



Government of the People's Republic of Bangladesh

United Nations Development Programme

PROJECT DOCUMENT



UNDAF Outcome(s)/Indicator(s): 2.2 Survival and development rights of vulnerable groups are ensured within an environmentally sustainable framework

Expected Outcome(s)/Indicator(s): 2.1 Carrying capacity of environment and natural resources base is enhanced  
MYFF Frameworks and strategies for sustainable development

Expected Output(s)/Annual Targets: National capacity enhanced through institutionalization and mainstreaming of sustainable environmental management

Implementing Partner: Ministry of Environment and Forests (MoEF) and Forest Department (FD), Lead Agency

Responsible Parties: MoEF; Forest Department, Bangladesh Forest Research Institute; Ministry of Land; Department of Agricultural Extension, Ministry of Fisheries & Livestock, United Nations Development Program

Programme Period: 2006-2010 Programme Component: Sustainable Environment & Energy Management Project Title: <b>Community-based Adaptation to Climate Change through Coastal Afforestation in Bangladesh</b> Project ID: PIMS 3873 Award / Project IDs: 00050567 / 00062536 (BGD10) PPG Phase Duration: July 2007 to June 2008 Project Duration: March 2009 to April 2013 (4 years) Management Arrangement: National Implementation	<b>Total budget:</b> 5,400,000 USD  <b>GEF/LDCF:</b> 3,300,000 USD <b>UNDP (Parallel, TRAC)</b> 1,100,000 USD <b>Government (in kind):</b> 1,000,000 USD
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Government of the Peoples Republic of Bangladesh  
United Nations Development Programme

PIMS No. 3873

## Community-Based Adaptation to Climate Change through Coastal Afforestation in Bangladesh

### Brief description

The risk of climate change-induced damage to human and economic development in coastal areas of Bangladesh is mounting. The combined effects of sea-level rise and subsidence, changes in upstream river discharge, increased frequency and intensity of tropical cyclones, and erosion of coastal embankments pose a serious threat to the natural resource base and livelihood opportunities of coastal communities. The existing disaster management framework in Bangladesh is largely organized to deal with recurrent and rapid onset extreme events, whereas coastal zones in Bangladesh are also confronted with a range of “creeping” climate risks, such as increasing salinity trends in coastal freshwater resources, growing drainage congestions, dynamic changes in coastal morphology and a decline in the functioning of protective ecosystems.

Given the general lack of institutional capacity to systematically identify and address climate-driven changes in risk patterns, the Government of Bangladesh is proposing a project to reduce the vulnerability of coastal communities to climate change-induced risks in 5 coastal districts (Barguna, Patuakhali, Bhola, Noakhali, and Chittagong) under 4 coastal forest divisions. The project is based on the following components:

- a. Enhancing the resilience of coastal communities and protective ecosystems through community-led adaptation interventions, focusing on coastal afforestation and livelihood diversification;
- b. Enhancing national, sub-national, and local capacities of government authorities and sectoral planners to understand climate risk dynamics in coastal areas and implement appropriate risk reduction measures;
- c. Reviewing and revising coastal management practices and policies with a view on increasing community resilience to climate change impacts in coastal areas; and
- d. Developing a functional system for the collection, distribution and internalization of climate-related knowledge.

The proposed project will employ a feedback loop between these four components and enable successful community-based adaptation approaches in coastal areas to be analyzed and replicated in other vulnerable regions, both within and outside of Bangladesh.

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## Acronyms

ALM	Adaptation Learning Mechanism
APF	Adaptation Policy Framework
APR	Annual Project Report
AWP	Annual Work Plan
BBS	Bangladesh Bureau of Statistics
BARI	Bangladesh Agricultural Research Institute
BBS	Bangladesh Bureau of Statistics
BCAS	Bangladesh Centre for Advanced Studies
BFRI	Bangladesh Forest Research Institute
BRRRI	Bangladesh Rice Research Institute
BWDB	Bangladesh Water Development Board
CAE	Country Assistance Evaluation
CBA	Community-Based Adaptation
CBOs	Community-Based Organizations
CCC	Climate Change Cell
CDMP	Comprehensive Disaster Management Program
CO	Country Office
CRA	Community Risk Assessment
CSOs	Civil Society Organizations
DAE	Department of Agriculture Extension
DEFDC	District Environment and Forest Development Committee
DDMC	District Disaster Management Committee
DFID	Department For International Development
DMB	Disaster Management Bureau
DMIC	Disaster Management Information Centre
DoE	Department of Environment
EA	Executing Agency
FD	Forest Department
FRMP	Forest Resources Management Project
GEF	Global Environment Facility
GOB	Government of Bangladesh
IA	Implementing Agency
INC	Initial National Communication
IPCC	Inter-governmental Panel on Climate Change
PDO-ICZMP	Project Develop Unit - Integrated Coastal Zone Management Project
LDCs	Least Developed Countries
LDCF	Least Developed Country Fund
LDRRF	Local Disaster Risk Reduction Fund
MDG	Millennium Development Goal
M&E	Monitoring & Evaluation
MoA	Ministry of Agriculture
MoEF	Ministry of Environment and Forests
MoFL	Ministry of Fisheries and Livestock
MoFDM	Ministry of Food and Disaster Management
MoL	Ministry of Land
MoLGRDC	Ministry of Local Government, Rural Development, and Cooperatives
MoWR	Ministry of Water Resources
NAPA	National Adaptation Program of Action

