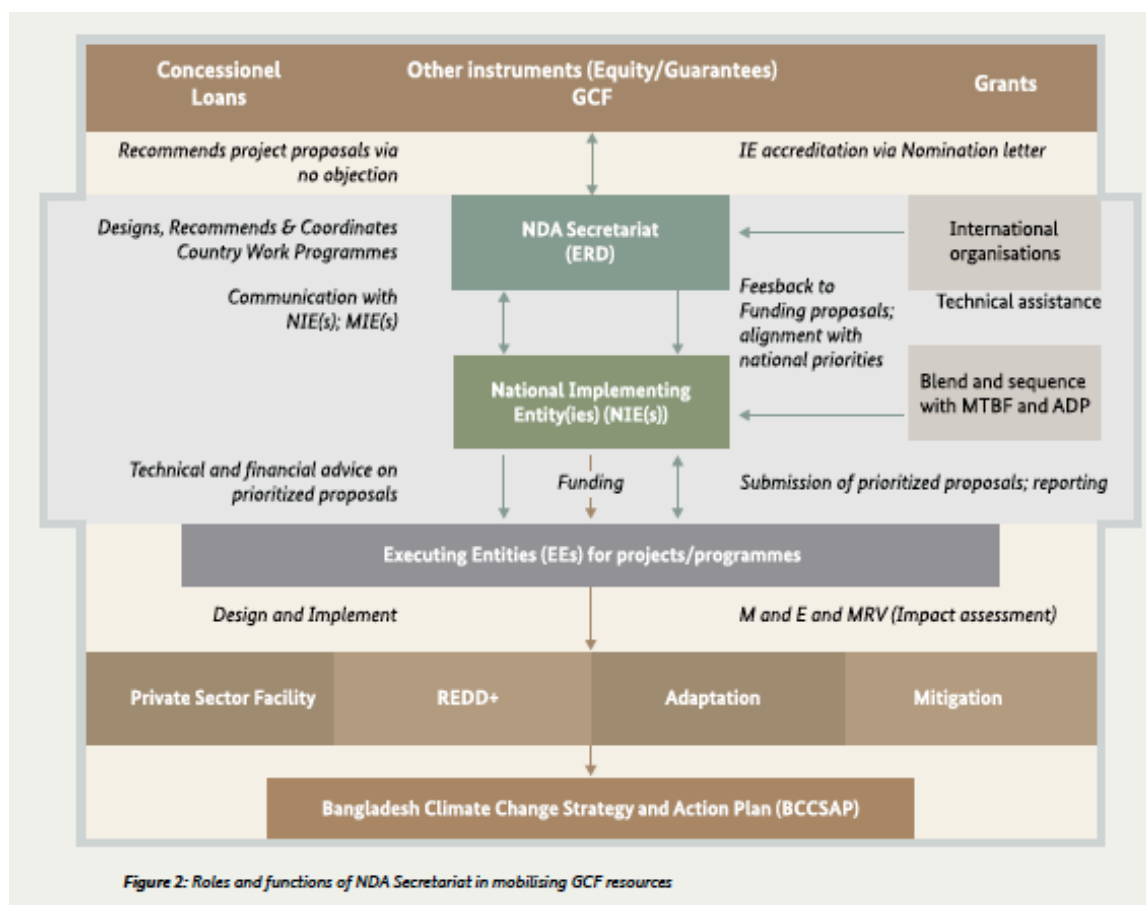
GoB recognizes insufficient coordination as one of the major limitations of the current institutional set up to address climate change issues.¹³⁵ To address the inter-agency coordination gap, focal points have been designated in each ministry and a few specialized and relevant agencies. The MOEF has trained focal points so that climate change is better addressed within national level activities. Several institutions have been established by the GoB to address climate change in view of BCCSAP. The Climate Change Trust is the

¹³⁵ MOEF-GOB, 2009. Bangladesh Climate Change Strategy and Action Plan 2009, Ministry of Environment and Forest (MOEF), Government of the People's Republic of Bangladesh (GOB), Dhaka.

latest institution to be set up within the ministry of Environment and Forest (MoEF) to assist the ministry regarding implementation of various activities under the BCCSAP and to provide secretariat support services for the Bangladesh Climate Change Trust Fund (BCCTF). Institutional arrangements are detailed below.

As the focal point of all climate change related activities on behalf of the GoB, MoEF is the key institution on climate change. MoEF was the custodian of two major funds for which a MoEF representative is chair of the awarding committees.

Recognizing the uncertainties and inadequacies of international climate adaptation finance from both multilateral and bilateral sources, the Government decided to establish the Bangladesh Climate Change Trust Fund (BCCTF). To provide BCCTF a legal footing, a law titled **Climate Change Trust Act 2010** was enacted. These are the landmark initiatives of the Hon'ble Prime Minister Sheikh Hasina. In recognition of her strong leadership in implementing these initiatives for combating unseen and unprecedented natural hazards and safeguarding the environment, the UN honoured the Hon'ble Prime Minister with the highest Award on Environment, "Champions of the Earth" in 2015 under the Policy Leadership Category.



Entity/ Partner Name	Area/s of focus	Engagement in country	Efforts to strengthen engagement with GCF
Asian Development Bank (ADB)			-
Agence Française	Urban development,	As the bilateral development agency	- AFD is keen on working with the

de Développement (AFD)	particularly water sanitation and public transport; energy efficiency; renewable energy; sustainability in the RMG sector; blue economy.	implementing Official Development Assistance (ODA) on behalf of French Government, AFD provides financing support to the Government of Bangladesh through concessional loans & grant for projects relating to green and inclusive growth in the mentioned sectors. AFD has a committed project portfolio of 367 M€ in Bangladesh.	<i>Government of Bangladesh in the areas of mitigation and/or adaptation to climate change in exploring project opportunities in the mentioned key sectors.</i> - AFD has made 5 project proposals that could be presented to GCF, through a letter to ERD dated 16/06/2016. - AFD is willing to further consider working with ERD the possibility for joint AFD-GCF financing during the next Annual Consultation Meeting (ACM) [May 2018].
European Investment Bank (EIB)			-
Food and Agriculture Organization (FAO)	Food security; agriculture; fisheries; forestry; natural resources assessment and monitoring; land rehabilitation and land conservation; climate resilient communities; bio-energy; climate change adaptation; Climate change mitigation.	FAO is working in the country based on the following priority areas: (i) reduce poverty and enhance food security and nutrition (access and utilization); (ii) Enhance agricultural productivity through diversification/intensification, sustainable management of natural resources, use of quality inputs and mechanization; (iii) improve market linkages, value addition, and quality and safety of the food system; (iv) improve technology generation and adaptation through better producer-extension-research linkages; and (v) increase resilience of communities to withstand 'shocks' such as natural disasters, health threats and other risks to livelihoods.	- FAO is developing two concept notes to be submitted to GCF and contributes to Bangladesh's Country Program to the GCF.
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH	Energy efficiency and renewable energies; rule of law, good governance and human rights; climate change adaptation in urban areas.	GIZ is implementing projects focusing on mentioned sectors through grants, technical cooperation and private sector engagement.	- Provision of NDA secretariat with GCF readiness support activities. - Developing concept notes for contributing to Bangladesh Country Program to the GCF. - GIZ headquarters is in the process of developing a pipeline of project proposals/ concepts for the GCF. - Project proposal preparation for GCF from GIZ Bangladesh.
HSBC Holdings plc and its subsidiaries (HSBC)			-
Infrastructure Development Company Limited (IDCOL)	Economic infrastructure development; private sector small, medium and large-scale infrastructure and renewable energy development; rural	The role of IDCOL in relation to private-sector infrastructure (small, medium and large), renewable energy, PPP, energy efficiency etc. and therefore achieving SDGs consist of working on mentioned sectors (Areas of focus) in partnership with NGOs/MFIs/Private Entities to foster an enabling environment of renewable energy	- IDCOL has formed a separate GCF department and has incorporated a detailed annual work plan for reaching out to all relevant stakeholders to make GCF's initiatives a comprehensive success.

	development; energy efficiency; public private partnership (PPP).	through development of competitive enterprises. At present, especially, IDCOL is financing a diverse portfolio of renewable energy initiatives such as solar home system, solar irrigation, solar mini grid, biogas plant and improved cook stoves through different type of schemes such as loan, grant, technical cooperation and private sector investment.	- During the development and implementation period of Country Program (CP), IDCOL and ERD will pursue and seek the possibility to utilize the loan scheme of GCF for upcoming projects by aligning with the necessary and relevant requirements as per GCF's criteria.
International Fund for Agricultural Development (IFAD)			-
International Finance Corporation (IFC)			-
International Union for Conservation of Nature (IUCN)	Human and economic development; nature conservation; protected area management; ecosystem based adaptation; vulnerability assessments and research; capacity development.	Bangladesh joined IUCN as a State Member in 1972. IUCN started its operations in the country in 1989 and established a country office in 1992. IUCN Bangladesh Country Office works under a MOU signed with by Ministry of Environment and Forests, and IUCN. Other than the govt. as state member, IUCN has 22 other NGO members in Bangladesh. IUCN Bangladesh Country Office worked with national institutions – both government and non-government – on environmental planning and assessment, sustainable management of natural resources, formulation of environmental policies, habitat conservation and restoration, ecosystem and livelihood management, water management, biodiversity conservation, demonstration of knowledge application through pilot interventions, institutional capacity strengthening, environmental education and awareness promotion, environmental law and water and climate change related issues.	- The concept of the proposed regional project, 'Building Climate Change Mitigation and Climate Resilient Coastal Communities and Ecosystems in Asia' was submitted to GCF with the NOL issued by the NDA. - Convened a National Stakeholders' Consultation meeting to discuss the above project proposal with relevant stakeholders as a means of country ownership to ensure that the national priorities are being reflected. - Submitted several concept notes along with other Executing Entities and NIEs for preparing Bangladesh Country Programme for GCF.
Japan International Cooperation Agency (JICA)	Economic infrastructure development; private sector development; urban development; rural development; disaster risk reduction.	JICA is implementing the projects focusing on mentioned sectors through different type of schemes such as Loan, Grant, Technical Cooperation and Private Sector Investment.	- In the stage of preparatory survey for the upcoming projects, JICA and ERD (Japan Section) will seek the possibility to utilize the Grand scheme of GCF and top of the scope to be fund by JICA.
Kreditanstalt für Wiederaufbau (KfW)	Climate change adaptation in urban areas; energy efficiency and renewable energies.	KfW is implementing German Financial Cooperation Projects focusing on mentioned sectors through different type of instruments such as grants, interest rate subsidies loans and concessional loans. Project proposals are submitted by the Project Partners to the German side and agreed in regular bi-annual consultations and negotiations between the Government of the People's Republic of Bangladesh and the Federal Government of Germany.	- KfW has been registered with the GCF as MIE and has got approval for the implementation of the GCF projects in Bangladesh named 'Climate Resilient Infrastructure Mainstreaming (CRIM)'. - Developing concept note for contributing to Bangladesh country programme to the GCF.

<p>Palli Karma Shohayak Foundation (PKSF)</p>	<p>Climate change adaptation in different sectors including livelihood, agriculture, fisheries, infrastructure, ecosystem etc.; household level mitigation interventions.</p>	<p>PKSF has already completed two public funded projects on climate change. One is Community Climate Change Project (CCCP) funded by Bangladesh Climate Change Resilient Fund (BCCRF) and other is funded by Bangladesh Climate Change Trust Fund (BCCT). In addition to climate change, PKSF has been working in partnership with a number of development partners working in the country. Major partners include IFAD, The World Bank, EU, UKAID, USAID, ADB etc.</p>	<ul style="list-style-type: none"> - PKSF has been accredited to GCF in its 18th Board Meeting. - PKSF is contributing designing ongoing Country Programme (CP) to GCF. - PKSF has organized workshops with national NGOs regarding access to GCF and proposal development. - PKSF is developing proposals for submitting to GCF through NDA.
<p>United Nations Development Programme (UNDP)</p>	<p>Building resilience of most vulnerable; Livelihood Resilience/Adaptation, ecosystem based adaptation; forestry and REDD+; adaptive watershed management; renewable energies and climate smart cities; low-emission transport; capacity building for adaptation and mitigation in development planning, budgeting, and implementation; climate finance readiness.</p>	<p>Working along the nexus of climate change, and livelihoods of the climate vulnerable poor and marginal people. In doing so, UNDP also works on climate finance governance and readiness, capacity building of the policy makers, national institutions and local governments, governance of climate change, mainstreaming climate change in planning and financing decisions, UNDP has been engaged explicitly in climate change issues in Bangladesh since 2004. Before 2004, UNDP worked implicitly on climate change issues through its environment management programmes and projects. UNDP supports the Government in the development of the climate change policy and institutional framework through provision of technical support, programmatic support, capacity building, piloting initiatives, etc. The current UNDP country programme document (2017-2020) is funded by internal UNDP funds, development partners, multilateral and bilateral sources, and vertical funding mechanisms (GEF, GCF, AAF, SDF, etc.). UNDP partners with various government ministries/ departments on climate change, including: MOF, Planning, LGRD&C, MOWCA, MODMR, Power Division, MOEF, GSB, Industry; as well as the private sector.</p>	<ul style="list-style-type: none"> - UNDP is the Readiness Partner for GCF in Bangladesh. - UNDP Bangladesh has a project proposal submitted to GCF as well as a project pipeline submitted to NDA for consideration under the country programme. - UNDP has a corporate strategy on engagement with GCF.
<p>United Nations Environment Programme (UNEP)</p>			<p>-</p>
<p>World Food Programme (WFP)</p>	<p>Disaster risk reduction; resilience innovation; food security and nutrition; social safety net; emergency response.</p>	<p>WFP Bangladesh designs and implements relevant projects in consultation with different ministries, departments, I/NGOs, and development partners.</p>	<ul style="list-style-type: none"> - As a newly accredited entity, WFP Bangladesh will work closely with NDA to develop a proposal to pursue the possible funding.
<p>World Meteorological Organization (WMO)</p>			<p>-</p>
<p>World Bank</p>			<p>-</p>

Apart from these accredited entities and institutions described above, there are a range of stakeholder groups of importance. Of these, two main stakeholder groups, the private sector and CSOs/ NGOs, play an increasingly important role in responding to climate change and engaging with international funding sources, such as the GCF.

CSOs and NGOs (both national and international) in Bangladesh were and are at the frontline of working on mitigating climate change related risks in Bangladesh. Their efforts are often not reflected in national programmes, but their efforts, particularly in the rural areas that are less covered by government service programmes are significant and a substantial portion of donors' assistance is channelled through NGOs. Most development partners of the government either build resilience through well-developed preparedness plans, or provide help during a continuing disaster, or take part in post-disaster relief and rehabilitation. In flood management, one-fifth of all support provided to stakeholders is contributed by the development partners, with the direct involvement of humanitarian NGOs. The entire Cyclone Sidr recovery and rehabilitation activities have been borne by NGOs alongside GoB efforts that enabled the affected population to bounce back within a few years. The globally reputable Cyclone Preparedness Programme (CPP) would not have been implemented had it not been supported by the Bangladesh Red Crescent Society and thousands of volunteers in association with local level administrations. This is just one example highlighting the important role CSOs and NGOs play in the climate change response strategies in the country, particularly in the field of disaster risk reduction, response, and rehabilitation. Thus, there is a high need for coordination of efforts in order to minimise overlaps, enable knowledge sharing, and active engagement of CSOs and NGOs with the NDA.

The **private sector** is not widely identified as being a major actor in Bangladesh's climate change response strategy. However, it can be assumed that many enterprises and farmers that operate in areas that face climate change induced hazards, such as floods or droughts, independently reduce their operational risks, e.g. through building embankments, and adapt to changing business environments. Other private sector actors explore new business opportunities both in the field of adaptation and mitigation. In the field of adaptation this can lead to unexpected negative impacts, such as the massive expansion of shrimp farms in southwest Bangladesh which operations were favoured through increasing coastal river salinity levels that lead to social exclusion of local communities and an intensified rate of salinization through periodic release of highly saline water by shrimp farmers. In the field of mitigation and the expansion of renewable energies the private sector plays a significant role and can be a driving force towards transformative investments in Bangladesh's energy sector due to arising business opportunities. Several private sector actors also developed business enterprises and sells CERs (Certified Emission Reductions) under the Clean Development Mechanism of the Kyoto Protocol. The NDA and the GoB will continue to engage with the private sector and facilitate proactive industry stakeholders to actively reduce overall emissions in the country or not to increase them significantly while reaching set development targets.

2.2 Roles and contributions of key stakeholders

The development of the country programme followed an inclusive approach allowing all key stakeholder groups, outlined above, to actively engage with the NDA in developing project ideas and submitting those for potential inclusion into the project pipeline (see Section 2.3). To facilitate this engagement the NDA organised (see table 7):

- 1 inception workshop
- 25 sensitisation meetings with government entities;
- 1 sensitisation workshop with private sector stakeholders (with 70 representatives);
- 1 sensitisation workshop with CSOs, NGOs, INGOs (with 53 representatives);
- 4 coordination meetings with NIEs;
- 1 coordination meeting with MIEs;
- 1 appraisal meeting with the NDA advisory board; and
- 1 multi-stakeholder validation workshop of the CP.

During the initial inception and sensitisation workshops and meetings, the stakeholder groups were introduced to the technical aspects of Green Climate fund (GCF) and the requirements of developing a Country Programme (CP) to the GCF. The NDA, supported by UNDP, further highlighted how each stakeholder can contribute to the development of Bangladesh's CP through submitting concept notes (based on a simplified concept note template in alignment with GCF funding criteria – see Annex 4.2) and identifying potential partners for the project implementation among other stakeholders (public and private) and accredited entities. During these events, the NDA also shared its aspiration to enhance the capacity of Bangladesh's NIEs to enhance direct access, as well as to focus adaptation projects to reflect climate change action needs and the country's international positioning in the climate change negotiations.

In a subsequent step the NIEs and MIEs worked closely together with the NDA in order to review received submissions and identify project ideas with a similar focus that could be (after seeking consensus from the stakeholders) be consolidated under a larger programmatic project or concept notes of high potential.

During the communications with the stakeholders, particularly during the validation workshop, they were informed that GCF represents only one potential source of funding and support to realise their climate change response activities. All stakeholders were encouraged to continue to proactively consider climate change mitigation and adaptation in their operations and continue to engage with the NDA in the future, regardless if their concept note was finally inserted into the CP or not. They were also informed that they will receive another chance to resubmit their improved concept notes to the NDA in 2018 during the revision of the CP pipeline.

For the next steps of the formulation of concept notes and funding proposals to the GCF to realise and implement those projects identified in the CP, the NDA will support and coordinate with the relevant stakeholders and stakeholder groups.

Table 7: Overview of consultation processes

Stakeholder group	Date of consultation	Type or objective of consultation	Outcome
Multistakeholder inception workshop: Inception workshop of Bangladesh's Country Programme to the GCF with all stakeholder groups and GCF representatives via Skype	01. Jun 2017	To sensitize the stakeholders about funding opportunities from the GCF and inform them about the GCF accreditation process. Pledge a robust and comprehensive engagement process that brings together key stakeholders across all levels of government, local and community-based institutions, the private sector, and civil society to put forward clear and country-owned priorities that GCF can support.	All the institutions (including the private sector and MIEs), divisions and ministries are informed about the CP process and related opportunities.
Public Sector: Road Transport and Highway Division; Ministry of Environment and Forest	14. Sep 2017	Introduction of stakeholders to GCF modalities and country programming for the GCF. Strengthening of new and reciprocated collaborations between NDA and key stakeholders. Invitation to submit concept note to NDA for consideration in competitive selection process.	Provision of stakeholders with concept note template.
Public Sector: Ministry of Agriculture; Health Services Division, Ministry of Water Resources; Ministry of Primary and Mass Education	17. Sep 2017	Introduction of stakeholders to GCF modalities and country programming for the GCF. Strengthening of new and reciprocated collaborations between NDA and key stakeholders. Invitation to submit concept note to NDA for consideration in competitive selection process.	Provision of stakeholders with concept note template.
Public Sector: Ministry of Fisheries and Livestock; Power Division	19. Sep 2017	Introduction of stakeholders to GCF modalities and country programming for the GCF. Strengthening of new and reciprocated collaborations between NDA and key stakeholders. Invitation to submit concept note to NDA for consideration in competitive selection process.	Provision of stakeholders with concept note template.
Public Sector: Ministry of Youth and Sports; Rural Development and Cooperative Division	20. Sep 2017	Introduction of stakeholders to GCF modalities and country programming for the GCF. Strengthening of new and reciprocated collaborations between NDA and key stakeholders. Invitation to submit concept note to NDA for consideration in competitive selection process.	Provision of stakeholders with concept note template.
Public Sector: Ministry of Science and Technology; Ministry of Textiles and Jute	21. Sep 2017	Introduction of stakeholders to GCF modalities and country programming for the GCF. Strengthening of new and reciprocated collaborations between NDA and key stakeholders. Invitation to submit concept note to NDA for consideration in competitive selection process.	Provision of stakeholders with concept note template.