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NGOs	Non-Governmental Organizations
OECD	Organization for Economic Co-operation and Development
PIR	Project Implementation Review
PPG	Project Preparation Grant
PRSP	Poverty Reduction Strategy Paper
NSC	National Steering Committee
QBS	Quality-Based Survey
RCU	Regional Coordinating Unit
RRAP	Risk Reduction Action Plan
SLR	Sea Level Rise
SNC	Second National Communication
SRDI	Bangladesh Soil Resources Development Institutes
UDCC	Union Development Coordination Committee
UNDP	United National Development Program
UNFCCC	United Nations Framework Convention on Climate Change
TPR	Tripartite Review
TTR	Terminal Tripartite Review
VRA	Vulnerability Reduction Assessment
WB	World Bank

## SECTION I: ELABORATION OF THE NARRATIVE

### PART I: Situation Analysis

#### Summary

1. Climate risks in Bangladesh are constituted by immediate variability in the occurrence and intensity of extreme weather events, as well as elements of more gradual and long-term climatic change. Climate change assessments undertaken during the NAPA and Initial National Communications (SNC) processes in Bangladesh have established the extent of projected increments in sea-level, temperature, evaporation, changes in precipitation and changes in cross-boundary river flows: Observed long-term temperature changes within Bangladesh suggest an increase during monsoonal periods at the rate of 0.04°C per year, whereas at the same time a significant increasing trend in the cyclone frequency over the Bay of Bengal during the cyclone months is being observed. Historical tidal data from various coastal measurement stations suggest that the rate of sea-level rise (SLR) in Bangladesh is many orders of magnitude higher than the mean projected rate of global SLR expected over the coming decades (4.0 mm/year at Hiron Point, 6.0 mm/year at Char Changa, and 7.0 mm/year at Chittagong). These scientific assessments have resulted in a range of adverse climate impact projections, which include amplified trends in the congestion of coastal drainage systems, reduction of fresh water availability in coastal communities, reduced protective functions of coastal ecosystems and natural geomorphologic processes, and increased human and material losses in the wake of more intense cyclone and storm surges, and frequent flooding disasters.
2. In addition to the pressures exerted by climate change, development of community resilience in coastal areas of Bangladesh is presently impeded by a range of non-climatic factors. On the one hand, vulnerability has increased due to anthropogenic activities, particularly due to massive conversion of mangroves into commercial shrimp farms, salt pans and increased demand for fuel-wood (e.g. where mangroves are exploited for fisheries), which has reduced mangrove cover that otherwise functions as a natural protective barrier to coastline erosion and inundation. Salt making industries and sand mining activities along the coastline have led to the shifting and/or degradation of coastal morphological dynamics and in some instances sand dunes, thereby undermining their effectiveness as physical barriers against flooding, and also as sedimentary stocks allowing for beach reorganization. The continuous increase in soil and water salinity (due to receding coastlines resulting from unauthorised settlements) is also contributing to the further degradation of natural defences.
3. Without additional adaptation activities to address the critical interface between climate dynamics and economic activities at the communal level, the expected costs associated with climate-induced damage on coastal regions in Bangladesh is likely to increase substantively over time. The NAPA has therefore identified the “reduction of climate change hazards through coastal afforestation with community participation”<sup>1</sup> as an immediate priority and provided a compelling argument that risk reduction in coastal areas can only be achieved if the maintenance of protective natural systems is connected to tangible economic development options in general and development of local community in particular.
4. Along these lines, the proposed project addresses a key priority of the Bangladesh NAPA and outlines an integrated adaptation approach that is comprised of the following tasks (see Figure 1):

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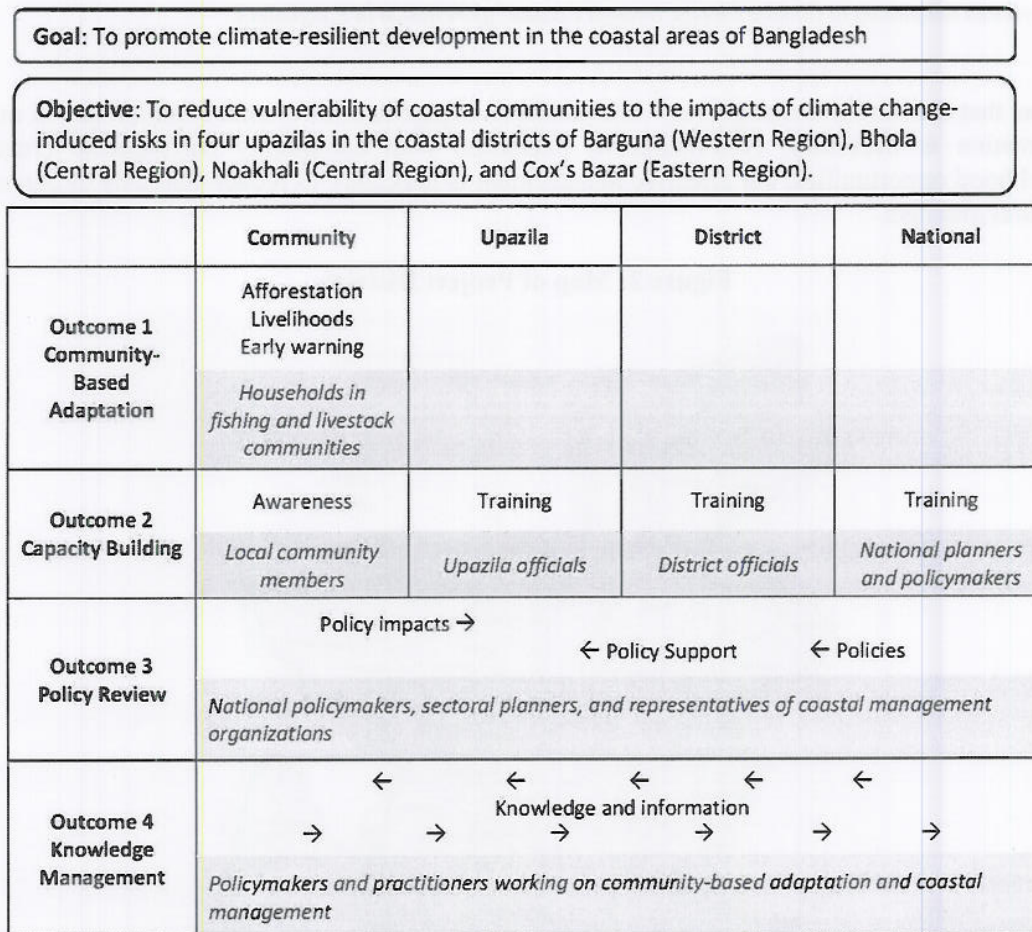
<sup>1</sup> Bangladesh NAPA, pg 24

- First, enhancing the resilience of coastal communities and protective ecosystems through community-led adaptation interventions that focus on afforestation and livelihood diversification options. Mangrove forests along the coastline have a high potential to reduce future climate change-induced threats, particularly the impacts of cyclones and storm surges; simultaneously, they provide livelihood resources for vulnerable coastal communities. The proposed project will systematically strengthen this synergistic relationship and ensure that coastal communities have economic incentives to maintain and safeguard protective natural systems without compromising their livelihood options.
  - Second, enhancing national, sub-national, and local capacities of government authorities and sectoral planners to understand and anticipate climate risk dynamics in coastal areas and delineate and implement appropriate climate risk reduction measures.
  - Third, promoting a review and revision of specific national policies to increase community resilience to climate change impacts in coastal areas. A feedback loop between community-based adaptation actions and policy review will ensure that national policies are updated on the basis of actual lessons learned at the community level, and ensure that policy support provided through this project will ultimately benefit vulnerable communities.
  - Fourth, developing a functional system for the collection, distribution, and internalisation of climate-related knowledge at the national, district, and local levels. This system will promote the sharing of project knowledge both within Bangladesh and with other countries.
5. The stakeholder foundation for this project is conducive, given Bangladesh's progress in baseline disaster risk reduction over the last 5 years. Bangladesh has extensive experience in community-based livelihoods interventions as well as community-based disaster management projects, and is well positioned to build on these capacities to integrate the risks posed by climate change (see Annex 4). The proposed project will enhance institutional mechanisms to support adaptation in coastal communities, sensitize policy makers to the requirements of systematic climate risk management, and develop a national-level coastal policy framework that is able to effectively address climate change risks.
6. The proposed project approach will facilitate the development of adaptive capacity at various levels. On the district level, the project will facilitate institutional coordination, structured information flows and targeted policy support to sensitize national policy stakeholders and re-evaluate key national policies that affect the sustainability of protective systems. The project will capitalize on existing institutional structures at the local level to enhance the exchange and flow of climate information and facilitate community-based adaptation. Importantly, the project will build capacity of community-based organisations and specifically vulnerable population groups to address climate risks to coastal livelihoods.





**Figure 1: Project Approach**



**Context**

- The proposed project is the Government of Bangladesh’s first adaptation initiative to be implemented in four vulnerable districts in the Western, Central, and Eastern regions (see Figure 2 below). The four districts were chosen through extensive stakeholder consultations with government agencies and community members (see Annex 1 for information on the selection process).
- Past climate disasters have shown that resilience to cyclones and storm surges is greater where mangrove greenbelts and buffer ecosystems exist. It is evident that mangroves can mitigate or reduce risk of natural disasters such as cyclones and tsunamis.<sup>2,3,4,5</sup> The super cyclone in 2002, which hit Orissa with a speed of 310 km/hr for eight hours, caused devastating effects to the coastal

<sup>2</sup> Kathiresan and Rajendran, 2005 K. Kathiresan and N. Rajendran, Coastal mangrove forests mitigated tsunami, *Estuarine, Coastal and Shelf Science* 65:601–606.