Public Sector: Local Government Division; Ministry of Industries	24. Sep 2017	Introduction of stakeholders to GCF modalities and country programming for the GCF. Strengthening of new and reciprocated collaborations between NDA and key stakeholders. Invitation to submit concept note to NDA for consideration in competitive selection process.	Provision of stakeholders with concept note template.
Public Sector: Secondary and Higher Education Division	25. Sep 2017	Introduction of stakeholders to GCF modalities and country programming for the GCF. Strengthening of new and reciprocated collaborations between NDA and key stakeholders. Invitation to submit concept note to NDA for consideration in competitive selection process.	Provision of stakeholders with concept note template.
Public Sector: Ministry of Land; Ministry of Expatriates' Welfare and Overseas Employment	26. Sep 2017	Introduction of stakeholders to GCF modalities and country programming for the GCF. Strengthening of new and reciprocated collaborations between NDA and key stakeholders. Invitation to submit concept note to NDA for consideration in competitive selection process.	Provision of stakeholders with concept note template.
Civil Society Organisations (CSOs): 53 representatives from CSOs, NGOs and INGOs	27. Sep 2017	Introduction of stakeholders to GCF modalities and country programming for the GCF. Strengthening of new and reciprocated collaborations between NDA and key stakeholders. Invitation to submit concept note to NDA for consideration in competitive selection process.	Provision of stakeholders with concept note template.
Public Sector: General Economics Division	27. Sep 2017	Introduction of stakeholders to GCF modalities and country programming for the GCF. Strengthening of new and reciprocated collaborations between NDA and key stakeholders. Invitation to submit concept note to NDA for consideration in competitive selection process.	Provision of stakeholders with concept note template.
Private Sector: 70 representatives from 35 different private enterprises and financial institutions	28. Sep 2017	Introduction of stakeholders to GCF modalities and country programming for the GCF. Strengthening of new and reciprocated collaborations between NDA and key stakeholders. Invitation to submit concept note to NDA for consideration in competitive selection process.	Provision of stakeholders with concept note template.
Public Sector: Ministry of Cultural Affairs; Ministry of Commerce; Ministry of Chittagong Hill Tracts Affairs	28. Sep 2017	Introduction of stakeholders to GCF modalities and country programming for the GCF. Strengthening of new and reciprocated collaborations between NDA and key stakeholders. Invitation to submit concept note to NDA for consideration in competitive selection process.	Provision of stakeholders with concept note template.
Public Sector: Energy and Mineral Resource Division	02. Oct 2017	Introduction of stakeholders to GCF modalities and country programming for the GCF. Strengthening of new and reciprocated collaborations between NDA and key stakeholders. Invitation to submit concept note to NDA for consideration in competitive selection process.	Provision of stakeholders with concept note template.
Public Sector: Ministry of Technical and Madrasa Education; Ministry of Disaster Management and Relief	03. Oct 2017	Introduction of stakeholders to GCF modalities and country programming for the GCF. Strengthening of new and reciprocated collaborations between NDA and key stakeholders. Invitation to submit concept note to NDA for consideration in competitive selection process.	Provision of stakeholders with concept note template.
Public Sector: Ministry of Women and Children	04. Oct 2017	Introduction of stakeholders to GCF modalities and country programming for the GCF. Strengthening of new and reciprocated collaborations between NDA and key	Provision of stakeholders with

Affairs		stakeholders. Invitation to submit concept note to NDA for consideration in competitive selection process.	concept note template.
Public Sector: Planning Commission	10. Oct 2017	Introduction of stakeholders to GCF modalities and country programming for the GCF. Strengthening of new and reciprocated collaborations between NDA and key stakeholders. Invitation to submit concept note to NDA for consideration in competitive selection process.	Provision of stakeholders with concept note template.
NIEs: Coordination meeting with PKSF and IDCOL	22. Oct 2017	Joint review of submitted concept notes and matchmaking of relevant executing entities with NIEs. Identification of opportunities to consolidate proposed small-scale projects with similar themes to programmatic approaches.	Identification of promising project ideas and clustering into programmatic concept notes.
NIEs: Coordination meeting with PKSF	23. Oct 2017	Continuous review of submitted concept notes and discussion of potential to consolidate proposed small-scale projects with similar themes to programmatic approaches.	Identification of promising project ideas and clustering into programmatic concept notes.
MIEs: Coordination meeting with ADB, AFD, FAO, GIZ, IFAD, IFC, IUCN, JICA, KfW, UNDP, WFP, and World Bank	23. Oct 2017	Joint review of concept notes submitted by national stakeholders and matchmaking of relevant executing entities with MIEs. Invitation for MIEs to submit concept notes to NDA, particularly programmatic ones that consolidate small-scale project ideas with similar themes.	Provision of MIEs with overview tables of submitted concept notes and concept note template.
NIEs: Coordination meeting with IDCOL	25. Oct 2017	Continuous review of submitted concept notes and discussion of potential to consolidate proposed small-scale projects with similar themes to programmatic approaches.	Identification of promising project ideas and clustering into programmatic concept notes.
Public Sector: Coordination meeting with public sector entities and provision of individual feedback (37 participants from 27 government agencies)	25. Oct 2017	Provision of update on progress in the CP development and presentation of general aspects on how to improve submitted concept notes and available MIEs. Individual feedback for public sector stakeholders on submissions.	Provision with additional deadline to re-submit revised concept notes.
NIEs/ MIEs: Coordination meeting with PKSF, IDCOL, KfW and UNDP...	06. Dec 2017	Joint review of project pipeline in perspective of selection of requesting entities of MIEs/ NIEs and coordination about capacity of NIEs/ MIEs to facilitate those submissions to further develop GCF concept notes (CNs) and project proposals, and, finally, implement the project.	NIEs and MIEs will review CNs in which they are mentioned and decide about their engagement potential.
NDA Advisory Board: Country Programme appraisal meeting with NDA advisory board	12. Dec 2017		
Multistakeholder: Validation workshop of Bangladesh's Country Programme to the GCF with all key stakeholder groups and GCF	14. Dec 2017		

representatives			
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2.3 Identification of country priorities for the GCF

The proposed projects and programs in this country programme were identified in an inclusive multiphase analysis, revision, consultative and prioritisation process (see figure 2). During the stakeholder consultations (see table 7) a comprehensive introduction to the GCF's goals, procedures and requirements and funding opportunities and Bangladesh's national development priorities and climate goals was shared with the participants. All participants selected from the public, private and CSO partners were given the opportunity to submit project idea / concept note (based on a simplified template of the GCF concept notes – see Annex 4.2) for consideration in the project/ programme pipeline through a competitive selection process. The NDA received 218 submissions of concept notes. The initial submissions were screened in perspective to their completeness and potential (e.g. in perspective of being a climate change related project and aligning with key national development and climate change priorities identified in the national development and climate change plans). During this screening, all project/program proponents received an extended deadline to revise their concept notes with guidance and clarifications provided. In addition, all concept notes that were identified as being particularly complete (providing all required information) and had some potential received individualised feedback and guidance on how to improve the quality of the submissions.

In a second phase, all complete concept notes (incomplete submissions were excluded) were rated against seven criteria. A total of 111 submissions (out which 50 from the public sector, 25 from private entities, 33 from CSOs/NGOs, and 15 from MIEs) were considered as being complete and eligible for this multi-criteria analysis (MCA). These criteria were:

- i) Climate change attribution/ impact potential
- ii) Alignment with national development and climate change policies, strategies and plans
- iii) Paradigm shift potential
- iv) Sustainable development potential
- v) Clear focus and objective, and sound planning
- vi) Potential environmental and social risks/ impacts
- vii) Gender and inclusiveness potential

For each of these criteria the concept notes could receive 1 (low) to 3 (high) points (with a reversed order for criteria number 6). The rating rational, which needed to be matched to receive the different points is provided in detail in Annex 4.3. A weighting of 0.1 to 1.0 was allocated for criteria (0.1 being less important and 1.0 means highly important). The results of this rating process were the shortlisting of high ranking concept notes (71 concept notes), which were considered in the final stage of the review and prioritisation process, can be found in Annex 4.4.

In a subsequent step, these 71 concept notes were separated into a project preparatory pipeline A (see table 9) and project preparatory pipeline B (see Annex 4.1). The preparatory pipeline A contains projects of strategic importance and was selected in perspective to ensuring that the projects/programs in the project preparatory pipeline A of the CP are:

- Not ill-conceived or duplicative of other on-going projects or other submitted concept notes;
- Well aligned with national development and climate priorities;
- Reflective of the national priorities with a focus on adaptation and appropriate action in the field of mitigation;
- Representative of a wide range of financial instruments (grant, reimbursable grant, concessional loan, equity, guarantee) and GCF supports (readiness, preparatory or funding/implementation support);
- Inclusive and cover a wide range of partners (minority, youth, disadvantaged groups); and
- Of high quality, competitive, fundable, and transformative.

The concept notes in the project preparatory pipeline B are not being perceived as being of lower importance, but some were overlapping with other efforts proposed in the project preparatory pipeline A. Some concept notes and project ideas can also be further elaborated and developed until the revision of the CP in 2018.

The prioritised projects/programs are presented in Section 2.4.

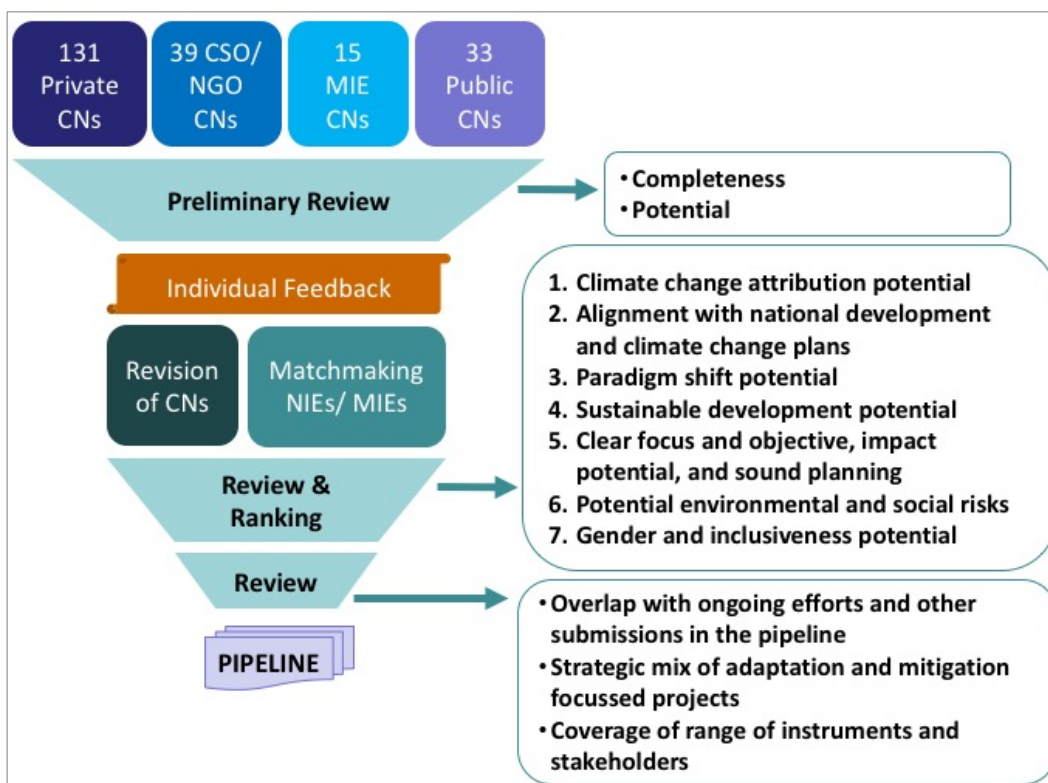


Figure 2: Schematic overview of concept note review and prioritisation process

2.4 Country Portfolio

The following country project portfolio (tables 8-10) reflect the identified strategically important project/ programmes and concept notes that Bangladesh's NDA identified through a competitive project idea prioritisation process (see section 2.2). Table 8 includes all fully-fledged project proposals that are currently being developed and/or received preparatory finance from GCF. Table 9 includes all project ideas that are at a concept note stage, but have the potential of being developed into fully-fledged GCF funding proposals. Table 10 includes all funding proposals that fall under the GCF Readiness Framework. In addition, table 11 provides an overview about the current progress in accrediting additional national accredited entities to the GCF.

Table 8: Country projects/programmes pipeline			
Project Title	Description	AE, IE, Partner	Submission timeframe
Enhancing adaptive capacities of coastal communities, especially women, to cope with climate change induced salinity	The key objective is to support the Government of Bangladesh in strengthening the adaptive capacities of coastal communities, especially women, to cope with impacts of climate change-induced salinity on their livelihoods and water security. GCF resources will be combined with GoB co-financing to address information, technical, financial and institutional barriers to implementing and managing resilient livelihoods and drinking water solutions for the vulnerable communities in the Southwestern coastal districts of Khulna and Satkhira. An estimated 719,229 people (about 245,516 direct	MIE: United Nations Development Programme (UNDP) IE: Ministry of Women and Children Affairs (MoWCA) Partners: Palli Karma Shohayak Foundation (PKSF), LGED, LGI, Local NGOs	2019
Fund level strategic impacts		Total financing (US\$ 32.98m)	Status

(5,6)	and 473,713 indirect) will benefit from the proposed project interventions.	GCF (US\$): 24.98m (Grant)	Other (US\$): 8m (MoWCA)	
Action		Lead		Timeline
Review of proposal by GCF Secretariat and ITAP		NDA		ongoing
Submission for consideration during 19 th GCF Board Meeting		NDA		2019
Project Title	Description	AE, IE, Partner		Submission timeframe
Building Climate Change Mitigation and Climate Resilient Coastal Communities and Ecosystems in Asia	This is a regional project to be implemented in nine Countries (Bangladesh, Cambodia, India, Indonesia, Myanmar, Pakistan, Sri Lanka, Thailand and Viet Nam). The project's objective is to extend and develop Mangroves For the Future (MFF) which has been working in the region since 2006, to build resilience to climate change and increase carbon storage capacity in twelve countries in Asia. It includes nine countries that are already members of Mangroves for the Future and three countries that have expressed interest in joining the initiative. It uses the platform established by MFF – including over 220 partners, national coordinating bodies, a regional steering committee and a secretariat – to significantly extend, expand and enhance the scale of MFF's interventions, their scope and influence for sustainable management of coastal ecosystems.	MIE: International Union for Conservation of Nature (IUCN) IE: Ministry of Environment and Forests (MoEF)		2018
Fund level strategic impacts		Total financing		Status
(4, 5, 8)		GCF (US\$): 55.69 million - equally distributed among 9 countries	Other (US\$): 16.64 million (SIDA, NICFI, participating governments) - equally distributed among 9 countries	
Action		Lead		Timeline
Review of proposal by GCF Secretariat and ITAP		NDA		ongoing
Submission for consideration during 19 th or 20 th GCF Board Meeting in 2018		NDA		2018
Project Title	Description	AE, IE, Partner		Submission timeframe
Global Clean Cooking Program – Bangladesh	This proposal on Bangladesh is part of a multi-country "Global Clean Cooking Program" planned for support by the World Bank (WB) and GIZ with a goal to support development of an affordable and sustainable market for clean cooking initiatives. This Bangladesh Clean Cooking Program is aimed at supporting a sustainable market for adoption of improved cook stoves (ICS) that will contribute to improved well-being of people living in rural Bangladesh by reducing Household Air Pollution (HAP) and contribute to reduced GHG emissions for a pipeline of activities planned by the WB under the Global Clean Cooking Program.	MIE: World Bank IE: Infrastructure Development Company Limited (IDCOL)		2018
Fund level strategic impacts		Total financing		Status
(3)		GCF (US\$): USD 20 million (grants)	Other (US\$): Local Beneficiaries: USD42.17 million, IDA: 20 million	

Action	Lead	Timeline
Review of proposal by GCF Secretariat and ITAP	NDA	ongoing
Submission for consideration during 19 th or 20 th GCF Board Meeting in 2018	NDA	2018

Project Title	Description	AE, IE, Partner	Submission timeframe
	This	MIE: Palli Karma Shohayak Foundation (PKSF) IE: Palli Karma Shohayak Foundation (PKSF)	2018
Fund level strategic impacts		Total financing	Status
		GCF (US\$): USD million (grants)	Other (US\$): L

Action	Lead	Timeline
	PKSF	ongoing
	PKSF	2018

Table 9: Country Project Preparation pipeline A

Prjct Title (A1)	Description	Accredited Entity, IE, Partner	Submission timeframe
Climate Resilient Coastal Forestry in Bangladesh	This proposed project would scale-up the interventions of the "Climate Resilient Participatory Afforestation and Reforestation Project" (CRPARP) (2012-2016) into further coastal areas. CRPARP has played an important role to build climate resiliency of coastal area's environment as well as communities through establishing climate resilient plantation as well as providing adaptive livelihoods. CRPARP, with a budget of US\$ 35m, was funded by the Bangladesh Climate Change Resilient Fund (BCCRF) and jointly implemented by the Bangladesh Forest Department (BFD) and Arranayk Foundation (AF). Based on the lessons learnt from the CRPARP project, this 5-year project would work in coastal areas through integrating restoration of existing plantations as shelterbelts, raising new plantations, expanding protected areas, and private tree growing in gainful partnerships with coastal communities. Main project objectives are: i) To enhance the climate resilience of coastal forests through the (re-)/establishment of participatory plantation and expansion of private nurseries, including the participatory propetected area management and CRPARP plantation approaches;	MIE/ NIE: World Bank/ United Nations Development Programme (UNDP) IE: Bangladesh Forest Department (BFD) Partners:	2018-2020
Fund level strategic impacts		Total financing (US\$ 60 m)	Status
4, 5, 7, 8		GCF (US\$): 50m (Grant)	Other (US\$): 10m (GoB)

	<p>ii) To promote climate resilient, conservation-linked livelihoods for coastal communities; and</p> <p>iii) Capacity building of local and national government, and communities, to monitor and evaluate project components and sustainable forest management.</p>				
Action		Lead	Timeline		
CN Development		World Bank or UNDP	2018-2020		
Full proposal development		World Bank or UNDP	2018-2020		
Project Title (A2)	Description	Accredited Entity, IE, Partner		Submission timeframe	
Resilient communities and ecosystems to cope with climate change induced disasters in Chittagong Hilltracts	<p>The Chittagong Hill Tracts (CHT) is a biodiversity hotspot, inhabited by tribal communities, where more than 40% of the country's forests, including key watersheds, are located. But the watersheds are rapidly degrading, and climate change projections, as per recent Forestry Master Plan (2017-2032) suggest adverse impacts on the structure and composition of the forests and encompassing waterbodies in the CHT. Building up on the ongoing USAID funded project "Strengthening Inclusive Development in Chittagong Hill Tracts (SID-CHT, 2016-2021), this project proposes to upscale the scope and enable the local government and communities to enhance the climate resilience of the region while reduce greenhouse gas emissions from forest degradation. All proposed project components are in close alignment with relevant GoB climate policies and plans.</p> <p>Main project objectives are:</p> <p>i) To strengthen climate resilience of the CHT people and ecosystems and to reduce risk of climate induced natural disasters;</p> <p>ii) To restore the CHT forests in gainful partnerships of local people and other key stakeholders by following a participatory, integrated watershed management approach;</p> <p>iii) To develop climate resilient infrastructure and facilities that enhance resilience of the CHT communities and ecosystems; and</p> <p>iv) To capacitate and empower the CHT institutions, decision makers, and people to improve environmental governance, and sustainable management of natural resources and land use conservation.</p>	<p>MIE/ NIE: United Nations Development Programme (UNDP)</p> <p>IE: Ministry of Chittagong Hill Tracts Affairs (MOCHTA)</p> <p>Partners: Bangladesh Forest Department (BFD), Infrastructure Development Company Limited (IDCOL)</p>		2018-2020	
Fund level strategic impacts	4, 5, 6, 7, 8	Total financing (US\$ 150m)		Status	
		GCF (US\$): 60m (Loan) 40m (Grant)	Other (US\$): 50m (GoB)	PPF application under development	
Action		Lead	Timeline		
CN Development		UNDP	2018		
Full proposal development		UNDP	2018-2020		
Project Title (A3)	Description	Accredited Entity, IE, Partner		Submission timeframe	
Strengthening the resilience of the Plainland Ethnic Minority Communities to Climate Change in Bangladesh	<p>The ethnic minority people in the Plainland areas are vulnerable to the impacts of climate induced drought, cyclone, salinity, and flooding that often affects their livelihoods, income, and food and water security. This gender responsive 5 years project seeks to strengthen the adaptive capacity and resilience of the plainland</p>	<p>MIE/ NIE: United Nations Development Programme (UNDP)</p> <p>IE: Hilfswerk der evangelischen Kirchen Schweiz (HEK/EPER).</p>		2018-2019	

	indigenous people through providing clean drinking water access and enable them to take up climate resilient, alternative livelihoods. Output 1: Strengthen the adaptive capacity of plain land ethnic minority communities to plan and implement culturally appropriate climate resilient water, food and livelihood security measures;	Partners: NETZ Partnership for Development and Justice NETZ) EDM, Enfants du Monde (EDM)		
Fund level strategic impacts	Output 2: Reduce climate induced gender and ethnic marginalisation process by enhanced risk information, control over climate resilient water, food and livelihood assets, and building enterprise model for community empowerment;	Total financing (US\$ 11.25m)		Status
1, 5, 6	Output 3: Strengthen ethnic minorities' indigenous knowledge to enhance resilient livelihoods of targeted communities in changing climate, securing diversification of income, social services and opportunities in a cultural sensitive manner; and Output 4: Advocate and Integrate plainland ethnic minorities policy into development and climate change policy, strategies and investments.	GCF (US\$): 9m (Grant)	Other (US\$): 2.25m (HEKS)	<i>PPF application under development</i>
Action	Lead	Timeline		
<i>CN Development</i>	<i>UNDP/HEKS</i>	<i>2018</i>		
<i>Full proposal development</i>	<i>UNDP/HEKS</i>	<i>2018</i>		
Project Title (A4)	Description	Accredited Entity, IE, Partner	Submission timeframe	
<i>Enhancing climate resilience of heritage sites in Bangladesh's coastal regions</i>	Climate change induced salinity, intensified cyclones, more frequent floods, and temperature rises along with the changing precipitation patterns of rainfall in the coastal regions adversely affect the heritage monuments in these areas. Government agencies and researchers demonstrated the incremental trend of soil salinity in the south-western and central zone of the coastal region. However, there are very little information about saline crystallization formation in heritage structures, mineralogical characteristics and their chemical formation. Another insufficiently investigated and tested field is the engagement of the local community, especially the women, in the preservation of heritage sites. Most of the small heritage sites are situated beside homesteads opening up an opportunity to engage women to take care of those heritage sites as an alternative, additional income opportunity. This would allow to follow a holistic preservation approach that does not solely consider structural restoration. One of the outcomes of the proposed project will be the establishment of a Climate Resilient Heritage Research Centre (CRHRC), a centre of excellence fully integrated with the Department of Archeology (DoA) for conducting relevant state of the art research, policy development and implementing ideas and techniques for enhancing resilience of the heritage sites. The CRHRC will conduct research, preserve the monuments, and enable and train local communities, especially women, to manage the heritage	MIE/ NIE: Palli Karma Shohayak Foundation (PKSF) IE: Department of Archeology, Ministry of Cultural Affairs Partners: N/A	2018-2020	
Fund level strategic impacts		Total financing (US\$ 50m)		Status
3, 7		GCF (US\$): 40m (Grant)	Other (US\$): 10m (GoB)	<i>PPF application under development</i>