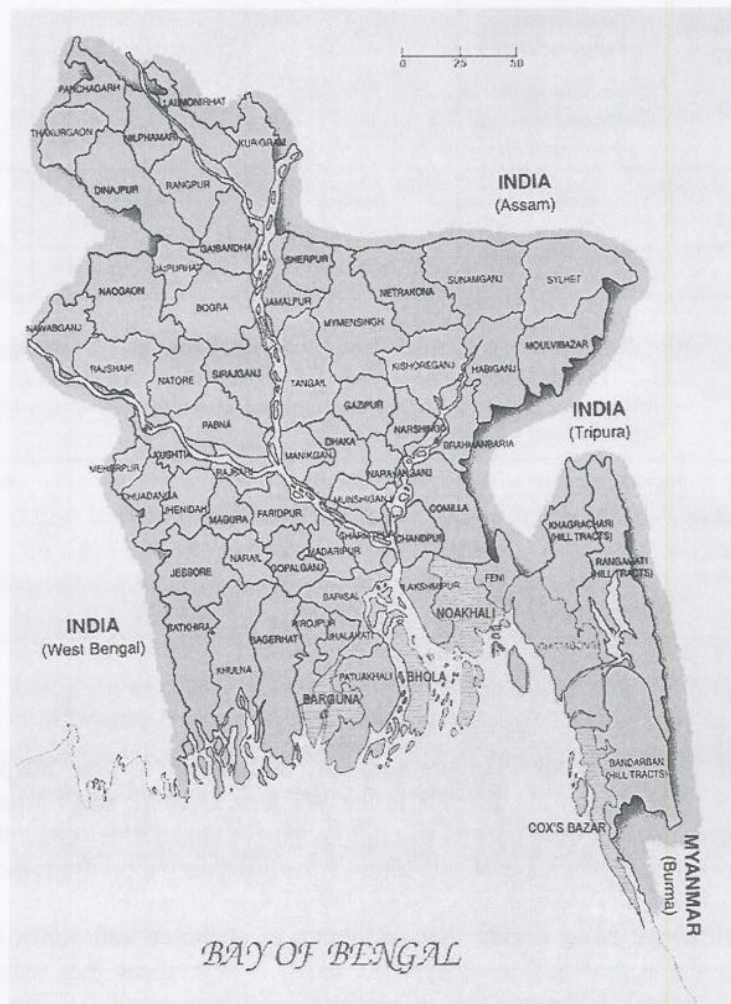
<sup>3</sup> Kerr, A.M., Baird, A.H., Campbell, S.J., 2006. Comments on “Coastal mangrove forests mitigated tsunami” by K. Kathiresan and N. Rajendran, *Estuarine, Coastal and Shelf Science* 2005; 65, 601-606. *Estuarine, Coastal and Shelf Science* 67, 539-541

<sup>4</sup> Vermaat, J.E., Thampanya, U., 2006. Mangroves mitigate tsunami damage: a further response. *Estuarine Coastal and Shelf Science* 69, 1-3.

<sup>5</sup> Mazda, Y., Magi, M., Kogo, M., Hong, P.N., 1997. Mangrove on coastal protection from waves in the Tong King Delta, Vietnam. *Mangroves and Salt Marshes* 1, 127-135.

areas that did not have mangroves.<sup>6</sup> The effective engagement of coastal communities in mangrove plantation is necessary. Non-mangrove plantation with community participation creates new livelihood opportunities, but effective management is necessary to reduce the scale of damage from natural disasters.

Figure 2: Map of Project Districts



- Annual average temperatures in Bangladesh have registered an increasing trend of about  $1^{\circ}\text{C}$  in May and  $0.5^{\circ}\text{C}$  in November during the 14-year period from 1985 to 1998. With rising temperatures, Bangladesh is also experiencing a higher occurrence of drought. During 1960 to 1991, there were 19 droughts year, which covered as much as 47% of the country's area and 53% of the current population.<sup>7</sup> The shrimp industry, which creates employment for thousands of households and is a large foreign exchange earner, would be under serious threat due to rises in surface water temperature and acidification of sea water. If the temperature increases over  $32^{\circ}\text{C}$  as predicted, the

<sup>6</sup> Kathiresan, K and Rajendran, N., 2003. Conservation and management of mangrove ecosystem in India, *Seshaiyana* 11(1): 1-4.

<sup>7</sup> ADPC and FAO, 2007



mortality small shrimp fry would be very high. Further rises would facilitate algal blooms that seriously affect the shrimp growth.<sup>8</sup>

10. With an area of 47,201 km<sup>2</sup> (32% of Bangladesh's land area) and a population of 35.1 million (28% of total population), the coastal region of Bangladesh is highly vulnerable to multiple climate change threats.<sup>9</sup> The country is a low-lying deltaic plain with a very high population density (more than 1,000/km<sup>2</sup>).<sup>10</sup> Three quarters of the population lives in rural areas and depends on subsistence agriculture, which contributed 22% of GDP in 2004-2005.<sup>11</sup> According to estimates by a World Bank assessment of climate change impacts in Bangladesh, a small change in peak discharge may result in about 20% increase in the area flooded. Similarly, riverbank erosion is exponentially related to maximum flood levels.
11. The agriculture sector alone employs 51.7% of the total labour force<sup>12</sup> and is highly sensitive to climate variability; the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report predicts that climate change may decrease the production of rice and wheat by as much as 8% and 32%, respectively, by 2050.<sup>13</sup> Despite making improvements in key human development indicators, the *United Nations' Common Country Assessment of Bangladesh (2005)* highlighted that over 63 million Bangladeshis still live below the poverty line and are vulnerable to natural and manmade shocks.<sup>14</sup>
12. Bangladesh will be seriously affected by sea level rise and salinization. With an estimated 45 cm rise of sea level, 10-15% of the land in Bangladesh may be inundated by the year 2050, resulting in over 25 million climate refugees from the coastal districts.<sup>15</sup> SLR along with high winds would allow saline water to overtop the existing coastal protection embankments and submerge polders, which will affect crop yields and livelihood security.<sup>16</sup> Salt water from the Bay of Bengal is reported to have penetrated 100 km or more along tributary channels during the dry season in past years.<sup>17</sup> Approximately 1.02 million ha of arable lands have been affected to varying degrees by soil salinity, and vast areas of croplands in the lower estuary of the coast remain fallow during the dry (or *rabi*) season due to high salinity.<sup>18</sup>
13. Monsoon depressions and cyclones in the Bay of Bengal have become more frequent over the past decades. Fishing in the Bay of Bengal, one of the most important livelihood options for the poor, is becoming risky or unsafe due to the erratic and cruel weather conditions in the sea. Cyclones with storm surges and associated precipitation inundate coastal polders and cause water logging in the embanked areas, affecting agricultural production and rural livelihoods.<sup>19</sup> On 15 November 2007,

<sup>8</sup> CEGIS, 2006, *Impacts of Sea Level Rise on Landuse Suitability and Adaptation Options, Final Report*.

<sup>9</sup> PDO-ICZMP, 2004. *Where Land Meets the Sea: A Profile of the Coastal Zone of Bangladesh*; and Bangladesh Bureau of Statistics 2001 Census

<sup>10</sup> UNDP, 2007. *Human Development Report 2007/2008: Fighting Climate Change: Human Solidarity in a Changing World*. Accessed on 14 April 2008 at <http://hdr.undp.org/en/reports/global/hdr2007-2008/>

<sup>11</sup> Bangladesh Bureau of Statistics (BBS) 2003. *Population Census 2001, National Report*

<sup>12</sup> BBS 2003. *Bangladesh Labour Force Survey 2002-2003*

<sup>13</sup> IPCC 2007. *Climate Change 2007, Fourth Assessment Report*. Accessed on 14 April 2008 at <http://www.ipcc.ch/ipccreports/assessments-reports.htm>

<sup>14</sup> UN Country Team, 2005. *United Nations' Common Country Assessment of Bangladesh*. January 2005. Accessed on 14 April 2008 at [http://www.un-bd.org/docs/Bangladesh%20CCA\\_2005.pdf](http://www.un-bd.org/docs/Bangladesh%20CCA_2005.pdf)

<sup>15</sup> Climate Change Cell, DoE, Bangladesh

<sup>16</sup> CEGIS, 2006. *Impacts of Sea Level Rise on Landuse Suitability and Adaptation Options, Final Report*

<sup>17</sup> IPCC, 2007. *Climate Change 2007*

<sup>18</sup> Soil Resources Development Institute (SRDI), Bangladesh

<sup>19</sup> Ahmed 2005a, and IWM and CEGIS, 2007, *Impacts of Sea Level Rise on Coastal Community and Livelihoods*



the super cyclone Sidr hit Bangladesh and caused over 4,000 deaths. In the past 125 years, over 42 major cyclones hit the coast of the Bay of Bengal, of which 14 occurred over the past 25 years.<sup>20</sup> Between 1991 and 2000, 93 major disasters were recorded, resulting in nearly 200,000 deaths, causing USD 5.9 billion in damage with severe losses in agriculture and infrastructure.