	<p>sites. The project aims to increase the climate resilience of the coastal heritage sites, through:</p> <ul style="list-style-type: none"> i) Identifying different resilience plans and developing methodical integration of climate change resilience into decision making process; ii) Exploring the possibilities of community participation and its socio-economic potentials to enhance the resilience of the heritage sites; and iii) Implementing comprehensive conservation strategies and interventions to the coastal heritage structures to adapt to and mitigate the climate related hazards. 			
Action		Lead	Timeline	
CN Development		PKSF	2018	
Full proposal development		PKSF	2018	
Project Title (A5)	Description	Accredited Entity, IE, Partner		Submission timeframe
<p>Development of Resilience in selected Hilly Municipal Areas through an Improved Early Warning System, Geo-hazard interventions, and Awareness Raising Campaigns</p>	<p>North-eastern and eastern part of Bangladesh is occupied by the low-lying fragile hills of Tertiary sedimentary rocks. Most of hills are covered by thick natural vegetation and reserved forests. The fragile nature of the hills due to its inherent and geological, ecological, and environmental situations are further threatened by climate-change impacts, such as land-slides, floods, and droughts. This poses a significant threat to local communities and ecosystems and it can be argued that the region is a hotspot to face climate change impacts in Bangladesh. Anticipating demands of the growing population it is very crucial to develop hilly municipals resilient to landslides and flashfloods. The proposed program aims to:</p> <ul style="list-style-type: none"> i) Raise the level of awareness about climate related threats; ii) Improve the response capacity to sudden and slow onset climate-disaster events like heavy rainfall, land slides, and flash flood; and iii) Build the community resilience to climate change induced vulnerability and risks. <p>It is expected that the program will reduce the loss of lives and damage to properties, as well as to conserve the hilly ecosystems. The program takes a comprehensive approach where the vulnerable communities, local government institution, service providing agencies, research and implementation organizations, including the Bangladesh Meteorological Department, Fire Service and Civil Defense and Geological Survey and the Norwegian Geotechnical Institute, will work together towards improved resilience.</p>	<p>MIE/ NIE: Japan International Cooperation Agency (JICA)/ United Nations Development Programme (UNDP) IE: Geological Survey of Bangladesh (GSB) Partners: Norwegian Geotechnical Institute (NGI), District Councils of Project Area and Bangladesh Meteorological Department (BMD)</p>		2018 - 2020
		<p>Fund level strategic impacts</p> <p>4, 5, 7, 8</p>	<p>Total financing (US\$ 14m)</p> <p>GCF (US\$): 10m (Grant)</p> <p>Other (US\$): 1.5m (GoB) 2.5m (NGI)</p>	<p>Status</p> <p>PPF application under development</p>
Action		Lead	Timeline	
CN Development		GSB, JICA, and UNDP	2018	
Full proposal development		GSB, JICA, and UNDP	2018-2019	
Project Title (A6)	Description	Accredited Entity, IE, Partner		Submission timeframe

<p>Strengthening Adaptive Capacity of Coastal Communities through Climate Resilient Rural Housing in Bangladesh</p>	<p>Coastal Bangladesh, which is inhabited by 35 million people – 20 % of Bangladesh’s total population – is one of the most exposed regions of the world to storm surges and inundations with saltwater (IPCC AR4). With a changing climate, people living in the coast are becoming more exposed to cyclones, tidal surges, salinity intrusion, and sea level rise. With most parts of coastal Bangladesh only just above sea level, whenever surge height exceeds 1 meter, there is a high risk of mass inundation leading to mortality, significant economic losses and displacement. Climate-induced disasters damage houses and the inhabitants livelihoods. Housing is used as one of the wellbeing indicators by the Bangladesh Bureau of Statistics (BBS), World Bank etc. as houses are the most valuable assets of most poor people. However, people’s poverty is also reflected in the quality and durability of their housing. The Government of Bangladesh estimates that 66% rural houses are made of primary materials that are more susceptible to cyclonic damage. The trend suggests that people living in concrete houses in the coast experience less mortality and economic loss. The vulnerability of the housing sector in Bangladesh is caused by four key factors: i) unavailability of affordable resilient housing technology; ii) limited funds available for appropriate housing of the rural population; iii) climate change is not incorporated in housing policies, plans and the ongoing programmes of the Government of Bangladesh (GoB); and iv) the current housing stock does not include climate resilience features.</p> <p>This project aims to protect the most vulnerable coastal-dwelling from the impacts of climate change. It will provide fund to the innovation/ development and the supply of climate resilient housing to 20,000 targeted vulnerable people in the coastal areas.</p>	<p>MIE/ NIE: Infrastructure Development Company Limited (IDCOL)/Palli Karma Shohayak Foundation (PKSF)/ United Nations Development Programme (UNDP) IE: Ministry of Disaster Management and Relief (MoDMR) Partners:</p>	<p>2018 - 2020</p>
<p>Fund level strategic impacts</p>		<p>Total financing (US\$ 175m)</p>	<p>Status</p>
<p>5, 6, 7</p>		<p><u>GCF (US\$):</u> 100m (Loan) 50m (Grant)</p>	<p><u>Other (US\$):</u> 25m (MoDMR) <i>PPF application under development</i></p>
<p>Action</p>	<p>Lead</p>	<p>Timeline</p>	
<p><i>CN Development</i></p>	<p><i>MoDMR/ IDCOL/ PKSF/ UNDP</i></p>	<p><i>2018</i></p>	
<p><i>Full proposal development</i></p>	<p><i>MoDMR/ IDCOL/ PKSF/ UNDP</i></p>	<p><i>2018-2019</i></p>	
<p>Project Title (A7)</p>	<p>Description</p>	<p>Accredited Entity, IE, Partner</p>	<p>Submission timeframe</p>
<p>Scaling up of Climate Resilient Women-led Livestock Raising in Vulnerable Regions of Bangladesh</p>	<p>About 70% of the households in the 4 most vulnerable areas of Bangladesh are directly or indirectly relying on livestock farming for their income as well as food and nutrition security. High temperature, droughts, floodings and cyclones are already affecting the productivity, feed conversion rate and fertility of the livestock and feed and pasture and threaten the income of the farmers. Women are mainly responsible for the families lifestocks, but due to existing inequity in the societal position of women (lack of decision making powers, and lack of access to resources among others), they are most affected by the risks of climate change.</p> <p>This project seeks to overcome the institutional, technical, financial, business, marketing and social barriers of scaling</p>	<p>MIE/ NIE: Palli Karma Shohayak Foundation (PKSF) IE: Palli Karma Shohayak Foundation (PKSF) Partners:</p>	<p>2018-2019</p>
<p>Fund level strategic impacts</p>		<p>Total financing (US\$ 50m)</p>	<p>Status</p>
<p>4, 5, 6, 8</p>		<p><u>GCF (US\$):</u> 10m (Loan) 40m (Grant)</p>	<p><u>Other (US\$):</u> 0m <i>PPF application under development</i></p>

	up gender responsive and climate resilient livestock production and businesses in these 4 vulnerable areas through adaptive (improved shelter, improved water and pasture management, use of resilient local livestock) and mitigation measures and businesses (improved feed quality and waste management to reduce methane emissions). 100,000 farmers will be targeted in the 4 areas. Expected impacts: i) 100,000 farmers (mainly female) will be targeted ii) Additional total income of BDT 25,000 million generated during the project life-time of 5 years.			
Action		Lead	Timeline	
CN Development		PKSF	2018-2020	
Full proposal development		PKSF	2018-2020	
Project Title (A8)	Description	Accredited Entity, IE, Partner		Submission timeframe
Scaling up of Climate Resilient Aquaculture for Vulnerable Poor People of Bangladesh	About 70% of the households in the 4 most vulnerable areas of Bangladesh are directly or indirectly relying on farming (crops, livestock, fisheries aquaculture) for their income as well as food and nutrition security. High temperature, droughts, floodings and cyclones are already affecting the productivity, feed conversion rate, fertility of the aquaculture, feed availability, and threaten the income of the farmers. Due to existing inequity in the societal position of women (lack of decision making powers, and lack of access to resources among others), they are more exposed to the risks of climate change and require special attention to improve their situation. This project seeks to overcome the institutional, technical, financial, business, marketing, and social barriers of scaling up gender responsive and climate resilient aquaculture production and businesses in these 4 vulnerable areas through adaptive (improved ponds, improved water and feed quality, use of resilient local fish species) measures and businesses. Outreach: PKSF targets to reach in total 500,000 farmers through the interventions in four climate vulnerable regions of Bangladesh. Impact on Income: An estimated additional total income of BDT 10,000 million will be generated through the project for the farmers during the proposed interventions over 5 years.	MIE/ NIE: Palli Karma Shohayak Foundation (PKSF) IE: Palli Karma Shohayak Foundation (PKSF) Partners:		2018-2020
Fund level strategic impacts	5, 6	Total financing (US\$ 50m)		Status
		GCF (US\$): 10m (Loan) 40m (Grant)	Other (US\$): 0m	PPF application under development
Action		Lead	Timeline	
CN Development		PKSF	2018-2020	
Full proposal development		PKSF	2018-2020	
Project Title (A9)	Description	Accredited Entity, IE, Partner		Submission timeframe
Climate Resilient Agriculture for Crop Diversification Project (CRACDP)	In the light of climate change, the Department of Agricultural Extension (DAE) promotes climate resilient, eco-friendly, safe and sustainable, productive agricultural activities to increase the food security among vulnerable	MIE/ NIE: Palli Karma Shohayak Foundation (PKSF) IE: Department of		2018-2019

	people of Bangladesh (around 80% of Bangladesh's rural society depend on agriculture as source for food and income) and promote the commercialization of agriculture.	Agricultural Extension (DAE) Partners:		
Fund level strategic impacts	However, climate change throughout the country is projected to pose a threat to agricultural sectors through, e.g. more frequent droughts in some regions, salinisation of soils and groundwater, and extreme precipitation events. The proposed projects intend to address climate related threats and increase the resilience of agriculture practices throughout the country. The project components will include, but not limited to the:	Total financing (US\$ 105m)		Status
5, 6	<p>e.g. more frequent droughts in some regions, salinisation of soils and groundwater, and extreme precipitation events. The proposed projects intend to address climate related threats and increase the resilience of agriculture practices throughout the country. The project components will include, but not limited to the:</p> <ul style="list-style-type: none"> i) Promotion of stress tolerant crops and varieties for saline, drought and flood prone areas; ii) Dissemination of NARS technologies through demonstration at farmers' field for increasing overall productivity through mechanization of crop production, e.g. through combined harvester, solar irrigation, drip irrigation, sprinkler irrigation, buried pipe, etc; iii) Increasing the quality of crop production and reducing post harvest losses; iv) Strengthen the capacity of DAE through establishing the framework, strategies, plans, program to mainstream climate change risks in their operations; v) Decentralizing learning and technologies through established Climate Field School (CFS) through Farmer Field School (FFS) is major innovation to help communities to become more climate resilient; and vi) Establish rain water harvesting structure for accessible and efficient irrigation of crops. <p>Through this, the project aims to attain sustainable food security, alleviate rural poverty, to ultimately improve living standards of the farming community in climate change prone areas.</p>	GCF (US\$): 100m (Grant)	Other (US\$): 5m (GoB)	PPF application under development
Action		Lead		Timeline
CN Development		DAE/ PKSF		2018
Full proposal development		DAE/ PKSF		2018-2019
Project Title (A10)	Description	Accredited Entity, IE, Partner		Submission timeframe
<i>Catalysing climate change related investments in the agricultural sector</i>	Recognizing the risk of climate change, investors are increasingly seeking to invest in resilient and sustainable businesses. Sustainable agriculture offers this possibility, while also delivering on development outcomes such as climate change mitigation, resilience, and increasing productivity amongst small farmers. Though, Bangladesh has spent considerable resources to tackle climate change, small-scale businesses, agribusinesses and local financial intermediaries are typically not the recipients of such support. SNV wants to work on closing this gap between investors and businesses in Bangladesh. Currently, SNV runs a project in East Africa that identifies and generates private sector investment opportunities in Climate Resilient Agriculture (CRA) by integrating CRA with	MIE/ NIE: Palli Karma Shohayak Foundation (PKSF) IE: Netherlands Development Organization (SNV) Partners: USAID		2018-2019
Fund level strategic impacts		Total financing (US\$ 11.50m)		Status
5, 6		GCF (US\$): 10m (Grant)	Other (US\$): 1.5m (USAID)	PPF application under development

	<p>Value Chain Development (VCD) and Inclusive Business (IB). A similar but modified model would work in the context of Bangladesh to promote climate resilience and innovation and support a paradigm shift in thinking around private sector's ability to contribute to climate change resilience. Building on SNV's strength of fully integrating its VCD approach and IB practice that connects smallholder farmers to markets, increases employment and investment opportunities in agribusiness supply chains and delivers increased goods and services that are otherwise unavailable to producers who typically operate in informal markets, we propose 3 key inter-related objectives:</p> <ul style="list-style-type: none"> i) Creating an enabling environment for investment in climate resilient agriculture backed by excellent research and evidence; ii) Incubate innovative, climate resilient and inclusive agriculture businesses in Bangladesh that lend themselves to private investment; iii) Accelerate deployment of private capital into scalable climate resilient agriculture businesses. <p>Over the course of the project, 35 sustainable and inclusive businesses worth US\$ 30 million of private and public investment will be incubated. It will help to achieve a paradigm shift towards public and private investment in profitable climate resilient agriculture and agribusiness models.</p>			
Action	Lead	Timeline		
<i>CN Development</i>	<i>SNV</i>	<i>2018</i>		
<i>Full proposal development</i>	<i>SNV/ PKSF</i>	<i>2019</i>		
Project Title (A11)	Description	Accredited Entity, IE, Partner	Submission timeframe	
<i>Agricultural livelihoods adaptation to drought in north-west high Barind areas of Bangladesh</i>	<p>The Barind region (Northwest part) of Bangladesh is highly prone to drought. A study found that the number of rainy days has been decreasing while the intensity of rainfall is increasing (MoEF, 2005, revised in 2009). Climate-induced droughts poses a significant threat to agricultural based livelihoods in Bangladesh. The frequency of high temperatures and heat waves in the country intensify the risks of droughts and excellerate its impacts, for example through drying up tube wells and ponds, which consequently leads to scarcity of drinking water and available water for irrigation. Droughts and heatwaves further can increase the risk of diseases of human, livestock, fisheries, etc.</p> <p>This project seeks to enhance the climate resilience of agriculture based communities in lights of climate-induced droughts and heatwaves. The project interventions include the installation of tube well and deep tube wells, rain water harvesting technologies, surface water management, the provision of beneficiaries with stress tolerant varieties and crop management technologies, skill development training on income generating activities (IGA) for poor and marginal</p>	<p>MIE/ NIE: Palli Karma Shohayak Foundation (PKSF) IE: Palli Karma Shohayak Foundation (PKSF) Partners:</p>	2018-2020	
Fund level strategic impacts		Total financing (US\$ 50m)		Status
5, 6		<p><u>GCF (US\$):</u> 40m (Grant)</p>	<p><u>Other (US\$):</u> 10m (PKSF)</p>	<p><i>PPF application under development</i></p>

	people, improvement of cattle sheds and poultry cages for livestock development, to build sanitary latrines, and to provide free health care services. The main objectives are: i) To promote drought-resistant agricultural production focusing crop varieties and water management; ii) To promote drought-adaptive pro-poor livelihoods in the drought vulnerable areas; and iii) To enhance access to safe drinking water and sanitation.			
Action		Lead		Timeline
CN Development		PKSF		2018-2020
Full proposal development		PKSF		2018-2020
Project Title (A12)	Description	Accredited Entity, IE, Partner		Submission timeframe
<i>Promoting climate resilient farming practices in the flood affected Haors areas, in northwest Bangladesh</i>	The Haors areas, in northwest Bangladesh that consists of flooded ecosystems and inhabitates extreme poor smallholders and communities. Most of the land area is annually inundated. While the inhabitants are generally adapted to floods and inundations, climate change poses a unprecedented risks to these communities through intensified flash floods and changing precipitation patterns damage standing crops and cause seasonal shifts that lead to crop failures. The proposed project intends to support the inhabitants to become more climate resilient through the uptake of new crop varieties and farming techniques.	MIE/ NIE: Food and Agricultural Organisation (FAO) IE: Center for Natural Resource Studies (CNRS) Partners: Bangladesh Agricultural Research Institute (BARI), Department of Agricultural Extension (DAE)		2018-2020
Fund level strategic impacts	Main projects objectives are: i) Capacitate local communities to uptake climate resilient agriculture livelihoods; ii) Improve access of local communities to climate resilient crop varieties, land, markets, and innovative technologies; and iii) Enhance access to public services.	Total financing (US\$ 10m)		Status
5		GCF (US\$): 9m (Grant)	Other (US\$): 0.5m (BARI) 0.5m (CNRS)	PPF application under development
Action		Lead		Timeline
CN Development		CNRS or FAO		2018-2020
Full proposal development		CNRS or FAO		2018-2020
Project Title (A13)	Description	Accredited Entity, IE, Partner		Submission timeframe
<i>Scaling up of solar powered irrigation to ensure food security and enhance resilience in drought prone areas of Bangladesh</i>	The productivity, livelihoods and food security of farmers in drought prone areas are threatened by lack of access to reliable water during dry seasons. This project seeks to overcome the high upfront cost of acquiring solar powered irrigation systems as part of promoting climate resilient agriculture practices and businesses. Matching rebates (50%) and competitive loans (30%) will be offered to farmers who are able to come up with remaining 20% of the initial costs as equity. The GCF grant will be used as 50% matching rebate to enable farmers to improve their productivity and income to pay for IDCOL's 30% loans. This will help to scale up the uptake of solar powered irrigation systems and strengthen the resilience of the farmers through improved productivity and income.	MIE/ NIE: Infrastructure Development Company Limited (IDCOL) IE: Infrastructure Development Company Limited (IDCOL) Partners:		2018-2020
Fund level strategic impacts		Total financing (US\$ 112m)		Status
1, 4, 5, 6		GCF (US\$): 56m (Grant)	Other (US\$): 56m (IDCOL)	PPF application under development

	This project will help to reduce Bangladesh overall diesel consumption and GHG emissions by offering farmers cleaner solar energy to displace diesel for irrigation pumping that can be expensive, noisy, and polluting.			
Action		Lead	Timeline	
CN Development		IDCOL	2018	
Full funding proposal		IDCOL	2018-2020	
Project Title (A14)	Description	Accredited Entity, IE, Partner		Submission timeframe
Scaling up Energy Efficient and Community Managed Buried Pipe Irrigation Systems	The food-water-energy nexus is an important field of work to assist, particularly facilitate climate change compatible development processes. This project proposes to address these three interlinked fields through: Demarcation of the river or canal alignment according to mouza map with the help of Local administration: (i) Excavation of rivers and canal by excavators (not dressing) with sufficient depth to increase the storage capacity, and thereby reducing the local floods and enhancing ground water recharge; (ii) Transportation of water from rivers and canals to targeted land through buried pipe under and thereby ensuring no evaporation loss, no land loss, no pollution and no collusion among farmers of adjacent lands. At the same time less water absorbing varieties of crop will be cultivated.(iii) Providing mild side slope to rivers and canals to reduce the risk of river bank erosion;(iv) Planting VETIVER grass on the side slope to stabilize the banks of rivers and canals; and thereby promoting local ecosystem and protecting biodiversity; (v) Pumping water from canal to land by solar pumps, and thereby avoiding use of fossil fuel;(vi) Providing trainings to local farmers (male and female) for awareness about climate resilient crop varieties. Main projects objectives are: i) To increase agricultural production by 15% to 25% through climate friendly water resources management; ii) To establish and strengthen WMCAs (Water Management Cooperative Association) for proper O& M of the facilities; iii) To increase farmers' income by providing agri- business related facilities, and other non-farm activities; and iv) To accelerate social development particularly by women empowerment.	MIE/ NIE: Japan International Cooperation Agency (JICA) IE: Local Government Engineering Department (LGED) Partners:		2018-2020
Fund level strategic impacts		Total financing (US\$ 120m)		Status
1, 4		<u>GCF (US\$):</u> 84m (Grant)	<u>Other (US\$):</u> 18m (GoB) 18m (JICA)	PPF application under development
Action		Lead	Timeline	
CN Development		JICA or LGED	2018-2020	
Full proposal development		JICA or LGED	2018-2020	
Project Title (A15)	Description	Accredited Entity, IE, Partner		Submission timeframe
Phase II: Enhancing adaptive capacities of coastal communities, especially women, to cope with climate change induced salinity	This concept note will be the second phase of the project "Enhancing adaptive capacities of coastal communities, especially women, to cope with climate change induced salinity", for which the GCF funding proposal is developed and currently in the process of being submitted to the GCF board (see table 4). The first phase of this project will be	MIE/ NIE: United Nations Development Programme (UNDP) IE: Ministry of Women and Childrens Affairs (MoWCA)		2022

	implemented in 39 unions of Khulna and Satkhira districts. This second phase will scale-up the interventions, and improve their effectiveness based on lessons-learned, in further climate-vulnerable coastal districts in Southwest Bangladesh.	Partners: Palli Karma Shohayak Foundation (PKSF), LGED, LGI, Local NGOs		
Fund level strategic impacts	Key objective of the proposed project is to support the Government of Bangladesh in strengthening the adaptive capacities of coastal communities, especially women, to cope with impacts of climate change-induced salinity on their livelihoods and water security. GCF resources will be combined with GoB co-financing to address information, technical, financial and institutional barriers to implementing and managing resilient livelihoods and drinking water solutions for the vulnerable communities in the Southwestern coastal districts of Bangladesh. The proposed project will empower target communities, especially women, as 'change-agents' to plan, implement, and manage resilient livelihoods and drinking water solutions. The project will target the same communities to address livelihood and drinking water security to promote synergistic co-benefits and adaptive capacities of these communities in the face of worsening impacts of climate-change induced salinity on their freshwater resources. The project is expected to achieve its objectives through the following 3 outputs: Output 1: Climate-resilient livelihoods, focusing on women, for enhanced adaptive capacities of coastal agricultural communities; Output 2: Gender-responsive access to year-round, safe and reliable climate-resilient drinking water solutions; and Output 3: Strengthened institutional capacities, knowledge and learning for climate-risk informed management of livelihoods and drinking water security.	Total financing (US\$ 59.89m)		Status
5, 6		GCF (US\$): 43.89m (Grant)	Other (US\$): 16m (MoWCA)	<i>PPF application under development</i>
Action	Lead	Timeline		
<i>CN Development</i>	<i>MoWCA/ UNDP</i>	<i>2018-2020</i>		
<i>Full proposal development</i>	<i>MoWCA/ UNDP</i>	<i>2022</i>		
Project Title (A16)	Description	Accredited Entity, IE, Partner	Submission timeframe	
<i>Solar powered drinking water supply in selected coastal areas of Bangladesh</i>	The proposed project will build up on GIZ Bangladesh's work in the field of climate resilient drinking water access. GIZ successfully piloted 122 climate resilient drinking water access interventions in 6 coastal districts affected by climate change induced salinity. This proposed 5-year project has the overall objective to: " <i>Significantly reduce the risks of climate change to sustainable development in Bangladesh as access to safe drinking water in the climate change affected coastal areas is ensured and a sustainable and environmentally benign approach (solar powered systems using mostly surface water) is developed and institutionalized with the engagement of public and private sectors and the local communities.</i> " The project will have three components:	MIE/ NIE: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH IE: Department of Public Health Engineering (DPHE) Partners:	2018	
Fund level strategic impacts	The project will have three components:	Total financing (US\$ 22.91m)		Status
1, 5, 6		GCF (US\$): 18.52m	Other (US\$): 3.23m (DPHE)	<i>PPF application under development</i>