14. Multiple natural disasters compounded with other vulnerability factors have marginalized coastal communities and at the same time slowed down social and economic development processes. Despite having natural resources (e.g. oil, gas, fisheries, agriculture, and mangroves), the full utilization of these resources in the coastal zone have not been realized due to climate-related hazards. The Sundarbans, a World Heritage Site and the world's largest natural mangrove forest, may be lost with a 1m rise in sea level that would affect not only coastal ecosystems but also the thousands of poor households subsisting on the Sundarbans' resources.
15. Coastal mangrove forests, which have great potential to act as barriers against cyclones and storm surges, are now under serious threat largely due to lack of harmonized policies and management. The current land tenure and distribution system in coastal areas is unsustainable and flawed. The MoL allocates newly accreted coastal lands to the Forest Department for a period of 25 years for mangrove plantation to stabilize the land. When the mangroves are fully grown into forests after 20-25 years, the land is distributed to communities by the local administration. However, there is little consideration given to the value of mangrove forest coverage along the coast, and the local administrators tend to overlook the technical advice of the Forest Department. People receiving the land, clear the forests and use it for either farming or the building of settlements.
16. Recent climate-driven trends of rising tidal levels have contributed to coastal erosion. Without adaptation to climate change, including variability, the low lying deltaic floodplains of Bangladesh is likely to experience a submergence of 17.5% of the country's land mass due to climate change-induced SLR in coastal regions. A report on potential impact of climate change indicated that around 58,000 ha along the shore line will be lost by 2030.<sup>21</sup> A recent UNESCO<sup>22</sup> report stated that an anthropogenic 45-cm rise in sea level (likely by the end of the 21<sup>st</sup> century, according to the IPCC), combined with other forms of anthropogenic stress on the Sundarbans, could lead to the destruction of 75% of the Sundarbans mangroves. This would not only affect coastal ecosystems but also the thousands of poor households depending on the Sundarbans resources. As a result, there will be an increase in pressure on plateau lands, which will undermine coastline stability and potentially lead into inter-community conflicts.
17. The proposed project is directly aligned with Bangladesh's development priorities. Climate change and related extreme events are recognized as major impediments to growth in a range of recently developed policies, such as the Coastal Zone Policy, Energy Policy, and Agricultural Policy. The National Water Policy has recognized that it is necessary to reduce the knowledge gap for addressing climate change impacts in the water sector. Bangladesh's Poverty Reduction Strategy Paper (PRSP) recognizes the direct links between poverty and vulnerability to natural hazards: *"Given the risk and vulnerability to natural hazards that are likely to continue as a serious threat to national development efforts, macro level policies for disaster risk reduction, mitigation and management must be adopted in view of alleviating disaster-induced poverty"*. It has also proposed

<sup>20</sup> MoL, 2007. Inception Report of the Coastal Land Use Zoning Project

<sup>21</sup> Potential Impact of Climate Change in Bangladesh, as viewed in:

<http://wbln0018.worldbank.org/lo+web+sites/bangladesh+Web.nsf/All/6DE0A774ACF0365185256A7E006AE31A?OpenDocument>

<sup>22</sup> UNESCO 2007. Case studies on Climate Change and World Heritage



a comprehensive and anticipatory approach to reduce Bangladesh's vulnerability: "...to reduce vulnerability to natural, environmental and human induced hazards through community empowerment and integration of sustainable risk management initiatives in all development programs and projects."

18. The project is aligned with the existing institutional setup to address climate change issues in Bangladesh. The government of Bangladesh (GOB) has established an Inter-ministerial Committee on Climate Change headed by the Minister for Environment and Forest (MOEF) and with representation from relevant government ministries and departments, as well as key non-governmental organizations (NGOs) and research institutions. The Department of Environment (DOE) under the MOEF has also set up a Climate Change Cell (CCC) to act as Secretariat for climate change-related work within the government. In addition, a National Environment Committee chaired by the Prime Minister has been consolidated to determine environmental policies in Bangladesh; Representation on this Committee includes Members of Parliament, government entities, representatives of civil society, as well as academic experts.
19. The proposed project will pilot interventions that a country-driven process has deemed urgent and immediate, and in this respect, it meets the eligibility criteria of the Least Developed Country Fund (LDCF) as outlined in the LDCF guidance paper. It is also consistent with the Government-endorsed *UNDP Country Program for Bangladesh (2006-2010)*<sup>23</sup> and Poverty Reduction Strategy Paper (PRSP)<sup>24</sup> development goals. Responding to the needs of Bangladesh, UNDP will extend support to strengthen the national disaster management system, communities' institutional mechanisms for disaster management, and promote the mainstreaming of risk reduction in development planning through the current UNDP Country Program. As a trusted development partner of the Bangladesh government, UNDP's comparative advantage lies in its experiences developing capacity and providing policy support in climate change, environment, and natural resource management. Following Bangladesh's national priorities, UNDP focuses on NAPA-centered interventions and act as a catalyst for institutional and policy change.