	<p>i) Strengthening institutional capacity (create an institutional framework for implementation of the infrastructure project);</p> <p>ii) Climate resilient and low carbon emitting water infrastructure design and delivery (proposed technologies: pond sand filter systems, ground water extraction systems, managed aquifer recharge, desalinisation systems); and</p> <p>iii) Management mechanism for operation, knowledge transfer and reporting (ensure sustainable operation of the implemented water systems).</p>	(Grant)	1.16m (GIZ)	
Action	Lead	Timeline		
CN Development	GIZ	2018		
Full proposal development	GIZ	2018		
Project Title (A17)	Description	Accredited Entity, IE, Partner		Submission timeframe
Promoting climate resilient safe drinking water supply to manage climate-induced water insecurity in poor and vulnerable coastal communities in Bangladesh	<p>While climate change is already affecting myriad aspects of the daily life in Bangladesh's coastal belt, the safe drinking water crisis is one of the most acute, pervasive and immediate impacts, compromising health, productivity, and burdening women disproportionately. Both present and imminent future climate variability demands that resilience be integrated into drinking water urgently.</p> <p>These challenges may be mitigated to a large extent by improving water storage through reservoirs and natural infrastructure. While coastal households have been practicing rainwater harvesting for decades, collection devices are of generally small volume and municipal reservoirs are almost non-existent. There is, therefore, a pressing need to improve both natural and artificial water storage, and large rain-fed reservoirs are an "obvious technical solution". However, operation and maintenance, and local water resource management practices, are as important to successful adaptation as the technology itself. The proposed project draws on lessons from existing programmes and literature, and vast experience working in the coastal zone to introduce a comprehensive solution including context-specific technologies and local capacity building that will increase access to year-round safe drinking water for the coastal population.</p> <p>Overall Aim: "To enhance health and resilience of poor and vulnerable coastal communities in Khulna and Satkhira through improved water security and access to safe and sustainable drinking water."</p> <p>Outcome: "Improved water security and sustainable access to safe drinking water for target communities through use of climate resilient, context-specific technologies and institutional capacity building."</p> <p>The proposed project areas are 30 unions comprising 100 wards in four upazilas of Khulna and Satkhira districts (not including areas covered by the joint UNDP-MOWCA project proposal submission to GCF). A total of over 74,000 households and nearly 400,000 people (50% women), will</p>	<p>MIE/ NIE: Palli Karma Shohayak Foundation (PKSF)</p> <p>IE: Water Aid Bangladesh</p> <p>Partners: Rupantar and Shushilan</p>		To be determined
Fund level strategic impacts		Total financing (US\$ 11m)		Status
6		GCF (US\$): 10m (Grant)	Other (US\$): 1m	PPF application under development

	be covered by target interventions.			
Action		Lead	Timeline	
CN Development		Water Aid Bangladesh	To be determined	
Full proposal development		Water Aid Bangladesh	To be determined	
Project Title (A18)	Description	Accredited Entity, IE, Partner		Submission timeframe
Mainstreaming Climate Change into National and Local Level (Urban and Rural) Planning, Budgeting, and Accountability Process in Public Sector	<p>The Government of Bangladesh (GoB) has spent approximately \$1 billion or 6-7% of its annual combined development and non-development budget on climate sensitive activities, and around 75% of this is domestically financed (CPEIR, 2012). To transform Bangladesh's economy to a low carbon climate resilient development, Bangladesh needs to increase its domestic climate finance, and this requires significant efforts by the Ministry of Finance, Ministry of Planning, Central bank, Auditor General Office, National Parliament, Bangladesh Bureau of Statistics, IMED, MoEF, MoWCA, MoDMR, and Local Government Division to mainstream climate change into their core business process.</p> <p>This programme seeks to address some of these issues by targeting a number of critical elements: i) Climate Resilient National level planning and coordination—led by Planning Commission; ii) National level budgeting and financing for low carbon climate resilient development—led by Finance Division of Ministry of Finance; iii) Enabling Private Sector Investment climate for low carbon climate resilient development; iv) Local level planning, budgeting and coordination – led by Local Government Division Fund level strategic impacts (expected outcome/impacts).</p> <p>Component 1: Inclusive Budgeting and Financing for Climate Resilience with Finance Division of Ministry of Finance; Component 2: Inclusive Planning for Climate Resilience with Planning Commission; Component 3: Environmentally sensitive and gender responsive private Sector Investment Facilities developed for low carbon climate resilient development with National Privatization Board and Bangladesh Bank; and Component 4: Local level inclusive Planning and Budgeting for Climate Resilience with Local Government Division.</p>	<p>MIE/ NIE: United Nations Development Programme (UNDP) IE: NDA Finance Division Partners: Finance Division, Planning Commission, Local Government Division, IMED, BBS, MoDMR, MoEF, Internal Resource Division, Bangladesh Bank, Office of the Auditor General, National Parliament Secretariat, Infrastructure Development Company Limited (IDCOL), Palli Karma Shohayak Foundation (PKSF)</p>		2018-2020
		Total financing (US\$ 20m)		Status
Fund level strategic impacts		GCF (US\$): 15m (Grant)	Other (US\$): 5m (GoB)	<i>PPF application under development</i>
1, 2, 3, 4, 5, 6, 7, 8				
Action		Lead	Timeline	
CN Development		UNDP	2018	
Full funding proposal		UNDP	2018-2019	
Project Title (A19)	Description	Accredited Entity, IE, Partner		Submission timeframe
Scaling up of energy efficient technologies and systems for the industrial and the household sector	Access to competitive financial products and services remains a key barrier in the promotion, uptake and scaling up of energy efficient solutions. This project seeks to overcome the high upfront cost of acquiring energy efficient appliances and systems by offering competitive loans to value chain actors in: (i) industry / commercial sector	<p>MIE/ NIE: Infrastructure Development Company Limited (IDCOL) IE: Infrastructure Development Company Limited (IDCOL)</p>		2018-2019

	(Component I); (ii) building sector (Component II), and; (iii) at the household level (Component III). The concessional loans from GCF will allow value chain actors in the three sectors to adopt and scale up energy efficient solutions. This project will help to reduce Bangladesh's overall energy consumptions and GHG emissions whilst offering the opportunity to improve the competitiveness of the companies by decoupling energy consumption with outputs and productivity. The proposed energy efficiency and conservation promotion financing project will result in saving of electricity, which will reduce use of diesel or HFO in the conventional diesel/HFO based power plants from where electricity is generated and transmitted to the national grid. This will result in reduction of CO2 emission and thereby contribute towards mitigating impacts of climate change. IDCOL as an NIE of GCF intends to implement Government's Energy Efficiency financing program and in the process, restrain carbon emission which is associated with electricity generation.	Partners:		
Fund level strategic impacts		Total financing (US\$ 250m)		Status
3, 5		<u>GCF (US\$):</u> 100m (Loan)	<u>Other (US\$):</u> 75m (IDCOL/ JICA) 75m (other sources)	<i>PPF application under development</i>
Action	Lead	Timeline		
<i>CN Development</i>	<i>IDCOL</i>	<i>2018</i>		
<i>Full funding proposal</i>	<i>IDCOL</i>	<i>2018</i>		
Project Title (A20)	Description	Accredited Entity, IE, Partner	Submission timeframe	
<i>Financing SMEs & Corporate business for Energy Efficient machineries, buildings, Renewable Energy projects in Bangladesh with an objective to reduce GHG emissions</i>	The project will achieve GCF's objectives of reducing emissions by increasing energy access and power generation and by saving energy through energy efficient equipments, appliances and buildings. The project is aligned to one of the themes of Bangladesh Climate Change Strategy and Action Plan (BCCSAP)- "mitigation and low carbon development". The Southeast Bank will utilize the fund to finance energy efficiency and small scale renewable energy projects in Bangladesh.	MIE/ NIE: Infrastructure Development Company Limited (IDCOL) IE: Southeast Bank (SEB) Partners:	2018-2019	
Fund level strategic impacts	Bangladesh is a rapidly industrializing developing country where manufacturing business is shifting technologies toward more capital intensive operations. Project costs often increases when an entrepreneur opts Energy Efficient Machineries. Banks have to offer a cheap source of fund in order to induce clients to procure energy efficient machineries and Building components. Our objective is to decrease energy consumption from baseline \geq at least 10% (base line means machineries or technologies prevalent in the country). This Energy Efficiency (EE) project aims at investing into fixed assets that are designed to decrease energy consumption for every unit of service output of the business entity or utilizing renewable or waste energy with the primary objective of improving the efficiency of energy use. Energy Efficiency (EE) will reduce heat wastage from boilers, for commercial and industrial buildings improvement of Heating, ventilation & Air Conditioning towards energy saving, efficient lighting system, energy	Total financing (US\$ 200m)	Status	
1, 3		<u>GCF (US\$):</u> 100m (Loan)	<u>Other (US\$):</u> 100m (SEB)	<i>PPF application under development</i>

	management system, building envelop insulation etc and all equipments, machineries and appliances that save energy. An eligible Renewable Energy (RE) sub-project aims at investing into fixed assets that are designed to produce electricity, heat, cooling and any other form of energy by utilizing renewable energy resources. Renewable energy resources may include but are not limited to solar, wind, geothermal, biomass, biogas, waste- to-energy etc. Renewable Energy equipment manufacturing and assembling plants are also included.			
Action		Lead		Timeline
CN Development		IDCOL		2018
Full funding proposal		Southeast Bank (SEB)/ IDCOL		2018-2019
Project Title (A21)	Description	Accredited Entity, IE, Partner		Submission timeframe
<i>Ensure reliable access to green energy from Mini Grid to productive anchor loads for strengthening local economy and growth</i>	In Bangladesh, people who are most exposed to the climate change iduced risks and vulnerabilities are also deprived from enjoining basic services and modern and efficient energy facilities. For instance, 30-50M people living in the outreach Chars and small coastal islands are out of modern energy services, which also limits local economic growth and peoples’ initiatives of diversifying climate adaptive livelihoods options. Rahimafrooz Renewable Energy Limited (RRE), one of the foremost and pioneering solar companies with more than 25 years of experience of Solarizing Bangladesh, intends to establish Mini Grid with pre-paid meter system connected to productive anchor loads like aquaculture, hydroponic, SME, Market place etc. in isolated Chars and small coastal islands. The overall objective of this project is to ensure access to energy to remote rural cluster of population to enhance living condition, and enable the local community to sustainably develop – which is line with the Sustainable Development Goal (SDG) Nr. 7: “Ensure access to affordable, reliable, sustainable and modern energy for all”. The specific objective is to establish 10 MW Mini Grid in 200 off grid areas in Bangladesh over the period of 36 months. This initiative will connect rural households with solar electricity to aquaculture centre, and providing capacity building along with income generating activities (IGA) to the targeted beneficiaries.	MIE/ NIE: Palli Karma Shohayak Foundation (PKSF)/ Infrastructure Development Company Limited (IDCOL) and United Nations Development Programme (UNDP) as MIE IE: Rahimafrooz Renewable Energy Limited (RRE) Limited Partners: Rural Services Foundation (RSF)		2018-2019
Fund level strategic impacts		Total financing (US\$ 50m)		Status
1, 5		GCF (US\$): 17.5m (Equity) 2.5m (Grant)	Other (US\$): 30m (RRE)	PPF application under development
Action		Lead		Timeline
CN Development		RRE/ PKSF/ IDCOL		2018
Full proposal development		RRE/ PKSF/ IDCOL		2018-2019
Project Title (A22)	Description	Accredited Entity, IE, Partner		Submission timeframe
<i>Ensure green energy access to the grid deprived rural island people through Five Mini-Grids with Solar PV</i>	Currently about 30% of Bangladesh’s land areas, mainly the remote chars and coastal islands, are out of National Grid provided electricity coverage. Those places are highly unlikely to have the National Grid in the near future because of the power transmission challenges and high	MIE/ NIE: Infrastructure Development Company Limited (IDCOL) IE: Engreen Ltd. Partners:		2018-2019

<i>technology in different island places of Bangladesh</i>	<p>related costs to cross big rivers and seas. Solar Mini-grids are the only clean and feasible option to provide electricity to the underprivileged village communities living in these islands. Engreen, a leading ESCO (Energy Service Company) in Bangladesh, intends to establish Solar mini-Grids in 5 different off grid Island locations namely Hatiya, UrirChar of Sandwip, Kolatoli of Manpura and Char kashem of Chandpur. Currently, Engreen Ltd got the initial approvals from IDCOL's Mini-grid program to install solar mini-grids in those areas. A detailed load surveys have also been completed to install around 2MWp of Solar PV & other related equipment to meet daily electricity demand of the people living in those areas. The project funding will add-on the additional finance requirement to install solar mini-grids, also will help installing necessary battery storage systems for 24/7 uninterrupted power service as well as distribution of electricity to the households, village markets, irrigation, Ice Factories, Saw & Husking Mills, small Industries, three-wheel battery driven easy bikes, etc. The proposed Mini-grid projects would avoid around 1,450 tonnes of CO2 equivalent annually. This project is in line with the SDG goals by reducing poverty, ensuring healthy lives, ensuring affordability of clean energy and taking climate actions as solar power ultimately reduce emissions and promote developments in renewable energy. It also will contribute to fulfilling GoB's goal of installing total 1,470 MW capacity from Solar Power by 2021.</p>				
Fund level strategic impacts		Total financing (US\$ 10m)		Status	
1, 5		GCF (US\$): 3m (Loan)	Other (US\$): 5m (IDCOL) 2m (Engreen)	PPF application under development	
Action	Lead	Timeline			
<i>CN Development</i>	<i>Engreen Ltd/IDCOL</i>	2018			
<i>Full funding proposal</i>	<i>Engreen Ltd/IDCOL</i>	2018-2019			
Project Title (A23)	Description	Accredited Entity, IE, Partner	Submission timeframe		
<i>Promoting Solar Light as Green Technology in Education Sector in Off-grid areas of Bangladesh</i>	<p>Bangladesh lags behind in terms of providing energy and electricity to the entire country and all its citizens. At present, Bangladesh has 30% off grid areas, mainly isolated chars and islands, where the connection to national grid systems is unlikely to be realised soon due to high infrastructure costs to overcome riversystems, etc.. As per Renewable Energy Policy-2008, Bangladesh targets to install a total of 1,470 MW capacity from Solar Power by 2021. In this regard, Engreen Ltd proposes to initiate a cross-cutting Mini-grid project by installing around 2MWp of Solar PV in five (5) different Islands of Bangladesh located in Hatiya, UrirChar of Sandwip, Kolatoli of Manpura, and Char kashem of Chandpur to contribute to holistically cover the electricity demand. The project will also include installing necessary battery storage systems for 24/7 power service as well as distributing electricity to the households, village markets and for irrigation purpose. This project is also in line with the SDG goals by reducing poverty, ensuring healthy lives, ensuring affordability of clean energy and taking climate actions as solar power ultimately reduce emissions and</p>	<p>MIE/ NIE: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH IE: Bangladesh Climate Change Trust Fund (BCCT) Partners:</p>	2018-2020		
Fund level strategic impacts		Total financing (US\$ 26m)		Status	
1, 6		GCF (US\$): 20m (Grant)	Other (US\$): 6m (GoB)	PPF application under development	

	promote developments in renewable energy.			
Action		Lead	Timeline	
CN Development		GIZ	2018-2020	
Full proposal development		GIZ	2018-2020	
Project Title (A24)	Description	Accredited Entity, IE, Partner		Submission timeframe
Renewable energy based climate resilient Eco-Village development in off-grid area of Bangladesh	This project proposes the development of Eco-Villages that would support rural communities to achieve gradual climate resilient, low-carbon, and socio-economic progress. Eco-Village Development includes a bundle of practices like Solar Micro-Grid, Solar water pump, solar drying units, Solar Street lights, bamboo-made slurry pit biogas plants, community based plants and smokeless clean cook stoves.	MIE/ NIE: Infrastructure Development Company Limited (IDCOL)/ Palli Karma Shohayak Foundation (PKSF) IE: Grameen Shakti Partners:		To be determined
Fund level strategic impacts	This project has been conceptualized based on the learning and experiences of an ongoing small scale pilot project called 'Eco-Village Development Project (EVD)' that is being implementing in three Villages in Bangladesh, India, Nepal and Sri Lanka and coordinated by International Network for Sustainable Energy (INFORSE). Grameen Shakti, the Partner Organisation of the EVD project in Bangladesh, intends to expand EVD in 50 villages other located in off-grid areas since villagers of these areas cannot access regular grid-network as a result they have to depend on dirty fossil fuel for lightning and cooking. The project would have a strong focus of capacity building of women and involving women in solar system fixation, improved cooking stove manufacturing, bio-slurry preparation as well organic farming. The projects would, further, facilitate community ownership on the project's interventions like Solar Micro-grid, solar pump, solar street light, biogas plant and rain water harvesting etc. The project would benefit approximately 25,000-30,000 people living in 50 villages (located in off-grid area). In terms of emission reduction, the project would mitigate 500 - 600 tons CO2 from 100 EVD households compared with a baseline of CO2 emission from the use of traditional fuel (kerosene and diesel) for cooking and lighting.	Total financing (US\$ 4m)		Status
1, 3, 5		GCF (US\$): 2m (Grant)	Other (US\$): 2m (Grameen Shakti)	PPF application under development
Action		Lead	Timeline	
CN Development		Grameen Shakti	To be determined	
Full proposal development		Grameen Shakti	To be determined	
Project Title (A25)	Description	Accredited Entity, IE, Partner		Submission timeframe
Climate resilient drainage, canal dredging, and flood control for Barisal City corporation area	The Barisal city is subjected to seasonal flooding and severe drainage congestion caused mainly by siltation and reduction of the internal canals. Climate change impact has increased the flooding, upsurge and siltation problems. As part of the Bangladesh Delta Plan 2021 the proposed investment project is intended to improve the water supply and drainage condition of the Barisal City Corporation area. In line with the overall goal of the delta plan of ensuring	MIE/ NIE: World Bank IE: Bangladesh Water Development Board (BWDB) Partners: Barisal City Corporation (BCC) and Local Government and Engineering Department		2018-2019

	safety climate change induced floods and related disasters, the project aims to:	(LGED)	
Fund level strategic impacts	i) Make Barisal more climate resilient by reducing flooding depth, duration and frequency; and	Total financing (US\$ 59m)	Status
7	ii) Reduce damage to assets, reduced business interruption, and reduced loss of flood event.	<u>GCF (US\$):</u> 44.25m (Grant)	<u>Other (US\$):</u> 14.75m (GoB) <i>PPF application under development</i>
Action	Lead	Timeline	
CN Development	BWDB/ World Bank	2018	
Full funding proposal	BWDB/ World Bank	2018-2019	
Project Title (A26)	Description	Accredited Entity, IE, Partner	Submission timeframe
<i>Development of climate resilient water infrastructure in Bhola island</i>	The proposed project is developed to safeguard the east coast of bhola near Daulatkhan for future flooding, storm surges and cyclone, which is likely to intensify with growing climate change. The project will protect the area of bank shifting, and erosion and safeguard local livelihood. Moreover, the early warning system will reduce the extent of loss of property, and subsequently reduce poverty levels. The project has an estimated implementation period of 4 years and an operating period of 25 years. The project is linked to the flowing delta plan strategies:	MIE/ NIE: World Bank IE: Bangladesh Water Development Board (BWDB) Partners: Department of Environment (DoE) and Embankment Maintenance Group, NGOs	2018-2019
Fund level strategic impacts	a) integrated flood management against extreme flood; and	Total financing (US\$ 187.5m)	Status
7	b) protect against coastal erosion. In line with the overall goal of the delta plan of ensuring safety climate change induced floods and related disasters, the project aims to: i) reduce erosion of coastal land and prevent flood damages; and ii) improve livelihoods and reducing levels of displacement.	<u>GCF (US\$):</u> 140.625m (Grant)	<u>Other (US\$):</u> 46.875m (GoB) <i>PPF application under development</i>
Action	Lead	Timeline	
CN Development	BWDB/ World Bank	2018	
Full funding proposal	BWDB/ World Bank	2018-2019	
Project Title (A27)	Description	Accredited Entity, IE, Partner	Submission timeframe
<i>Creation of Alternate Livelihoods for climate change affected communities victims through Cooperative approaches in Haor areas of Bangladesh</i>	The haor areas are an area with annual flooding and host many extreme poor communities. While the inhabitants are generally adapted to floods and inundations, climate change poses a unprecedented risks to these communities through changing precipitation patterns and intensified flash floods damage standing crops and cause seasonal shifts that lead to crop failures.	MIE/ NIE: Palli Karma Shohayak Foundation (PKSF) IE: Department of Cooperatives (DoC) Partners:	2018-2020
Fund level strategic impacts	The project is proposed to increase the contribution of cooperatives in creation of climate resilient, sustainable livelihoods and raise awareness on climatic changes among the communities. This will be reached through:	Total financing (US\$ 8m)	Status
5, 6	i) Awareness building of the 6000 members of Cooperatives; ii) Increase community participation including local	<u>GCF (US\$):</u> 6m (Grant)	<u>Other (US\$):</u> 2m (GoB) <i>PPF application under development</i>

	authorities and local level organizations to aware people about climate-change risks (Food, health, accommodation, etc.); iii) Creation of alternative employment opportunity for 6000 families for sustainable livelihood; and iv) Capacity Building of Department of Cooperatives.			
Action		Lead	Timeline	
CN Development		PKSF or DoC	2018-2020	
Full funding proposal		PKSF or DoC	2018-2020	
Project Title (A28)	Description	Accredited Entity, IE, Partner		Submission timeframe
Production and supply of climate resilient crop varieties	This project will support marginalised Bengali farmers becoming less vulnerable and enhance their food and income security through the uptake of climate resilient agricultural techniques and crop varieties. The introduced crop varieties will be, depending on the climate change impact faced for each farmer, more drought or salinity resilient. The objectives of the project are:	MIE/ NIE: Palli Karma Shohayak Foundation (PKSF) IE: Bangladesh Agricultural Development Corporation (BADC) Partners:		2018-2020
Fund level strategic impacts		Total financing (US\$ 156.3m)		Status
6	i) To sustain agriculture (crop cultivation) in light of intensifying climate change impacts (drought, salinity, submergence, etc.); ii) To increase the availability of drought resistant, salinity and submergence tolerant varieties of rice and other crops for the northern and southern farmers; iii) To establish new seed farms in the dry zone and coastal region for producing foundation seeds of drought tolerant and locally adaptable stress tolerant HYV seeds and purification of popular local varieties of rice and other crops; iv) To create new contract grower's zones both in the north and south regions for producing adaptable stress tolerant certified seeds/ TLS of HYV seeds & Hybrid of rice and other crops in the farmer's field of different localities; v) To establish preservation facilities by constructing seed store and by arranging modern machineries for processing of produced stress-tolerant seeds; vi) To increase crop productivity horizontally by taking fallow and underutilized lands of southern region under cultivation and to increase crop productivity vertically (increase per unit yield) through distributing stress-tolerant quality seeds to the northern and southern farmers; vii) To introduce sustainable cropping pattern and to increase crop intensity in both the north and south agriculture; viii) To give training to farmers/ seed producers/ seed companies/ NGOs of the drought-prone areas and coastal belt on utilization of improved seeds and modern crop cultivation; ix) To create employment opportunities for rural poor people particularly women through engaging them in the extended crop cultivation activities in Barind area and on	GCF (US\$): 117m (Grant)	Other (US\$): 39.3m (GoB)	PPF application under development

	un/underutilized char-lands of coastal belt; and x) To develop socio-economic condition of the farm families to prevent dropping of child schooling and to ensure sustainable food security of the country.			
Action		Lead		Timeline
CN Development		PKSF or BADC		2018-2020
Full funding proposal		PKSF or BADC		2018-2020
Project Title (A29)	Description	Accredited Entity, IE, Partner		Submission timeframe
Capacity Development for Climate Resilient Seed Certification in Bangladesh	As one of the most climate vulnerable sectors to climate change impacts in Bangladesh, the agriculture sector is likely to face significant challenges in the upcoming years. In order to cope with new climatic realities (e.g. changing precipitation patterns) and circumstances (e.g. increasing soil salinity levels in coastal regions) farmers will require climate change resilient rice and crop varieties. To increase and ensure the quality of those crops the Bangladesh's Seed Certification Agency plays a pivotal role and proposes a comprehensive project to enhance their capacity to cope with the additional climate change related challenges. This project aims to: i) Provide assistance in varietal evaluation and release for 200 climate resilient varieties of notified crops of different research organization through DUS (Distinctness, Uniformity and Stability) and VCU (Value for Cultivation and Uses) tests within the entire project period; ii) Verify and control the quality of 7000 metric ton seed of climate resilient varieties of notified crops every year after testing it in the laboratory; iii) Cover 2000 hectare cropping land under field certification of seed crop to produce quality seed of climate resilient varieties; iv) Collect and test 150 seed samples every year from the market for monitoring quality of seed of resilient varieties; and v) Verify the genetic purity of 6000 seed samples of climate resilient varieties of notified crops through Pre-post Control & Grow-out test.	MIE/ NIE: To be selected IE: Seed Certification Agency, Bangladesh Partners:		By 2018-2019
Fund level strategic impacts		Total financing (US\$ 6.25m)		Status
5, 6		GCF (US\$): 5.625m (Grant)	Other (US\$): 0.625m (GoB)	PPF application under development
Action		Lead		Timeline
CN Development		Seed Certification Agency		June 2018
Full proposal development		Seed Certification Agency		2019
Project Title (A30)	Description	Accredited Entity, IE, Partner		Submission timeframe
Productive Use of Renewable Energy (PURE)	The program intends to scale-up access to electricity from renewable energy (RE) in Bangladesh through private sector financing. The program will support both off-grid renewable energy technologies, particularly solar energy, as well as larger grid connected PV plants. Under the program there will be sub-projects including solar irrigation pumps for agriculture (approx. 2000 systems), solar/diesel hybrid mini-grids (approx. 20 systems), biogas-based power plants	MIE/ NIE: IDA, World Bank IE: Infrastructure Development Company Limited (IDCOL) Partners: To be determined		By 2018-2019
Fund level strategic		Total financing		Status

impacts	(approx. 50 systems), solar cold storages (approx. 20 system), solar roof-top (approx. 60) and possibly other renewable energy interventions for productive use. Access to clean energy is a GCF priority area and has been identified as a high impact opportunity for the Asian region, particularly Bangladesh. The GCF funds of up to USD 84 million would be used as investment grants to ensure the financial viability of the sub-projects. The grant support as well as GCF loan shall complement concessional loan financing from other donor agencies and equity contributions from sponsors of sub-projects, which are generally private enterprises or NGOs. PURE is designed to build on IDCOL's existing renewable energy program, which has been successfully running with the support of – among others –IDA, World bank. The GCF grant would mobilise already committed loan funds from the World Bank and JICA, thereby facilitating rapid implementation of PURE.	(US\$ 223m)		<i>PPF application under development</i>
1, 4, 7		<u>GCF (US\$):</u> 84m (Grant)	<u>Other (US\$):</u> 70m (IDA, World Bank) 39m (Equity)	
Action	Lead	Timeline		
<i>CN Development</i>	<i>IDCOL</i>	<i>2018-2020</i>		
<i>Full proposal development</i>	<i>IDCOL</i>	<i>2018-2020</i>		
Project Title (A31)	Description	Accredited Entity, IE, Partner	Submission timeframe	
<i>Enhancing Urban Resilience Programme</i>	The envisaged project, "Enhancing Urban Resilience Programme" (EURP) aims to strengthen 5 to 10 cities in the coastal belt in their endeavor to adapt to and to mitigate the negative effects of climate change. The project will not only support the target cities to improve their respective urban planning, but also in the implementation of an adapted urban infrastructure. This project will support up to 10 municipalities to: 1) improve their strategic focus on climate adaption in urban planning, selecting the respective infrastructure investment and budgeting, and 2) provide climate-adapted infrastructure for the urban population especially those most affected. The list of potential key infrastructure investments include: (i) drainage; (ii) water supply; (iii) sanitation and waste management; (iv) cyclone shelters; and (v) other municipal infrastructure such as emergency access roads and bridges, bus terminals, slum improvements, boat landings, and markets. It is to be noted that this programme will built upon the experience of the first GCF-funded project "Climate Resilient Infrastructure Mainstreaming" (CRIM) undertaken in the City and surrounding areas of Satkhira where climate-resilient planning and subsequent investments were accompanied by the setting-up of a so-called national Center of Excellence. This Center, named "Climate Resilient Local Infrastructure Center" (CRiLIC), shall be responsible for the collection, evaluation and dissemination of the experience and know how gained so far in adaption to climate change in urban and rural areas.	MIE/ NIE: Kreditanstalt für Wiederaufbau (KfW) IE: Local Government Engineering Department (LGED) Partners:	By 2018-2019	
Fund level strategic impacts		Total financing (US\$ 175m)	Status	
3, 5, 7		<u>GCF (US\$):</u> 100m (Grant)	<u>Other (US\$):</u> 50m (GoB) 25m (KfW)	<i>PPF application under development</i>
Action		Lead	Timeline	

CN Development	LGED	2018-2020
Full proposal development	LGED	2018-2020

Table 10: Country Readiness programme pipeline

Title	Description	Delivery Partner	Submission timeframe
<i>Readiness support for enabling environment for private climate financing</i>	<p>Objectives:</p> <p>i) Developing an umbrella policy structure for Sustainable Banking (Green Finance, Climate Finance, Carbon Finance; Climate Risk Fund; Carbon/Ecological Footprint, ESRM) for banks and Financial Institutions in Bangladesh which will have separate focus on conventional and Shariah based practices;</p> <p>ii) Transforming all relevant policies of Bangladesh Bank on Sustainable Banking into International Language;</p> <p>iii) Developing capacity building and knowledge sharing framework within Bangladesh Bank for disseminating climate finance knowledge and information towards Banks, FIs, and entrepreneurs; and</p> <p>iii) Strengthening regulatory capacity of Bangladesh Bank for catalyzing private climate finance through direct accessing of GCF as accredited entity and other international sources.</p>	Bangladesh Bank	December 10, 2017
		Total financing:	Status
		US\$ 95,000	
Action	Lead	Timeline	
<i>Proposal development/ submission</i>	NDA Bangladesh	10. December, 2017	
<i>Implementation</i>	NDA Bangladesh	01 April 2018 – 31 March 2019 (12 months)	
Title	Description	Delivery Partner	Submission timeframe
<i>Readiness for strengthening capacity of Infrastructure Development Company Limited as an NIE</i>	<p>Objectives:</p> <p>i) Strengthening institutional capacity of IDCOL for mobilizing fund for climate change activities;</p> <p>ii) Access resources to facilitate Funding Proposal development; iii) Monitoring, measuring and reporting the program/ project outcomes and impacts based on the indicators aligned with the results management framework of the Fund.</p> <p>The activities will include:</p> <p>i) IDCOL will require its staff members who will be engaged in the disbursement of the Fund, including Technical, Monitoring, Credit Risk Management, Legal etc. to participate in international and local training courses. Especially in areas relevant to the objectives of the GCF such as project and program development, international procurement, accounting, oversight, planning and monitoring and evaluation processes. Also in order to extract lessons learned and to engage in dialogues with existing and prospective accredited entities from other countries, exchange visits and workshops will be organised under the readiness budget;</p> <p>ii) To establish an efficient and effective process of developing, as well as facilitating funding proposals, IDCOL will engage climate change, environment and other relevant experts, so that potential concepts can be scaled up through programmatic approach. Several feasibility study will also be conducted prior to finalising the project/program design</p>	Infrastructure Development Company Limited (IDCOL)	07. December, 2017
		Total financing:	Status
		US\$ 900,000	

	<p>which will require both internal and external resources. Furthermore, in the process of developing funding proposals IDCOL will arrange consultative sessions (meetings, workshops, seminar, conferences etc.) with different stakeholders (Civil society, NDA, MIEs, EEs etc.) that will help to take into account stakeholders' interest into the proposal;</p> <p>iii) As a part of the reporting requirement of the Fund IDCOL will engage a dedicated monitoring team for the funded programs and projects. This team will be responsible to check the implementation progress and generate quarterly report for the Fund. In addition to this IDCOL will also engage third party monitoring for developing annual reports on evaluating the impacts of the funded programs and projects.</p>		
Action	Lead	Timeline	
<i>Proposal development/ submission</i>	<i>NDA Bangladesh</i>	07. December, 2017	
<i>Implementation</i>	<i>NDA Bangladesh</i>	February 2018 – January 2019 (12 months)	
Title	Description	Delivery Partner	Submission timeframe
<i>Strengthening and Capacity enhancement of the Executing Entities (EEs) to effective participate in GCF activities</i>	<ul style="list-style-type: none"> Identify and select the potential EEs who has the potential to execute the fiduciary standards and ESS standards of GCF Awareness raising and capacity building of EEs about the fiduciary standards and ESS standards of GCF Conducting as institutional gap analysis of the potential EEs against the fiduciary standard and ESS Developing and implementing preparatory support to the EEs to address identified gaps to comply with the fiduciary standards, ESS standards and development of new policies and procedures Enabling lesson learning from other institutions that have been through similar process to become an effective EEs Building capacity of EE in relation to the GCF activities in stakeholder consultation, procurement, monitoring and evaluation etc. 	Palli Karma Shohayak Foundation (PKSF)	December 31, 2017
		Total financing	Status
		USD 1 million	<i>PKSF (NIE) already submitted a project to NDA for EDA window and is in the process to select potential EEs in the proposed areas to successfully implement the project in the field level</i>
Action	Lead	Timeline	
<i>Proposal development/ submission</i>	<i>NDA Bangladesh</i>	31. December, 2018	
<i>Implementation</i>	<i>NDA Bangladesh</i>	January 2018 to December 2018	
Title	Description	Delivery Partner	Submission timeframe
<i>Updating the Strategic frameworks for engagement with GCF including the preparation of country programmes</i>	<p>The current CP could not accommodate many ideas submitted by different entities. Moreover, we only could ensure justice with a few entities in providing guidance on the GCF investment criteria and eligibility. It was also evident that many CP requires stronger climate change attribution to their ideas and initial concepts. Therefore, an update of the current CP is very urgent to ensure the following outputs:</p> <p>i) Strengthen the climate change attribution of the project pipelines with in-depth engagement with interested entities, who submitted their ideas/concept for CP;</p> <p>ii) Orientation and training to interested entities about</p>	United Nations Development Programme (UNDP)	25 January 2018
		Total financing	Status
		US\$ 300,000	UNDP as delivery partner of NDA, is now developing Bangladesh's Country Programme for GCF. It is expected that the CP document will be

	<p>strengthening the concepts that the entites have submitted;</p> <p>iii) Support the private sector, including micro,small and medium enterprises, and CSOs with more orientation about GCF's banlable ideas, financing instruments and feasibility study of their submitted ideas;</p> <p>iv) Further clarification of the roles of prospective public and private sector entities inimplementing Bangladesh's programming priorities with respect to GCF. This includes co-finance, more explanation of the financing instruments of GCF;</p> <p>v) Continue the institutionalization of the CP within Plannign Commission and Finance Division's future financial and programe planning; and</p> <p>vi) Helping NDA to develop a robust M&E system in order to track progress,assess outcome/impact and to ensure accountability for use of resources.</p>		<p>prepared and finally adopted by 31 December 2017.</p>
Action	Lead	Timeline	
Proposal development/ submission	NDA Bangladesh	25. January 2018	
<p>1. Series of Training Workshop with more than 60 entites submitted the idea/ concepts for the CP.</p> <p>2. Stakeholders' consultation meetings with all AE's preferably with NIEs to appraise and support the ideas of CP, where AEs are mentioned as potential AE.</p> <p>3. Deployment of a team, consisting of both national and international consultants, members from NDA Secretariat in updating the CP.</p>	NDA Bangladesh	01 February 2018 - 31 January 2020 (24months)	
Title	Description	Delivery Partner	Submission timeframe
<p><i>Saving lives from climate-induced diarrhoeal diseases: Assessing economic burden and adaptation strategies for resilient societies</i></p>	<p>Being a deltaic country Bangladesh is vulnerable to enteric and infectious diseases due to large open water bodies along with a dense population. Diarrhoea, a water borne disease accounts for 11% of under-five mortality in Bangladesh. Additionally, climate change is expected to increase the risks of diarrhoeal diseases due to changing climatic pattern, which can lead to 2.2 million additional cases by the end of the century, when temperatures are expected to increase by 2.1°C. Given the context, ICDDR would implement this project in both coastal and hinterland regions to assess risk and vulnerabilities of climate change on health and livelihood. The project also will generate evidence between climatic variability and diarrhoeal diseases, estimate additional economic costs for climate change induced diarrhoea, and find necessary adaptation approaches.</p> <p>The objectives of this research projects are:</p> <p>i) To generate and synthesize policy-relevant evidence on the impacts of climate variability and change on the seasonality and severity of pathogen-specific diarrhoeal diseases;</p> <p>ii) To estimate the associated economic costs (both direct and indirect);</p>	<p>International Centre for Diarrhoeal Disease Research (ICDDR)</p> <p>Total financing</p> <p>US\$ 2.5 million</p>	<p>June 2018</p> <p>Status</p> <p>Developed project idea</p>

	<p>iii) To find out the functional capacity of effective measures/interventions - those which have worked so far as well as new options - to adapt to climate-induced fluctuations of seasonal trends of diarrhoeal diseases; and</p> <p>iv) To find out the economic viability of adaptation strategies – both in terms of reducing the economic burden of the community as well as in generating community response, and evaluating the extent to which they may function to build societal resilience.</p>		
Action	Lead	Timeline	
<i>CN Development</i>	<i>NDA Bangladesh</i>	<i>June 2018</i>	
<i>Full Funding Proposal</i>	<i>NDA Bangladesh</i>	<i>2018</i>	

Entity Name	Type	Action	Lead	Timeline
Department of Environment (DoE)	Government	Stage I - Institutional Assessment and Completeness Check is going on.	Department of Environment (DoE)	Waiting for GCF's action/response.
Local Government Engineering Department (LGED)	Government	PWC has completed accreditation gap assessment. LGED has started the process of lodging application for accreditation	Local Government Engineering Department (LGED)	Will complete submitting the application within June 2018
Bangladesh Bank	Autonomous	Started the process of lodging application for accreditation	Bangladesh Bank	Will complete submitting the application within 2018
Bangladesh Climate Change Trust Fund (BCCTF)	Government	Started the process of lodging application for accreditation	Bangladesh Climate Change Trust Fund (BCCTF)	Will complete submitting the application within 2018
Suitable Entity from Private Sector	Private Sector	NDA will call for interest from the eligible private sector entities to apply for screening and ultimately through necessary scrutiny will nominate one or two private sector entity/entities to apply for GCF's accreditation	NDA	2018

3. Monitoring and evaluation of Country Programme implementation

Bangladesh's Country Programme (CP) to the GCF is considered to be a 'living document'. GCF kindly offered additional support to update the CP in 2018. Thus, this first version of the Country Programme is supposed to provide strategic guidance for upcoming project proposals to the GCF for the upcoming years, while being updated in 2018. This will allow an adjustment of the CP to changes in new developments of the economic circumstances; new information on adaptation and mitigation needs, priorities and targets; new information on changing viability or costs of various adaptation and mitigation measures and options. The long-term revision cycle of the CP will be determined in 2018, whereas the nature of the document will remain flexible.

There will be a review of effectiveness, performance, and accuracy conducted in 2018 to provide the NDA and relevant stakeholders with relevant information to provide insights into its functionality as a guiding document and if it reflects countries' needs. The expanded capacity of Bangladesh's NDA will allow them to undertake the monitoring and evaluation.

The revision of the CP, post evaluation of its effectiveness, in 2018 will build upon the positive experiences of the inclusive preparation of this first version of the country program that attracted a total of 218 actors to submit simplified concept notes (based on the GCF concept note template) to the NDA for consideration to be prioritised and included into the project proposal development pipeline. This high level of resonance from involved parties showed the interest and ability of local stakeholders to actively engage in the climate change action and to gain direct access to the GCF resources. Thus, this process can be considered as being a valuable exercise to mainstream climate change, increase awareness and, ultimately, support a paradigm shift towards considering potential climate change impacts or arising opportunities in the operation and planning process of the involved entities.

Performance indicators:

- Numbers of adaptation and mitigation proposals submitted, approved, pending or rejected by GCF by year
- Volume and percentage of approved funds approved and disbursed by project and by year
- For adaptation project, number of beneficiaries by project, by region and by year, disaggregated by sex
- For mitigation project, volume of GHG saved or avoided by year by sector

4. Appendix

4.1 Project preparation pipeline B

The following table 12 includes the concept notes/ project ideas of the project preparatory pipeline B. These are not being perceived as being of lower importance than those in the pipeline A, but some were overlapping with other efforts proposed in the project preparatory pipeline A. Some concept notes and project ideas can also be further elaborated and developed until the revision of the CP in 2018 or brought forward to seek funding from other international climate change related funding sources, e.g. Adaptation Fund or GEF.