### **Baseline Analysis**

20. The NAPA and the Initial National Communication (INC) established that a weak economy and widespread poverty in Bangladesh has contributed to low adaptive capacity to withstand the adverse impacts of climate change. Vulnerability is worsened due to the high dependence of a majority of the population on climate-sensitive sectors, such as agriculture, forestry and fisheries as well as weak infrastructure facilities, institutional mechanisms and lack of financial resources. Effective adaptation of coastal communities therefore requires effective policies, capacity development, and specific interventions that directly tackle the issue of risks posed by climate change, including variability.
21. As the NAPA (and the National Communications) process has elaborated, it is evident that numerous factors affect the resiliency of the coastal sector that has little or nothing to do with climate change, including variability. The Government of Bangladesh and donors such as the United Kingdom's Department for International Development (DFID) are already tackling these other pressures on the coastal sector from several fronts. Some of these "baseline" activities (i.e. activities

<sup>23</sup> UNDP, 2005. *UNDP Country Programme for Bangladesh (2006-2010)*. October 2005. Accessed 14 April 2008 at [http://www.undp.org/rbap/Country\\_Office/CP/CP\\_BGD.pdf](http://www.undp.org/rbap/Country_Office/CP/CP_BGD.pdf)

<sup>24</sup> Planning Commission, 2005. *Bangladesh: Unlocking the Potential: National Strategy for Accelerated Poverty Reduction*. Prepared by the General Economics Division, 16 October 2005. Accessed 14 April 2008 at [http://siteresources.worldbank.org/INTPRS1/Resources/Bangladesh\\_PRSP\(Oct-16-2005\).pdf](http://siteresources.worldbank.org/INTPRS1/Resources/Bangladesh_PRSP(Oct-16-2005).pdf)



that would be implemented in the absence of climate change) include: a) creating buffer zones; b) providing relief during periods of climate-induced emergencies; and c) providing alternative settlement locations for coastal communities.

22. The vulnerability context of climate change for coastal areas of Bangladesh is related to gradual changes in the physical system and climate change-related extreme weather events. The gradual change phenomena in the physical system include changes in salinity concentration in the surface water and soil, coastal inundation, and drainage congestion. Changes in intensity and the frequency of tropical cyclones and storm surges will occur, as will changes in tidal height. Compared to inland areas, physical vulnerability is high toward the coasts, which are more exposed to the different vulnerability factors.
23. Agriculture, fisheries, forestry and forestry products, and livestock are the primary sources of rural livelihoods of the coastal communities. All these sectors are vulnerable both to gradual change phenomena and extreme weather events related to climate change. Coastal and marine fishing communities are also vulnerable to the changing intensity of cyclones, even if they do not fall on land. Coastal settlements exposed to the sea are severely prone to cyclones and storm surges. Paragraph 8 above describes how the resilience of coastal systems to cyclone and storm surges is higher where coastal greenbelt and buffer zones exists.
24. A well-maintained coastal greenbelt with adequate buffer zones can reduce vulnerability and protect settlements. At the same time, forestry products provide substantial livelihood support and meet a portion of domestic needs. Community participation to manage coastal afforestation and a long-term agreement between the Forest Department and Ministry of Land is necessary to maintain the coastal greenbelt and effective buffer zones. The introduction of alternative livelihood options creates new potential for sustainable income sources and is also necessary to relieve some of the pressure on forestry resources in the coastal area.
25. The project takes advantage of newly accreted land availability and community enthusiasm on social forestry, combining these opportunities to increase coverage of the greenbelt area and create a buffer zone. The proposed activities will be accomplished through increased participation from coastal communities. Afforestation will help support the coastal greenbelt and buffer zone, as well as increase the biological diversity in the area. Amending land use policies and building institutional capacity is also necessary for increasing the sustainability of greenbelt and maintain buffer zones. Awareness and training on climate change, the role of forestry, and different alternative livelihoods options will help achieve the project's objective.
26. Baseline activities to expand local coping ranges in coastal areas are limited to narrow geographic regions and do not incorporate additional impacts of long-term climate change. Although various baseline projects are ongoing or planned to support coastal development, afforestation, and livelihoods interventions (see Annex 4), the Bangladeshi government is still unable, on its own, to overcome the institutional, technical, and financial constraints in effectively reducing the threat of cyclones, storm surges, and SLR. Such impacts are expected to result in the displacement of human settlements and a long-term trend in climate refugees, estimated at approximately 25 million by 2100<sup>25</sup>. Climate-induced impacts are already considered as a principal reason behind the rising number of environmental refugees, which has already led to social tensions over remaining land and other scarce resources. With climate change and variability, political and social instability is projected to worsen, thereby adversely affecting sustainable livelihood opportunities and development in coastal regions.

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<sup>25</sup> Climate Change Cell, DoE, Bangladesh

### Financing Adaptation

27. Without an adaptation strategy in place, the percentage of coastal population in need of recurrent emergency relief assistance and will continue to increase with more frequent and severe extreme climate events (including cyclones, tidal surge and storms, and floods).<sup>26</sup> In the absence of an Integrated Coastal Adaptation Road Map for the coming years and decades, the current set of *ad hoc* activities is unlikely to address emerging climate change problems coherently. There is a clear need to develop strategies based on existing opportunities, understand current as well as projected levels of climatic risk, consolidate vulnerability assessments in coastal areas and continuously ensure political as well as economic feasibility of climate change adaptation measures.
28. The government, together with bilaterals and other UN agencies, has made a commitment of approximately US\$7 million (\$3 million related to coastal forestry and \$4 million related to disaster risk reduction under UNDP) towards baseline development activities in the context of this project. Without LDCF support, the national coastal development and management framework would continue to have insufficient human, institutional, and ecological adaptive capacity to address the dynamic and growing impacts of climate change, including gradual hazards such as SLR, erosion and salinization, which severely affect the entire coast of Bangladesh.