Project Title (B1)	Description	Accredited Entity, IE, Partner		Submission timeframe
Enhance Community Resilience Through Hill Forest Restoration	This project will improve forest cover and restore forest landscape by participatory reforestation, assisted natural regeneration, enrichment plantation, agro-forestry, strip plantation etc. in the degraded forestland. Besides this, measures will be taken to protect the threatened and endangered species of flora and fauna and the fragile ecosystems in the hill forest region. Sustainable livelihood opportunities will be enhanced by improving ecosystem services and introducing livelihood opportunities, capacity building and providing incentives for alternative income generation activities. In addition, non-timber forest products (NTFP) plantation will be carried out under this project.	MIE/ NIE: United Nations Development Programme (UNDP) IE: Bangladesh Forest Department (BFD) Partners:		To be determined
Fund level strategic impacts		Total financing (US\$ 60m)		Status
4, 5, 6, 8		GCF (US\$): 50m (Grant)	Other (US\$): 10m (GoB)	Project idea developed
Action	Lead	Timeline		
<i>CN Development</i>	<i>BFD</i>	<i>To be determined</i>		
Project Title (B2)	Description	Accredited Entity, IE, Partner		Submission timeframe
Integrated Community resilience programme in coastal-plainland indigenous communities in Bangladesh	The plain land indigenous communities or ethnic minorities (also known as <i>adibashis</i>) are among the most vulnerable communities to the impacts of climate change in Bangladesh. Most <i>adibashis</i> are landless or only own small patches of land and depend largely on day-labour jobs in the agricultural sector for their income. Considering the differentiated vulnerabilities of the plain land indigenous communities, this programme aims to increase the resilience of climate vulnerable and plainland indigenous communities, especially women and children, through reducing their risk to climate change impacts. The project interventions will ensure: i) Improved access to sustainable and safe water supply; ii) Improved climate adaptive agriculture practices and livelihoods; iii) Strengthened community preparedness and early warning / early action systems; and iv) Strengthened policy dimensions of gender-responsive and inclusive climate change adaptation through evidence-backed policy advocacy for plain land.	MIE/ NIE: United Nations Development Programme (UNDP) IE: UNDP (Lead) Partners: HEKS/EPER, NETZ Bangladesh, Enfants du Monde (EDM), WaterAid, and CARE		To be determined
Fund level strategic impacts		Total financing (US\$ 40m)		Status
5, 6, 8		GCF (US\$): 30 m (Grant)	Other (US\$): 10 m (to be determined)	Project idea developed

	indigenous communities.			
Action		Lead		Timeline
CN Development		UNDP		To be determined
Project Title (B3)	Description	Accredited Entity, IE, Partner		Submission timeframe
<i>Ready to Risk Reduction: Promoting Community based Climate Resilient Livelihood in Coastal Districts of Bangladesh</i>	The project is proposed to promote climate resilient livelihoods in coastal districts of Bangladesh. It intends to contribute to alternative income generation by the beneficiaries which will have direct and indirect impact on livelihood quality improvements and community development. The specific objectives of the project are: i) To raise awareness of the rural people of the coastal area on climate change risks; ii) To improve the communities and local government agencies' preparedness to cope with climate change induced risks/disaster; iii) To facilitate the local level planning and its implementation for the climate risk management; and iv) To develop the climate resilient livelihoods of the most vulnerable communities.	MIE/ NIE: Palli Karma Shohayak Foundation (PKSF) IE: Bangladesh Rural Development Board (BRDB) Partners:		To be determined
Fund level strategic impacts		Total financing (US\$ 25.63m)		Status
5, 6		GCF (US\$): 20.63m (Grant)	Other (US\$): 5m (GoB)	Project idea developed
Action		Lead		Timeline
CN Development		BRDB or PKSF		To be determined
Project Title (B4)	Description	Accredited Entity, IE, Partner		Submission timeframe
<i>Integrated geo-resource management as a tool and base to increase the climate change resilience of people and ecosystems in Chalanbil Areas of Bangladesh</i>	The proposed project intends to provide necessary information for parameters and measures of adaptation, preparedness of tackling droughts, groundwater crisis and other hazards, land use potential, optimum utilization of land and water resources for extensive agricultural and socio-economic activities, and for sustainable development of the Chalanbil and surrounding Areas. The outcome of the project is expected to create considerable mitigation opportunities and will put positive impact on environmental and ecological, restoration socio-economic condition as well as adaptation regarding global warming and climate change.	MIE/ NIE: Palli Karma Shohayak Foundation (PKSF)/ United Nations Development Programme (UNDP) IE: Geological Survey of Bangladesh (GSB) Partners: Barind Multipurpose Development Authority, BMD, others		To be determined
Fund level strategic impacts		Total financing (US\$ 27m)		Status
4, 5, 6, 7		GCF (US\$): 17.00 m (Grant)	Other (US\$): 5.00m (GoB) 5.00m (DP)	Project idea developed
Action		Lead		Timeline
CN Development		GSP or PKSF		To be determined
Project Title (B5)	Description	Accredited Entity, IE, Partner		Submission timeframe

Resilient infrastructure to combat climate change impacts in flash flood prone Haor areas of Bangladesh	The Haor region of Bangladesh is prone to flash flood due to heavy rainfall in the south-east Himalayan mountains in Meghalay, Assam and Tripura of India. Flash flood occur frequently and damage crops and property of local communities. Climate change is projected to intensify the flash floods and make it a more frequent phenomenon, which poses a significant additional threat to local communities.	MIE/ NIE: Palli Karma-Sahyak Foundation (PKSF) IE: Palli Karma-Sahyak Foundation (PKSF) Partners:		To be determined
Fund level strategic impacts	Objectives of the proposed project are:	Total financing (US\$ 50m)		Status
5, 6	<ul style="list-style-type: none"> i) To protect houses, homestead, villages and public places from flash flood destruction; ii) To promote flood resilient crops and livestock and non-farm income diversification with market access for targeted community people particularly women; iii) To facilitate and promote flood resilient WASH facilities for targeted community, children education, institutions and market places; and iv) To facilitate and promote flood shelter for targeted households and livestock safety. 	GCF (US\$): 45 m (Grant)	Other (US\$): 5 m (GoB)	Project idea developed
Action		Lead		Timeline
CN Development		PKSF		2018
Project Title (B6)	Description	Accredited Entity, IE, Partner		Submission timeframe
Climate adaptive housing solutions for the displaced people in Bangladesh	Intensifying extreme weather events, such as cyclones, droughts or floods, particularly affect the poor rural societies of Bangladesh, and often lead to forced displacement or create a push factor for national migration. The pilot project 'One House, One Family At a Time', through which displaced people were provided a new climate resilient house and new future opportunities proved to be successful. This project aims to scale-up and replicate the pilot project to support displaced people to ensure and safeguard land and property rights and provide them with climate resilient housing options.	MIE/ NIE: UDP/PKSF IE: Young Power in Social Action (YPSA) Partners:		To be determined
Fund level strategic impacts	opportunities proved to be successful. This project aims to scale-up and replicate the pilot project to support displaced people to ensure and safeguard land and property rights and provide them with climate resilient housing options.	Total financing (US\$ 0.57m)		Status
5, 7	<p>The specific objectives of this project are:</p> <ul style="list-style-type: none"> i) To provide housing, land and other living support to climate-induced displaced families ensuring harmony between host community and arrival families as an adaptation; and ii) To provide capacity building support for ensuring alternative livelihood for leading better life as well as link to other basic needs such as education, health etc. 	GCF (US\$): 0.52m (Grant)	Other (US\$): 0.5m (GoB)	Project idea developed
Action		Lead		Timeline
CN Development		YPSA		To be determined
Project Title (B7)	Description	Accredited Entity, IE, Partner		Submission timeframe

Biogas energy supply and organic fertilizer production for improvement of soil health and reduction of GHG emission from the use of chemical fertilizer in rice cultivation	Considering unhealthy waste management as a major issue as well as the use of chemical fertilizers in the rice production that produce greenhouse gases as well as pollute soils, this project proposes to establish a "bio-compost plant" in Gazipur City to produce bio-organic fertilizer and biogas. Waste materials will be converted to biogas and organic fertilizer which will reduce use of conventional fuel in vehicles and use of urea fertilizer in crop field. Dissemination and adoption of this technology will: i) Reduce GHG emission due to reduced TSP and urea production and 30% less uses of urea fertilizer; ii) Solve household waste material disposal problem as well as environmental pollution; iii) Produce green energy (biogas) during recycling of waste materials and finally; iv) Improve paddy soil organic matter content for sustainable land use and future food security of Bangladesh.	MIE/ NIE: IDCOL IE: Soil Science Division, Bangladesh Rice Research Institute (BRRI) Partners:	To be determined
Fund level strategic impacts		Total financing (US\$ 22m)	Status
5, 8		GCF (US\$): 20m (Grant) Other (US\$): 2m (GoB)	Project idea developed
Action	Lead	Timeline	
<i>CN Development</i>	<i>BRRI</i>	<i>To be determined</i>	
Project Title (B8)	Description	Accredited Entity, IE, Partner	Submission timeframe
Climate resilient cropping patterns for coastal farmers	Farmers in coastal Bangladesh are exposed to manifold climate change induced impacts, including salinization of soils and groundwater reserves, intensified cyclones, and changing precipitation trends. The proposed project aims to develop and disseminate climate change adaptive cropping patterns and thereby improve livelihoods of the coastal farmers.	MIE/ NIE: PKSF IE: Rice Farming Systems Division, Bangladesh Rice Research Institute (BRRI) Partners:	To be determined
Fund level strategic impacts		Total financing (US\$ 1.6m)	Status
4, 5, 6	The specific project objectives are: i) To develop cropping patterns that can adapt to climate change to increase yield and improve farmer's livelihood; ii) To disseminate climate resilient cropping patterns in coastal saline areas of Bangladesh to increase yield and improve farmer's livelihood; iii) To build up capacity and knowledge of the stakeholders on climate change adaptation and mitigation.	GCF (US\$): 1.1m (Grant) Other (US\$): 0.5m (GoB)	Project idea developed
Action	Lead	Timeline	
<i>CN Development</i>	<i>BRRI</i>	<i>To be determined</i>	
Project Title (B9)	Description	Accredited Entity, IE, Partner	Submission timeframe
Development of climate resilient rice varieties and suitable management practices for the	This project will support marginalised Bengali farmers becoming less vulnerable and enhance their food and income security through the uptake of climate resilient agricultural techniques and crop varieties. The overall objective is to increase rice production for food security and improve livelihoods of the farming-dependent	MIE/ NIE: Palli Karma-Sahyak Foundation (PKSF) IE: Bangladesh Institute of Nuclear Agriculture (BINA) Partners:	To be determined

<i>promotion of sustainable production at saline and drought prone areas of Bangladesh</i>	communities of Bangladesh. The specific objectives are: i) Development of high yielding, salinity and drought tolerant rice varieties; ii) Promote best fit soil and water management practices in saline and drought prone areas; iii) Dissemination and socio-economic impact assessment of rice varieties and management technologies.		
Fund level strategic impacts		Total financing (US\$ 16m)	Status
4, 5, 6		GCF (US\$): 9.6m (Grant)	Other (US\$): 1.6m (GoB) 4.8 (PKSF) Project idea developed
Action	Lead	Timeline	
<i>CN Development</i>	<i>BINA/ PKSF</i>	<i>To be determined</i>	
Project Title (B10)	Description	Accredited Entity, IE, Partner	Submission timeframe
<i>Promotion of climate adaptive crops and community based water and salinity management for strengthened resilience of 30,000 small and marginal farmers</i>	Given the context of sea level rise and saline water intrusion in the southwest coastal region (Khulna, Bagherhat and Barguna districts), this project aims to promote saline adaptive new and native crop varieties for sustaining crop production; as well as to ensure water security and effective use of water for coping with climate change and producing wide variety of crops in the salinity affected areas.	MIE/ NIE: PKSF, IUCN IE: Shushilan Partners: Lal Teer Seed Ltd., Bangladesh Rice Research Institute (BRRI), Bangladesh Agricultural University (BAU)	To be determined
Fund level strategic impacts		Total financing (US\$ 21m)	Status
5, 8		GCF (US\$): 20m (Grant)	Other (US\$): 1 m (Shushilan and others) Project idea developed
Action	Lead	Timeline	
<i>CN Development</i>	<i>Shushilan and IUCN</i>	<i>To be determined</i>	
Project Title (B11)	Description	Accredited Entity, IE, Partner	Submission timeframe
<i>Development and scaling up of portable solar energy for irrigating climate resilient rice based crops and household appliances of smallholders in the coastal region of Bangladesh</i>	This project aims to develop a low-cost portable solar energy operated irrigation pump (PSEOP) for the small-scale farmers who often cannot afford high irrigation cost of diesel run pumps. The PSEOP could be an affordable substitute of diesel run pumps and reduce GHG emission. Through developing and disseminating PSEOP, this project also aims to reduce food insecurity to climate risks and threats while increasing the adaptive capacity, well-being, and resilience of the vulnerable small-scale farming communities in crop production. The specific objectives are: i) To conduct field trials of climate resilient cropping	MIE/ NIE: Infrastructure Development Company Limited (IDCOL) IE: Irrigation and Water Management Division (IWMD) of Bangladesh Rice Research Institute (BRRI) Partners:	To be determined
Fund level		Total financing	Status

strategic impacts		patterns for enhancing livelihoods of the most vulnerable small-scale farmers (men and women); ii) To use of portable solar energy for irrigating climate smart rice based different crops and provide energy to household appliances; and iv) To develop awareness of farmers (both men and women) for using solar energy in agriculture and household appliances.	(US\$ 10m)		Project idea developed
1, 3, 5			GCF (US\$): 7m (Grant)	Other (US\$): 3m (GoB)	
Action		Lead		Timeline	
CN Development		IWMD		To be determined	
Project Title (B12)	Description	Accredited Entity, IE, Partner		Submission timeframe	
<i>Cultivation of climate-resilient water caltrop (chesnut) in flood affected Haor areas</i>	The haor areas are an area with annual flooding, which currently intensify due to climate change. Poor local communities face increasing difficulties to sustain agricultural-based livelihoods throughout the year. The plantation of flood resilient water caltrop (chestnuts), which can withstand a water depth of 3m and are considered being a cash crop, is proposed as an alternative livelihood for implementation under this project. The project objectives are to: i) Protect houses and villages from erosion during water logged period (April – November); ii) Produce water chesnut during water logged period, (usual cultivation is not possible during this period) and thus increase the food production; iii) Develop processes to prepare food items from water chesnut; iv) Promote food items prepared from chesnut; v) Increase the biodiversity in the haor area; and vi) Increase fish production.	MIE/ NIE: Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) IE: Bangladesh Climate Change Trust Fund (BCCT) Partners: Bangladesh Bondhu Foundation (BBF), Department of Agriculture Extension (DAE)		To be determined	
Fund level strategic impacts		Total financing (US\$ 25m)		Status	
4, 5, 6, 7, 8		GCF (US\$): 20m (Grant)	Other (US\$): 3m (BCCT) 2m (BBF)	Project idea developed	
Action		Lead		Timeline	
CN Development		BCCT/ GIZ		To be determined	
Project Title (B13)	Description	Accredited Entity, IE, Partner		Submission timeframe	
<i>Building resilience through nutrition sensitive climate-smart agriculture livelihoods, led by poor and extreme poor women and youth in southwest Bangladesh</i>	CARE Bangladesh proposes the project, to enhance the resilience to climate change of women and youth farmers in poor and extreme poor (PEP) households by promoting nutrition-sensitive adaptive agricultural practices for sustainable livelihoods in 3 southwestern coastal districts in Bangladesh. Specific objectives are to: i) Enhance the adaptive capacities of rural women and youth through climate smart livelihoods and the strengthening of DRR/CC system; ii) Create inclusive markets for climate adaptive, scientific	MIE/ NIE: Palli Karma-Sahyak Foundation (PKSF) IE: CARE Bangladesh Partners:		To be determined	
Fund level strategic impacts		Total financing (US\$ 5 m)		Status	

4, 5	and local solutions for sustainable agricultural production and practices, targeting women and youth; and iii) Generate and manage knowledge based evidences for influencing policies and practices at national and international level.	GCF (US\$): 4m (Grant)	Other (US\$): 1m (CARE)	Project idea developed
Action		Lead		Timeline
CN Development		CARE or PKSF		To be determined
Project Title (B14)	Description	Accredited Entity, IE, Partner		Submission timeframe
<i>Providing safe drinking water supply to the climate vulnerable coastal areas of Bangladesh using solar water purifier and solar desalination technology</i>	This project will support improvements in year-round access to safe water in climate vulnerable rural, un-served, underserved, technically challenging areas. The overall objective of the project is to improve the climate resilience, and health and living standard of the people of the coastal belt of Bangladesh by providing safe drinking water supply using Solar Water Purifier and Solar Desalination Technology. The specific objectives are: i) To provide safe water supply to the saline and arsenic prone areas of Bangladesh using Solar purifier technology; ii) To increase the usage of surface water in order to reduce the pressure from the groundwater and to combat against the adverse effect of climate change; iii) To increase the usage of rainwater by installing rainwater harvesting systems; iv) To increase the rural water coverage.	MIE/ NIE: To be determined IE: Department of Public Health Engineering (DPHE) Partners:		To be determined
Fund level strategic impacts		Total financing (US\$ 45m)		Status
1, 4, 5, 6, 8		GCF (US\$): 31.5m (Grant)	Other (US\$): 13.5m (GoB)	Project idea developed
Action		Lead		Timeline
CN Development		DPHE		To be determined
Project Title (B15)	Description	Accredited Entity, IE, Partner		Submission timeframe
Increase Resilience to climate change in southwest coastal zones of Bangladesh through adaptive livelihoods, housing, and safe drinking water supply	Climate induced sea level rise (SLR), increased cyclones and storm surges and salinity intrusion are threatening livelihoods in the southwest coastal area of Bangladesh areas. These climate impacts often lead to huge displacement of human settlements, loss of livelihoods, culture and social values. Increased frequency and intensity of tropical cyclones also causes coastal erosion, damages to standing crops, pollution of water sources, whilst salinity intrusion is rendering agricultural lands into unproductive barren land as well as effecting drinking water. This project seeks: i) To enhance resilience of the climate vulnerable people of Southwest coastal zone of Bangladesh through climate smart adaptation technologies including housing; ii) To enhance access to safe drinking water and sanitation for the climate vulnerable communities; and iii) To increase awareness of the communities on the	MIE/ NIE: Palli Karma-Sahyak Foundation (PKSF) IE: Palli Karma-Sahyak Foundation (PKSF) Partners:		To be determined
Fund level strategic impacts		Total financing (US\$ 50m)		Status
5, 6		GCF (US\$): 40 m (Grant)	Other (US\$): 8m (PKSF) 2m (community)	Project idea developed PPF support to be requested in 2018-2019

	effects of climate change on their lives and livelihoods.			
Action		Lead		Timeline
<i>CN Development</i>		<i>PKSF</i>		<i>To be determined</i>
Project Title (B16)	Description	Accredited Entity, IE, Partner		Submission timeframe
Scaling up renewable energy, energy-efficiency, and waste-to-energy technologies and businesses to support urban development in Bangladesh	Of the urban population, more than half lives in the four largest cities: Dhaka, Chittagong, Khulna, and Rajshahi. This project seeks to support city government planners and decision makers in Dhaka, Chittagong, Khulna, and Rajshahi city to integrate and implement energy efficient street lighting and buildings, effective solid waste management, and possibly the low carbon urban mobility solutions in collaboration with private sector in their city corporations' and development plans. Objective: To reduce GHG emissions by scaling up renewable energy, energy-efficiency, and waste-to-energy technologies and businesses to support urban development in Bangladesh through 4 outcomes:	MIE/ NIE: United Nations Development Programme (UNDP) IE: Infrastructure Development Company Limited (IDCOL) Partners: Ministry of Power Energy and Mineral Resources (MoPEMR)		To be determined
Fund level strategic impacts	i) Low carbon development initiatives are integrated at city level to reduce GHG emissions; ii) Buildings and public lighting in cities comply with existing energy efficiency standards; iii) Increased investments in EE and RE projects in cities; iv) Raise knowledge, and awareness to involve everyone in greening city development to make it a liveable city.	Total financing (US\$ 27.76m)		Status
3		GCF (US\$): 13.76 m (Grant)	Other (US\$): 14 m (GoB)	Project idea developed PPF support to be requested I 2018-2019
Action		Lead		Timeline
<i>CN Development</i>		<i>IDCOL</i>		<i>2018-2019</i>
Project Title (B17)	Description	Accredited Entity, IE, Partner		Submission timeframe
<i>Accelerating the adoption of modern biomass cooking stove for improving health and wellbeing of rural women through alleviating indoor air pollution while reducing CO emission.</i>	This project aims to disseminate improved energy efficient biomass cooking stoves, increase households cooking fuel efficiency, safety, and reduce indoor air pollution and CO emissions in un-served 20% households (five million) in rural Bangladesh. The project interventions will improve health and wellbeing of rural women and children by accelerating the adoption of clean cooking stoves and will contribute in achieving Sustainable Development Goals (SDG) 1-5, 7, 8, 11, 13, 15 and taking action towards achieving the goal of 100% Clean Cooking Solutions by 2030 in Bangladesh.	MIE/ NIE: IDCOL/ PKSF/ UNDP/ HSBC/ ADB/ KFW IE: Rahimafrooz Renewable Energy (RRE) Limited Partners: Rural Services Foundation (RSF)		To be determined
Fund level strategic impacts		Total financing (US\$ 105m)		Status
1, 3, 6		GCF (US\$): 10 m (Grant)	Other (US\$): 10 m (RRE), 85 m (Others as Guarantees)	Project idea developed

Action		Lead	Timeline	
CN Development		RRE	To be determined	
Project Title (B18)	Description	Accredited Entity, IE, Partner		Submission timeframe
Enabling ultrapoor Boro rice cultivators of Bangladesh to learn & co-create BHUNGROOTM towards low carbon, lesser fossil fuel usage and adapting to weather extremes for food security and better agriculture growth	<p>This project aims to pilot and disseminate a low-cost water conservation technology called BHUNGROOTM™ that would enable farmers in the drought prone areas to pump water stored in subsoil zones.</p> <p>Based upon subsoil formation, each unit of Bhungroo can store 10 million liters with usage of only 2 meter square surface areas.</p> <p>The specific project objectives are:</p> <p>i) To undertake an action research with local community to arrive at an acceptable and appropriate technology process for our farmers towards climate change adaptation i.e. saving them from weather extremes as well as converting the weather extremes into better livelihood and food security opportunities;</p> <p>ii) To create a social enterprise based adaptation program for unemployed rural youth; and</p> <p>iii) To create an enabling policy environment to uptake and disseminate the technology ahead.</p>	<p>MIE/ NIE: Infrastructure Development Company Limited (IDCOL)</p> <p>IE: Irrigation and Water Management Division (IWMD)</p> <p>Partners: Naireeta Services Private Limited a social enterprise from Ahmedabad, India</p>		To be determined
Fund level strategic impacts		Total financing (US\$20 m)		Status
4, 5		GCF (US\$): 14m (Grant)	Other (US\$): 6m (GoB)	Project idea developed
Action		Lead	Timeline	
CN Development		IWMD	To be determined	
Project Title (B19)	Description	Accredited Entity, IE, Partner		Submission timeframe
Community based adaptation to climate change in central and northern flood prone areas of Bangladesh through adaptive agriculture, livelihoods, and shelter	<p>Due to its geographical features, floods are a very common phenomena in Bangladesh. In every monsoon, most of the country's land is inundated with water. These annual floods are getting accelerated through climate change which intensifies the pace of glacial ice melting of the Himalayas and changes precipitation patterns. This causes damage to agriculture crop, livestock, and other livelihood resources. The impact of flood due to climate change disproportionately affects the poor, women and children.</p> <p>This project seeks:</p> <p>i) To enhance adaptive capacity of the char dwellers, particularly women, through planting flood tolerant agriculture;</p> <p>ii) To develop climate resilient homestead with resilient water and sanitation system in the char areas; and</p> <p>iii) To enhance institutional capacities of the community to address climate change in the long ru</p>	<p>MIE/ NIE: Palli Karma Shohayak Foundation (PKSF)</p> <p>IE: Palli Karma Shohayak Foundation (PKSF)</p> <p>Partners:</p>		To be determined
Fund level strategic impacts		Total financing (US\$ 50m)		Status
5, 6, 7		GCF (US\$): 35m (Grant)	Other (US\$): 15m (PKSF)	PPF application under development
Action		Lead	Timeline	
CN Development		PKSF	To be determined	

Project Title (B20)	Description	Accredited Entity, IE, Partner		Submission timeframe
Emission Reduction and improvement of kitchen environment for rural poor women through Improved cooking Stove program in Bangladesh	Objective of the proposed project is to sustainably improve the kitchen performance of low-income households; reducing green-house gas emissions, household air pollution related diseases and deforestation in Bangladesh. The project seeks to: i) Reduce greenhouse gas emissions to contribute to achieve the nationally set reduction targets; and ii) Improve the health status of rural women by reducing kitchen air pollution.	MIE/ NIE: Palli Karma Shohayak Foundation (PKSF) IE: Christian Commission for Development in Bangladesh (CCDB) Partners: Bread for the World		To be determined
Fund level strategic impacts	The project is expected to reduce emission at least 4.39 m tCO ₂ (assuming average 5-year lifetime of stoves, unspecified drop-out of 2% per year and a 20% continued use of traditional baseline stoves), reduce the deforestation and protection of the ecosystem, reduce 80% of household air pollution (HAP) and, therefore, of related diseases in women and children and also empower the women through time savings and organization in people's institutes.	Total financing (US\$ 21.1m)		Status
3, 5, 6		GCF (US\$): 9.3m (Grant)	Other (US\$): 5.3m (CCDB) 2.1m (Bread for the World) 4.4m (Emission Reduction Sales)	<i>PPF application under development</i>
Action		Lead		Timeline
CN Development		CCDB		<i>To be determined</i>
Project Title (B21)	Description	Accredited Entity, IE, Partner		Submission timeframe
Local Government Initiative on Climate change (LoGIC)	Bangladesh has strong presence of the local government institutions (LGIs) that are mandated to implement actions related to climate change responses, these actions need to be included in the local plans as climate proofing initiatives. A recent analysis of the expenditure patterns on climate change indicates that the Local Government Institutions (LGIs) receive regular development finance and other safety net resources (e.g. food) from different sources. They also generate their own revenue.	MIE/ NIE: United Nations Development Programme (UNDP) IE: Local Government Department (LGD) Partners: European Investment Bank (EIB), TBC, PKSF/ IDCOL, SIDA		To be determined
Fund level strategic impacts	However, the existing development schemes of LGIs at the community level remain confined to infrastructure. As a result, the vulnerable households face two-fold challenges in addressing climate risks at their level: firstly, they do not have direct access to resources and secondly, they cannot adequately influence the planning and budgeting of the local government. On the other hand, the Civil Society Organizations (CSOs) and local institutions who have long been functioning at local level for enhanced participation and accountability also shy off the process owing to lack of appropriate capacity. The project would support LGIs to effectively and efficiently deliver climate change adaptation actions at different levels. The project will, further, enhance the	Total financing (US\$ 200m)		Status
4, 5, 6, 7, 8		GCF (US\$): 25m (Guarantees) 50m (Reimb. Grant) 25m (Grant)	Other (US\$): 75m (LGD) 25m (EU, SIDA)	<i>PPF application under development</i>

	capacity of vulnerable communities, local government institutions and civil society organisations for planning and financing climate change adaptation solutions in selected climate vulnerable areas.			
Action		Lead		Timeline
CN Development		UNDP		To be determined
Project Title (B22)	Description	Accredited Entity, IE, Partner		Submission timeframe
Greening the brick sector in Bangladesh for emission reduction and better natural resources management.	This project aims to reduce the greenhouse gas (GHG) emissions from the fired-clay brick making industry (BMI), and will impact on natural resources by displacing the fired-clay bricks through the non-fired bricks (NFBs) in Bangladesh. The Project is expected to generate GHG emission reductions through the replacement of coal. The project is expected to reduce 255150 tonnes CO _{2eq} from the piloting at the divisional level from 2021 to 2023 project time period (direct benefits), and in total 7.74 million tonnes CO _{2eq} from replication of the project success at the district level (indirect benefits).	MIE/ NIE: Food and Agriculture organization of the United Nations (FAO) (Under process of discussion) IE: Department of Environment (DoE) Partners:		To be determined
Fund level strategic impacts		Total financing (US\$ 40m)		Status
1, 3, 4, 7, 8		GCF (US\$): 40m (Grant)	Other (US\$): To be determined	Developed project idea
Action		Lead		Timeline
CN Development		FAO		2018
Project Title (B23)	Description	Accredited Entity, IE, Partner		Submission timeframe
Building climate resilient agriculture in Bangladesh	This project intends to demonstrate adaptive trials including capacity building and technology transfer in selected climate sensitive agro-ecological areas of the country (saline, flood, drought prone areas). By promoting these resilient varieties that are better suited to changing climate as well as better adopted by the farmers would contribute to build adaptive capacity of farmers, increase rice production, and help in achieving food security for the county' poor.	MIE/ NIE: IDCOL/PKSF/ IUCN/ FAO IE: Center for Natural Resources Studies (CNRS) Partners: BRRI, IRRI, IDCOL, Grantees, PKSF, FAO		To be determined
Fund level strategic impacts		Total financing (US\$80 m)		Status
1, 5, 6, 7		GCF (US\$): 75.2m (Grant)	Other (US\$): 0.8m (CNRS); 1m (BRRI); 0.5m (IRRI); 0.8m (IDCOL); 0.2m (Grantees); 0.5m (PKSF); 1m (FAO)	Developed project idea
Action		Lead		Timeline
CN Development		CNRS		To be determined
Project Title (B24)	Description	Accredited Entity, IE, Partner		Submission timeframe

<p><i>Developing a dynamic model to simulate the impact of climate change on Jute and Allied Fibre crops for introducing suitable JAF crops in the existing cropping patterns to enhance their climate resilience</i></p>	<p>This project aims to promote Jute and Allied Fibre (JAF) crops in different agro-ecological areas through a suitability analysis by a model based impact projections. Through this, the project will improve the existing FIBGROW model of jute growth by incorporating the modules of promising all jute and allied fibres varieties (Kenaf, Mesta etc) and can facilitate a shift towards more climate change resilient cropping and farming techniques. Further, it will train all the researchers, extension officials/managers, planners and other interested people engaged in JAF crop research activities for successful utilization of the JAFGROW model before launching their field experiments.</p>	<p>MIE/ NIE: Yet to be determined IE: Bangladesh Jute Research Institute (BJRI) Partners:</p>	<p>To be determined</p>	
<p>Fund level strategic impacts</p>		<p>Total financing (US\$ 7.7m)</p>	<p>Status</p>	
<p>5, 8</p>		<p><u>GCF (US\$):</u> 7</p>	<p><u>Other (US\$):</u> 0.7 (BJRI)</p>	<p>Developed project idea</p>
<p>Action</p>	<p>Lead</p>	<p>Timeline</p>		
<p>CN Development</p>	<p>BJRI</p>	<p>To be determined</p>		
<p>Project Title (B25)</p>	<p>Description</p>	<p>Accredited Entity, IE, Partner</p>	<p>Submission timeframe</p>	
<p><i>Climate change adaptation and mitigation for alternative livelihood options for the chars dwellers of Jamuna River, Bangladesh</i></p>	<p>As a result of climate change impacts, the flood level is increasing gradually and inundating the homesteads of the char dwellers of Jamuna River and surrounding areas. The local people are forced to displace almost every year and desperately looking for support to raise their house above the flood level. The proposed project intends to: i) Raise plinth level of houses for adaptation that face raising flood levels; ii) Install rain water harvesting technologies along with RDA developed low cost piped water supply systems for ensuring irrigation and drinking waters in the potential Chars areas; and iii) Construct shelters and rehabilitation centers to minimize resettlement problems.</p>	<p>MIE/ NIE: Palli Karma Shohayak Foundation (PKSF) IE: Rural Development Academy (RDA) Partners:</p>	<p>To be determined</p>	
<p>Fund level strategic impacts</p>		<p>Total financing (US\$ 10.30 m)</p>	<p>Status</p>	
<p>5, 6, 7</p>		<p><u>GCF (US\$):</u> 10m</p>	<p><u>Other (US\$):</u> 0.30m (GoB)</p>	<p>Project idea developed</p>
<p>Action</p>	<p>Lead</p>	<p>Timeline</p>		
<p>CN Development</p>	<p>RDA/PKSF</p>	<p>To be determined</p>		
<p>Project Title (B26)</p>	<p>Description</p>	<p>Accredited Entity, IE, Partner</p>	<p>Submission timeframe</p>	
<p><i>Adaptation to climate change impacts through agricultural research</i></p>	<p>Sustained crop production in light of climate change induced impacts is a challenge in Bangladesh. Research institutes can actively support the government and farmers to cope with these impacts through action focused assessments. The proposed project seeks to develop stress tolerant varieties/ technologies to enable the agricultural sectors' Bangladesh's to sustain their production despite climate induced salinization of soils</p>	<p>MIE/ NIE: Palli Karma Shohayak Foundation (PKSF) IE: Bangladesh Agricultural Research Institute (BARI) Partners:</p>	<p>To be determined</p>	
<p>Fund level strategic impacts</p>		<p>Total financing (US\$ 104.16m)</p>	<p>Status</p>	

4, 6	and groundwater, and intensified droughts, among other stressors. The proposed project intends: i) To overcome the risk of unfavourable environment like drought and salinity through develop climate resilient crop varieties; ii) To develop climate resilient production technologies (soil management, insect and pest management, seed production, processing and preservation) for sustainable crop production; and iii) To strengthen research infrastructure to combat stress environment for sustainable crop production.	GCF (US\$): 95.88m	Other (US\$): 8.28m (GoB)	Project idea developed
Action		Lead		Timeline
CN Development		BARI/ PKSF		To be determined
Project Title (B27)	Description	Accredited Entity, IE, Partner		Submission timeframe
<i>Improving the resilience of vulnerable coastal communities of Bangladesh through re-excavation/ maintenance of Ponds and installation of rainwater harvesting system</i>	This proposed project will support improvements in year-round access to safe water in the rural, un-served, underserved, technically challenging areas. Furthermore, the project aligns with the Bangladesh Government's Seventh Five Year Plan targets in the water supply and sanitation sector, which are: i) To achieve 100% coverage of Water Supply & Sanitation services throughout the country including their safe use and effective management; ii) To achieve congenial environmental sanitation for overall development of the country in a sustained manner; iii) To ensure quality water for drinking and domestic purposes.	<u>MIE/ NIE:</u> Palli Karma Shohayak Foundation (PKSF)/ United Nations Development Programme (UNDP) <u>IE:</u> Department of Public Health Engineering (DPHE) <u>Partners:</u>		To be determined
Fund level strategic impacts		Total financing (US\$ 42.50m)		Status
5, 6		GCF (US\$): 29.75m	Other (US\$): 12.75m (GoB)	Project idea developed
Action		Lead		Timeline
CN Development		DPHE/PKSF/UNDP		To be determined
Project Title (B28)	Description	Accredited Entity, IE, Partner		Submission timeframe
<i>Adaptation of suitable vegetables and spices in saline soils of southern regions of Bangladesh</i>	Despite some progress in developing salinity tolerant rice varieties, very little or almost no work has been done for developing such varieties of widely cultivated vegetables like Brinjal, Tomato, Okra, Chili and Garlic in saline prone areas of Bangladesh. Considering the importance of developing and dissemination of salinity and other stress tolerant vegetable varieties, this research project aims to achieve following objectives: i) To screen the saline tolerant brinjal, tomato, okra, chili and garlic variety for specific level of soil salinity; ii) To evaluate the adaptive performances of selected tolerant cultivars of vegetables and spices at different	<u>MIE/ NIE:</u> Palli Karma Shohayak Foundation (PKSF) <u>IE:</u> Bangladesh Institute of Nuclear Agriculture (BINA) <u>Partners:</u>		To be determined
Fund level strategic impacts		Total financing (US\$ 3.12m)		Status
5, 6		GCF (US\$): 2.5 m (Grant)	Other (US\$): 0.62m (to be determined)	Project idea developed

	levels of soil salinity in selected saline areas; and iii) To disseminate and assess socio-economic impact assessment of vegetables and spices crop varieties in selected saline areas.			
Action		Lead		Timeline
CN Development		BINA		To be determined
Project Title (B29)	Description	Accredited Entity, IE, Partner		Submission timeframe
<i>Providing Safe Drinking Water Supply to the Coastal Areas of Bangladesh using Solar Purifier and Solar Desalination Technology</i>	Given the context of unavailability and scarcity of portable drinking water in the Southwest coastal areas, this project aims to improve the health and living standard of the people of the coastal belt of Bangladesh by providing safe drinking water supply using Solar Water Purifier and Solar Desalination Technology. The specific objectives are: i) To provide safe water supply to the saline and arsenic prone areas of Bangladesh using Solar purifier technology; ii) To increase the usage of surface water in order to reduce the pressure from the groundwater and to combat against the adverse effect of climate change; iii) To increase the usage of rainwater by installing rainwater harvesting systems; iv) To increase the rural watercoverage.	MIE/ NIE: To be determined IE: Department of Public Health Engineering (DPHE) Partners:		To be determined
Fund level strategic impacts		Total financing (US\$ 45m)		Status
1, 4, 5, 6, 8		GCF (US\$): 31.5m (Grant)	Other (US\$): 13.5m (GoB)	Project idea developed
Action		Lead		Timeline
CN Development		DPHE		To be determined
Project Title (B30)	Description	Accredited Entity, IE, Partner		Submission timeframe
<i>Installation of low Cost Carocell Solar Water Desalination & Purification Panel Technology for providing safe drinking water and increase resilience of coastal population of Bangladesh</i>	Bangladesh is being seriously affected by climate change. Increasing salinity in river waters due to rise in sea-level is severely restricting the supply of drinking water or freshwater supply from rivers upstream in the coastal areas. In order to address this issue, InGen Technology Ltd. proposes to introduce Solar Desalination / Purification panel, a unique water treatment technology, known as Carocell solar desalination / purification technology. Carocell solar water panels can produce pure, clean drinking water on any scale from any water source including polluted, industrial waste water, brackish groundwater, sea water and arsenic contaminated water. The Carocell panels use the natural process of distillation to eliminate a wide range of dissolved solids and contaminants commonly found in water which causes disease and death worldwide, such as salt, arsenic, E.Coli, other water-borne diseases, and minerals common to water such as iron, fluoride, calcium, chlorine.	MIE/ NIE: IDCOL IE: InGen Technology Ltd. Partners:		To be determined
Fund level strategic impacts		Total financing (US\$ 10m)		Status
1, 5, 6		GCF (US\$): 8m (Loan)	Other (US\$): 2m (GoB)	Project idea developed
Action		Lead		Timeline
CN Development		IDCOL		To be determined

4.2 Simplified concept note template

Country Project Preparation Pipeline

TEMPLATE

(Adapted from GCF Concept Note Format)

Project/ programme information	
Project/ programme title	
Project type	<input type="checkbox"/> Mitigation <input type="checkbox"/> Adaptation <input type="checkbox"/> Cross-cutting
Result Areas (According to GCF Criteria)	<p>Reduced emissions from</p> <p><input type="checkbox"/> Energy access and power generation (e.g. on grid, micro grid or off-grid solar, wind, geothermal etc.)</p> <p><input type="checkbox"/> Low emission transport (e.g. rapid bus transport)</p> <p><input type="checkbox"/> Building cities, industries and appliances (new and retrofitted energy-efficient buildings, energy-efficient equipment for companies and supply chain management, etc.)</p> <p><input type="checkbox"/> Forestry and land use (e.g. forest conservation and management, agroforestry, agricultural irrigation, water treatment and management etc.)</p> <p>Increased resilience of:</p> <p><input type="checkbox"/> Most vulnerable people and communities (e.g. mitigation of operational risk associated with climate change- diversification of supply sources and supply chain management, relocation of manufacturing facilities and warehouses etc.)</p> <p><input type="checkbox"/> Health and well-being, and food and water security (e.g. Climate resilient crops, efficient irrigation systems etc.)</p> <p><input type="checkbox"/> Infrastructure and built environment (e.g. Sea walls, resilient road networks etc.)</p> <p><input type="checkbox"/> Ecosystems and ecosystem services (e.g. eco-system conservation and management, eco-tourism etc.)</p>
Project/ programme description (Including rationale and objectives)	
Fund level strategic impacts (expected outcome/impacts)	
Financing/ Cost Information	
GCF Financing (Approximate)	Financial Instruments

	<input type="checkbox"/> Loans Amount USD <input type="checkbox"/> Equity Amount USD <input type="checkbox"/> Guarantees Amount USD <input type="checkbox"/> Reimbursable grants Amount USD <input type="checkbox"/> Grants Amount USD
Co-financing (Approximate)	Financial Instruments <input type="checkbox"/> Source Amount USD <input type="checkbox"/> Source Amount USD
Total Project Financing (Approximate)	Sum of (GCF Financing and Co-financing):
Institutional Arrangements	
	Accredited Entity <input type="checkbox"/> NIE Name: <input type="checkbox"/> MIE Name: Implementing/ Executing Entity <input type="checkbox"/> Lead EE Name: <input type="checkbox"/> Others Name:
Activities and timeline	
Filling-out the template	Lead agency Timeline/deadline
Development of project Concept Note	Lead agency Timeline/deadline

4.3 Prioritisation criteria and rating rational

Rating rational for seven ranking criteria:

1) Climate change attribution potential (1 low/ 3 high) (crosscutting projects will be assessed against both climate change adaptation (CCA) and climate change mitigation (CCM) criteria, whereas the predominant focus will influence the selected rating; in cases with no predominant focus on either CCA or CCM, the higher ranking achieved is valid)

1 point = CCA: Proposed project has no obvious link to climate change impacts that justify the need for the intervention (e.g. Development of new township or community growth centre with modern civic amenities (whether the initiative is green or not).

CCM: Proposed project does not appear to have any effective and scalable GHG reduction potential (e.g. land-use change of existing agricultural area through use of different crop varieties).

2 points = CCA: Some components (for which, presumably, GCF funding is requested) of the proposed project have a very clear causal relationship to climate change impacts (e.g. alternative livelihood starter packages at household level in southwest Bangladesh to deal with climate-induced salinity).

CCM: Some components of the proposed project have the potential to effectively reduce GHG emissions, but are not necessarily scalable. e.g. promotion of clean cooking stove)

3 points = CCA: All proposed project interventions have a very clear causal relationship to climate change impacts; enhance resilience and reduce vulnerability (e.g. a project solely focussed on improving early warning systems to cope with intensified cyclones).

CCM: All proposed project interventions have direct or indirect effect to reduce GHG emissions and have high scalability potential (e.g. development of solar photovoltaic on-grid power stations or off-grid mini grid system).

2) Alignment with national development and climate change plans (1 low/3 high)

1 point = The proposed project neither falls into nor aligned with the adaptation or mitigation priorities identified in the main national development (e.g. 7th FYP, Vision 21) and climate change plans and/or strategies (e.g. BCCSAP, INDC, NDC, NAPA) of Bangladesh.

2 points = The proposed project aligns with one or several of the six priority themes of the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) – the key climate change response plan of the Government of Bangladesh (1: Food Security, Social Protection and Health; 2: Comprehensive Disaster Management; 3: Infrastructure; 4: Research and Knowledge Management; 5: Mitigation and Low Carbon Development; 6: Capacity Building and Institutional Strengthening).

3 points = The proposed project aligns with one or several of the six priority themes of the BCCSAP, as well as response priorities identified in other national development and climate change plans (e.g. 7th FYP, NAPA, INDC, NDC, ccGAP, Sectoral Climate Action Plan).

3) Paradigm shift potential (1 low/3 high)

1 point = The proposed project has a low/no potential to bring substantial change of current practices, regulatory frameworks and used technologies in the targeted region/Bangladesh.

2 points = Some components of the proposed project are introducing new and/or innovative interventions, contribute to advances the national/local regulatory or legal frameworks to systemically promote investment in and reshape existing governance structures to address low-emission or climate-resilient development (e.g. explores new market segments, introduces new/ transformative technologies, triggers behavioural changes, creates new cyclone resilient building codes), but has limited scalability and replication potential.

3 points = The entire proposed project is based on the theory of change and focussed on introducing new and/or innovative interventions (e.g. explores new market segments, introduces new technologies, or triggering sustainable changes in practice, behaviour and livelihoods), contributes to advance the national/local institutional capacity, regulatory or legal frameworks, improve service delivery (that is expected to improve and promote good governance) to systemically address local needs and promote investment in low-emission or climate-resilient development, and has the potential to be scaled up and replicated in other regions and is not likely to be an one-off intervention.

4) Sustainable development potential (1 low/ 3 high)

1 point = The project has a limited potential of creating co-benefits leading to positive environmental externalities (such as improved air or soil quality), positive social and health impact's (such as health infrastructure or food security), and/or positive economic impacts (such as job creation, poverty alleviation, or national/ local economic growths).

2 points = Some proposed project components have high potential of creating co-benefits leading to positive environmental externalities, positive social and health impact's, and/or positive economic impacts.

3 points = All proposed project components have high potential of creating co-benefits leading to positive environmental externalities, positive social and health impact's, and/or positive economic impacts and catalyse the project impacts beyond the scope of the project or programme.

5) Clear focus, objective, impact potential, and sound planning (1 low/ 3 high)

- 1 point = The proposed project has no clear focus on a specific target group, region, technology, or logical mix of activities to enhance climate resilience or reduce GHG emissions. Neither do the project's objectives logically relate to the activities and roughly outline a consistent theory of change and timeline. Nor does the concept note indicate an adequacy of the proposed institutional arrangements (involved NIE's, MIE's, and implementing partners), or a soundness of requested amounts of funding in relation to co-finance, chosen financial instruments, and proven historical capacity of the requesting entity to implement the proposed project.
- 2 points = The proposed project has a relatively clear focus on a specific target group, region, technology, or logical mix of activities to enhance climate resilience or reduce GHG emissions. The project's objectives also relatively logical relate to the activities and roughly outline a consistent theory of change and timeline. The concept note, further, provides some details on an adequate proposed institutional arrangement (naming NIE's, MIE's, and implementing partners), and a soundness of requested amounts of funding in relation to co-finance, chosen financial instruments, and proven historical capacity of the requesting entity to implement the proposed project.
- 3 points = The proposed project has a clearly defined target group, target region, technology, or logical mix of activities with definitive timeline to enhance climate resilience or reduce GHG emissions. The project's objectives also logically relate to the activities and outlines a consistent theory of change for replication of proposed activities. The concept note, further, provides details on an adequate proposed institutional arrangement (naming NIE's, MIE's, and implementing partners), and a soundness of requested amounts of funding in relation to co-finance, chosen financial instruments, and proven historical capacity of the requesting entity to implement the proposed project.

6) Potential environmental and social risks/ impacts (1 low/ 3 high)

- 1 point = Proposed project with potential significant adverse environmental or social risks and/or impacts that are diverse, irreversible, or unprecedented (e.g. large-scale dam building and/or relocation of communities or establishment of industries in/close to community or fragile ecosystem).
- 2 points = Proposed project with potential limited adverse environmental or social risks and/or impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures (e.g. introduction of alternative livelihoods that include new species or construction of small to medium-scale embankments).
- 3 points = Proposed project with minimal or no adverse environmental or social risks and/or impacts (e.g. capacity development or distribution of household level photovoltaic lightning systems).

7) Gender and inclusiveness potential (1 low/ 3 high)

- 1 point = The proposed project components are not gender responsive nor address social empowerment or enhancing the resilience of particularly vulnerable groups of society (e.g. development of photovoltaic power stations without women or marginalised groups being considered in the workforce or represented in planning or advisory processes).
- 2 points = Some proposed project components are gender inclusive and consider particular needs of vulnerable groups in the society (e.g. women are considered as major recipients of livelihood starter packs, while not represented in planning or decision-making processes).
- 3 points = The entire proposed project or its components are targeted to improve the climate change resilience of and/or empowers women and marginalised groups of society to participate in the planning, implementation, evaluation of the activities and decision-making processes. The proposed project takes care of gender, age, race, religions, ethnicity, ability/disability, excluded classes, most vulnerable people of the society and/or necessarily explains as how it address the needs of the women in order to correct the prevailing inequalities.

4.4 Results of systematic concept note prioritisation tool – Shortlisted Concept Notes overview

SN	Focus	Title	Type	Executive Entity	NIE	MIE	Total budget (in US\$ million)	GCF Funding (in US\$ million)	Co-Finance GoB (in US\$ million)	Co-Finance Dev-partner (in US\$ million)	Co-Finance CSOs/ NGOs (in US\$ million)	Co-Finance Private Sectors (in US\$ million)	Co-Finance Others (in US\$ million)	Total Co-Finance	Percentage of co-financing to total budget	Loans	Equity	Guarantees	Reimbursable Grant	Grant	1) Climate change attribution potential	2) Alignment with national development and climate change plans	3) Paradigm shift potential	4) Sustainable development potential	5) Clear focus and objective, impact potential, and sound planning	6) Potential environmental and social risks/ impacts	7) Gender and inclusiveness potential
A1	Forestry	Climate Resilient Coastal Forestry in Bangladesh	CCA/C CM	BFD		World Bank/ UNDP	60	50	10					10	17%					50	1	3	2	3	2.5	3	2
A2	Forestry/ Risk Reduction/ Chittagong Hill Tracts	Resilient communities and ecosystems to cope with climate change induced disasters in Chittagong Hill Tracts	CCA/C CM	MOCHT A	IDCOL	UNDP	150	100	50					50	33%	60				40	3	3	3	2.5	3	2.5	3
A3	Ethnic minorities resilience	Support to Plainland Ethnic Minority Communities Adaptation to Climate Change in Bangladesh	CCA	HEKS/EPER		UNDP	11.25	9	2.25					0	0%					9	3	3	2.5	2.5	2.5	2	2.5
A4	Heritage site resilience	Enhancing climate resilience to heritage sites in coastal region of Bangladesh	CCA	Department of Archaeology	PKSF		50	40	10					10	20%					40	2	2	3	2	3	2.5	3
A5	Research based EWSS	Development of vulnerability resilience in selected Hilly Municipal Areas through Early Warning System, Geo-hazard intervention and Awareness	CCA	GSB		JICA/UNDP	14	10	1.5	2.5				4	29%					10	3	2	2	2	2	3	2

A6	Infrastructure - Housing	Strengthening National Adaptive Capacity through Climate Resilient Rural Housing in Coastal Bangladesh	CCA	MoDM R	IDCOL/ PKSF	UNDP	175	150	25										50	3	3	2	2.5	2.5	3	2	2	2
A7	Livestock Production	Climate Resilient Livestock Production for the Climate-Vulnerable Regions of Bangladesh	CCA	PKSF	PKSF		50	50											40	3	3	3	2.5	2.5	2.5	2	2	2.5
A8	Aquaculture	Promoting Climate Resilient Aquaculture for Climate Vulnerable Poor People of Bangladesh	CCA/C CM	PKSF	PKSF		50	50											40	3	3	3	2.5	2.5	2.5	2	2	2.5
A9	Agriculture - Climate resilient crops	Climate Smart Agriculture for Crop Diversification Project (CSACDP)	CCA/C CM	DAE	PKSF		105	100	5										100	3	3	2	2.5	2.5	2.5	3	2	2
A10	Agriculture - Private Sector engagement	Catalysing climate change related investments in the agricultural sector.	CCA	SNV	PKSF		11.5	10	0.75				0.75						10	3	3	2	2	3	3	2	2	2
A11	Agriculture livelihoods - drought	Agriculture and livelihood adaptation to drought in north-west high Barind areas of Bangladesh	CCA	PKSF	PKSF		50	40		8			2						40	3	3	3	2.5	2.5	2.5	2	2	2.5
A12	Agriculture livelihoods - Haor - Flood	Innovative farming practices as a tool of poverty reduction and climate change adaptation	CCA	CNRS, (DAE, BARI)		FAO	10	9	0.5				0.5						9	2.5	3	3	2.5	3	2	2.5	2	2.5
A13	Irrigation PV / agriculture	Scaling up solar powered irrigation to ensure food security and enhance resilience in drought prone areas of Bangladesh	CCA/C CM	IDCOL	IDCOL		112	56					56						56	3	3	3	2.5	2.5	2.5	2	2	2.5

A14	Irrigation and EE	Energy Efficient and Community Managed Buried Pipe Irrigation Project	CCA/C CM	LGED	JICA	120	84	18	18										84	2	3	2.5	3	2	2.5	2
A15	Water / Livelihoods	Phase II: Enhancing adaptive capacities of coastal communities, especially women, to cope with climate change induced salinity	CCA	MOWC A	PKSF UNDP	59.89	43.89	16											43.89	3	2	2.5	3	2	2.5	3
A16	Water	Solar powered drinking water supply in selected coastal areas of Bangladesh	CCA/C CM	DPHE	GIZ	22.91	18.52	3.23	1.16										18.52	3	3	2	3	3	2.5	1
A17	Water	Promoting climate resilient safe drinking water supply to manage climate-induced water insecurity in poor and vulnerable coastal communities in Bangladesh	CCA	WaterAid Bangladesh	PKSF	11	10			1									10	3	3	2.5	3	3	2.5	3
A18	Climate finance governance	Mainstreaming Climate Change into National and Local Level (Urban and Rural) Planning, Budgeting and Accountability Process in Public Sector	CCA/C CM	NDA Finance Division	PKSF/IDCOL UNDP	20	15	2.5		2.5									15	3	3	2	2	3	2	2
A19	RE, EE investment scheme	Energy saving through wide scale promotion of energy efficient equipment for the industrial and the household sector	CCM	IDCOL	IDCOL	250	100			75											3	3	3	3	2	2
A20	Energy Efficient machineries, buildings, Renewable Energy projects	Financing SMEs & Corporate business for Energy Efficient machineries, buildings, Renewable Energy projects in Bangladesh with an objective to reduce GHG emissions.	CCM	Southeast Bank	IDCOL	200	100			100											3	3	2.5	2.5	2.5	2
A21	Mini Grid - REs	Ensure reliable access to green energy from Mini Grid to productive anchor loads for strengthening local economy and growth	CCM	RRE	PKSF/IDCOL UNDP	50	20			30											3	2.5	2.5	2.5	2.5	2

A22	Mini Grid - RE / PV	Ensure green energy access to the grid deprived rural island people through Five (5) Mini-Grids with Solar PV technology in different island places of Bangladesh	CCA/C CM	Engreen Ltd	IDCOL			10	3					5	2	7	70%							3					3	3	3	2.5	3	2	2			
A23	PV - off-grid areas	Promoting Education Friendly Solar Light as Green Technology in Education Sector (Off-grid areas in Bangladesh).	CCM	BCCT	GIZ			26	20	6						6	23%																					
A24	Eco-Village Development in off-grid area	Renewable Energy based climate resilient Eco-Village Development in off-grid area of Bangladesh	CCA/C CM	Grameen Shakti	PKSF/ IDCOL			4	2					2		2	50%																					
A25	Water infrastructure	Climate resilient Drainage, Canal Dredging, and Flood Control for Barisal City Corporation Area	CCA	BWDB	World Bank			59	44.25	14.75						14.75	25%																					
A26	Water infrastructure	Development of climate resilient water infrastructure in Bhola island	CCA	BWDB	World Bank			187.5	140.6	46.88						46.88	25%																					
A27	Hoar area resilience	Creation of Alternate Livelihood for climate victims through cooperative approaches in Hoar areas of Bangladesh	CCA	Department of Cooperatives	PKSF			8	6	2						2	25%																					
A28	climate resilient crop	Production and supply of climate resilient crop varieties	CCA	BADC	PKSF			156.25	117	39.3						39.3	25%																					
A29	Climate Resilient SEED	Capacity Development for Climate Resilient Seed Certification in Bangladesh	CCA	SCA	PKSF			6.25	5.62	0.625						0.625	10%																					

B7	Bio-organic Fertilizer Production	Community Based Bio-organic Fertilizer Production for Improvement of Soil health and Reduction of GHG emission due to Use of Chemical fertilizer in Rice Cultivation	CCA/ CCM	Soil Science Division , BRRI	IDCOL		22	20	2						20	2.5	2	1.5	2	2	3	2
B8	climate resilient cropping	Climate resilient cropping patterns for coastal farmers	CCA	RFSD	PKSF		1.6	1.1	0.5						1.1	2	2	1.5	2	2	3	1
B9	Agriculture - Climate resilient crops	Development of Climate Resilient Rice Varieties and Suitable Management Practices for the Promotion of Sustainable Production at Saline and Drought Prone Areas of Bangladesh	CCA	BINA	PKSF		16	16	1.6		4.8				16	3	2.5	2	3	2	3	2.5
B10	Climate adaptive crops and community based water and salinity management	Promotion of climate adaptive crops and community based water and salinity management for strengthening resilience of 30,000 small and marginal farmers	CCA	Shushila n	PKSF	IUCN	21	20			0.5				20	3	3	2.5	3	2	2.5	2
B11	Climate Resilient Rice Based Crops and Household Appliances	Development and Scaling up of Portable Solar Energy for Irrigating Climate Resilient Rice Based Crops and Household Appliances of Smallholders in the Coastal Region of Bangladesh	CCA/ CCM	IWMD, BRRI	IDCOL		10	7	3						7	2	2.5	2	2	2.5	2.5	2
B12	Cultivation	Cultivation of water caltrop (chesnut) Bangladesh	CCA	BCCT		GIZ	25	20	3	2					20	2	2.5	3	3	2.5	2	2
B13	climate-smart agriculture livelihoods	Building resilience through nutrition sensitive climate-smart agriculture livelihoods, led by Poor and Extreme Poor women and youth in South-west Bangladesh	CCA/ CCM	CARE BD	PKSF		5	4		1					4	3	1	2	3	3	2	3
B14	Water	Providing Safe Drinking Water Supply to the Coastal Areas of Bangladesh using Solar Water Purifier and Solar Desalination Technology	CCA	DPHE			45	31.5	13.5						31.5	2	2.5	2	3	2	2	2

B15	Water/ Livelihoods	Increase Resilience to Climate Change in Southwest Coastal Zone of Bangladesh through adaptive livelihood, housing and sweet drinking water supply	CCA	PKSF	PKSF		50	40				8		2	10	20%					40	3	3	2.5	3	2.5	2	2.5
B16	Reduce GHG emissions	Reduce GHG emissions by enabling investments in renewable energy, energy-efficiency, and waste-to-energy applications to support urban development in Bangladesh	CCM	MoPEM R	PKSF/ IDCOL	UNDP	27.36	13.76	14						14	50%					13.76	3	3	2.5	3	2.5	2	2
B17	adoption of Modern Biomass Cook stove	Accelerating the adoption of Modern Biomass Cook stove for improving health and wellbeing of rural women through alleviating indoor air pollution and reducing CO emission	CCA/ CCM	RRE	PKSF/ DCOL	UNDP/ HSBC/ ADB/ KFW	105	62.5				10		32.5	42.5	40.5%	52.5				10	3	2.5	2	2	3	3	3
B18	low carbon, lesser fossil fuel usage	Enabling ultrapoorBoro rice cultivators of Bangladesh to learn & co-create BHUNGROOTM towards low carbon, lesser fossil fuel usage and adapting to weather extremes for food security and better agriculture growth	CCA/ CCM	IWMD	IWMD		20	14	6						6	30%					14	1.5	2	1.5	2	1.5	3	2
B19	Agriculture livelihoods/ shelter - flood	Community based adaptation to climate change in Central and Northern flood prone areas of Bangladesh through adaptive agriculture, livelihood and shelter	CCA	PKSF	PKSF		50	35						15	15	30%					35	3	3	2.5	2.5	2.5	2	2.5
B20	Cooking stoves	Emission Reduction and improvement of kitchen environment for rural poor women through Improved Cook Stove Program in Bangladesh	CCM	CCDB	PKSF		21.1	9.3						11.8	11.8	56%					9.3	3	3	2	2	3	2	3
B21	Initiative on Climate change (48)	Local Government Initiative on Climate change (LoGIC)	CCM	LGD	PKSF/ DCOL	UNDP and EIB (TBC)	200	100	75					25	100	50%			25	50	25	3	3	2.5	2.5	2.5	3	2
B22	Agriculture	Greening the Brick sector in Bangladesh for emission reduction and better natural resources management.	CCA/ CCM	FAO		FAO	40	40							0	0%					40	2	3	2	2	2.5	2.5	2

B23	Building climate resilient agriculture	Building climate resilient agriculture in Bangladesh	CCA/C CM	CNRS	IDCOL, PKSF	IUCN	80	75.2		1	1.3	0.8	0.9	4.8	6.0%						75.2	3	3	2.5	3	2	2	2
B24	Modeling the climate change impact on Jute	Developing dynamic model to simulate the impact of climate change on Jute and Allied Fibre crop for introducing suitable JAF crops in the existing cropping patterns of problem soils of Bangladesh	CCA/C CM	BJRI	PKSF		6.9	6.9	NON-Comprehensible					0	0%						6.9	2	2.5	2	2	2	3	1
B25	Livelihoods; - Chars Duellers of Jamuna River	Climate Change Adaptation and Mitigation for Alternative Livelihood Options for the Chars Duellers of Jamuna River, Bangladesh.	CCA/C CM	RDA	PKSF		10.3	10	0.3					0.3	3%						10	2	2	2	2.5	2	2.5	2
B26	Agricultural Research	Adaptation of Climate Change Effects Through Agricultural Research	CCA	BARI	PKSF		104.16	95.88	8.28					8.28	8%						95.88	2	2	2	2	2.5	3	1
B27	Resilience of Vulnerable Coastal Community	Improving the Resilience of Vulnerable Coastal Community of Bangladesh through Re-excavation/Maintenance of Ponds and Installation of rainwater harvesting system.	CCA	DPHE			42.5	29.75	12.75					12.75	30%						29.75	2	3	2	2	2	2	2
B28	Adaptation of Suitable Vegetables in Saline Soil	Adaptation of Suitable Vegetables and Spices in Saline Soils of Southern Regions of Bangladesh	CCA	BINA	PKSF		2.35	2.35	0.58					0.58	25%						2.35	2.5	3	2.4	3	2.5	2	1
B29	Water	Providing Safe Drinking Water Supply to the Coastal Areas of Bangladesh using Solar Water Purifier and Solar Desalination Technology	CCA	DPHE			45	31.5	13.5					13.5	30%						31.5	2	2.5	2	3	2	2	2
B30	Water	Installation of low Cost Carocell Solar Water Desalination & Purification Panel Technology for providing safe drinking water and increase resilience of coastal population of Bangladesh	CCA	InGen Technol ogy Ltd.	IDCOL		10	8				2		2								3	2	2	3	2.5	2	2
B31																												

4.5 List of abbreviations

ADB	Asian Development Bank
AF	Adaptation Fund
AFD	Agence française de développement
ASL	Above Sea Level
BADC	Bangladesh Agricultural Development Corporation
BARI	Bangladesh Agriculture Research Institute
BCCRF	Bangladesh Climate Change Resilience Fund
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BCCTF	Bangladesh Climate Change Trust Fund
BFIDC	Bangladesh Forest Industries Development Corporation
BFD	Bangladesh Forest Department
BGEF	Bright Green Energy Foundation
BINA	Bangladesh Institute of Nuclear Agriculture
BJRI	Bangladesh Jute Research Institute
BMI	brick making industry
BPC	Bangladesh Planning Commission
BRAC	Bangladesh Rural Advancement Committee
BUET	Bangladesh University Engineering and Technology
BWDB	Bangladesh Water Development Board
BRRRI	Bangladesh Rice Research Institute
BRDB	Bangladesh Rural Development Board
BSRM	Bangladesh Steel Re-Rolling Mills
CCA	Climate Change Adaptation
CCDB	Christian Commission for Development in Bangladesh
CCGAP	Climate Change and Gender Action Plan
CCTF	Climate Change Trust Fund
CDMP	Comprehensive Disaster Management Programme
CDB	Cotton Development Board
CNRS	Center for Natural Resource Studies
CIF	Climate Investment Funds
CPC Ltd	Concord Pragatee Consortium Limited
DDM	Department of Disaster Management
DRR	Disaster risk reduction
DLS	Department of Livestock Services
DPHE	Department of Public Health Engineering
DAE	Department of Agricultural Extension
DoA	Department of Archeology
DoC	Department of Cooperatives
DoEF	Department of Environment
DPHE	Department of Public Health Engineering
DRR	Disaster Risk Reduction
DYD	Department of Youth Development
DWA	Department of Women Affairs
EIB	European Investment Bank
FAO	Food and Agriculture Organization (of UN)
FY	Fiscal Year
FYP	Five Year Plan
GBM	Ganges-Brahmaputra-Meghna
GDP	Gross Domestic Product

GED	General Economic Division
GIS	Geographic Information System
GoB	Government of Bangladesh
GSB	Geological Survey of Bangladesh
GUK	Gono Unnayan Kendro
GIZ	Gesellschaft für Internationale Zusammenarbeit GmbH
HH	Household
HSBC	Hongkong and Shanghai Banking Corporation
ICDDRБ	International Centre for Diarrhoeal Disease Research
IDLC	Industrial Development Leasing Company
IDCOL	Infrastructure Development Company Limited
IIDFC	Industrial and Infrastructure Development Finance Company
IDF	Integrated Development Foundation
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IWMD	Irrigation and Water Management Division
IUCN	International Union for Conservation of Nature
JICA	Japan International Cooperation Agency
JAF	Jute and Allied Fibre
KfW	Kreditanstalt für Wiederaufbau (KfW)
LDCF	Least Developed Countries Fund
LDRRF	Local Disaster Risk Reduction Fund
LEDARS	Local Environment Development and Agricultural Research Society
LGI	Local Government Institutes
LGSP	Local Government Support Project
LGED	Local Government Engineering Department
LGD	Local Government Division
MoEF	Ministry of Environment and Forest
MoFDM	Ministry of Food and Disaster Management
MoWCA	Ministry of Women and Children Affairs
NAPA	National Adaptation Programme of Action
NTFP	Non-timber forest produced Plantation
PDBF	Palli Daridro Bimochon Foundation
PEP	Poor and extreme poor
PKSF	Palli Karma Shohayak Foundation
PPCR	Pilot Programme for Climate Resilience
PPP	Public Private Partnership
RDA	Rural Development Academy
RFSD	Rice Farming Systems Division
RISDA	Resource Integration and Social Development Association
PSEOP	Portable solar energy operated irrigation pump
RDA	Rural Development Academy
RRE	Rahimafrooz Renewable Energy
SCA	Soil Science Division
SDS	Shariatpur Development Society