### Recent national initiatives relevant to coastal afforestation and adaptation

29. The Bangladesh Forest Department (FD), under the Ministry of Environment and Forests (MoEF), has been active in mangrove and non-mangrove afforestation in the coastal areas over the past few decades. Since 1960-61 up to 1999-2000, 142,835 ha of mangrove plantations have been raised under a number of coastal afforestation projects. Relevant projects in the coastal area include the following: **Forestry Sector Project** (1997-98 to 2005-06); **Forest Resources Management Project** (1992-1993 to Dec 2001); **Extended Forest Resources Management Project** (2002-03 to 2003-04); and **Coastal Greenbelt Project** (1995-96 to 2001-02). The present area of mangrove plantation is less than the total planted area due to losses of 10,835 ha by natural calamities, particularly cyclones and erosion, leaving 132,000 ha standing.<sup>27</sup>
30. Bangladesh's coastal forest today is almost a monoculture mangrove forest. These monoculture forests contribute to a number of issues limiting the adaptive capacity of the buffer ecosystem, including stem borer attacks in pre-existing mangroves; the lack of preferred mangrove species for regeneration; and the likelihood of no vegetation after mono-specific stands mature and are felled. To a limited extent, the Forest Department (FD) has shifted from their traditional custodial role to a more participatory approach in forest management (social forestry) over the last two decades. Based on past experiences of mangrove development projects, the Forest Department is now aiming to more fully involve local communities in forest management. Past projects did not adequately develop a sense of ownership of the mangroves among the local population, which resulted in overharvesting and damage. Local communities were thus often viewed as a threat to the forest rather than potential protectors and managers. A total of over 40,000ha of natural and manmade mangrove forests have already been destroyed along the eastern and central coasts of Bangladesh due to poor policy and management.<sup>28</sup> Therefore, any protection from climate hazards or livelihood benefits from these mangrove forests are likely to be short-lived without effective engagement and new and additional livelihoods.

<sup>26</sup> UNCT, 2004. *Millennium Development Goals Report*

<sup>27</sup> <http://www.bforest.gov.bd> accessed on 08 May 2008.

<sup>28</sup> FD, 2006. *Bangladesh Forest Department: Forest Development & Forest Conservation*. Brochure published by the Forest Department, Ministry of Environment and Forests



31. The ongoing **Coastal Charland Afforestation Project (2005-06 to 2009-10)**<sup>29</sup> and the **Climate Change Resilient Afforestation in Bangladesh Project (2008-2012)**<sup>30</sup>, have and will enhance adaptive capacity by improving livelihoods and reducing damage from climate-related impacts by enhancing protective forest ecosystems. However, as the frequency of extreme climatic events in coastal areas increases with climate change, concerns remain regarding the long-term effectiveness and sustainability of these baseline interventions. The Coastal Charland Afforestation Project and the **Coastal Greenbelt Project** cover only a limited area of the coast needing increased adaptive capacity to climate change. Similarly, discussions with staff at the Ministry of Water Resource's **Integrated Coastal Zone Management Project (ICZMP)** and the Ministry of Land's **Coastal Land Zoning Project** revealed that climate change has not been considered and therefore zoning will be static in nature, rather than dynamic and forward-looking. Without intervention supported by the LDCF, the capacity to incorporate climate change into the planning, design, and implementation phases of coastal afforestation and land zoning programs—including the necessary engagement of coastal communities—will not be built.
32. There are examples of benefits of engagement and empowerment of local communities for effective adaptation. A Poverty-Environment Partnership report on poverty and climate change highlighted that for adaptation to be effective, it is especially important to empower civil society to participate in the assessment of risks and the design and implementation of adaptation activities.<sup>31</sup> For example, the Bangladesh Red Crescent Society and German Red Cross **Community-Based Disaster Preparedness Program (CBDPP)** found that in Chittagong, where women are now fully involved in disaster preparedness and livelihood support activities, there has been a huge reduction in the number of women killed or affected by extreme climate events. In addition, Bangladesh is one of the first countries to initiate community-based adaptation (CBA) to climate change, addressing both variability and extreme events, through the GEF-funded **Community-Based Adaptation Program**.<sup>32</sup> It will enhance the adaptive capacity of communities, and/or the ecosystems on which they rely, to climate change. Resources from the LDCF will be used in the proposed project to empower women through engagement in the planning and design of activities to build long-term adaptive capacity, such as the development of household- and community-level risk reduction plans, identifying climate-resilient livelihoods, and improving information flows regarding extreme events.
33. The methodologies, types of livelihood diversification, and other findings from these baseline projects will inform coastal management and livelihoods activities in the proposed project, helping to improve quality of life in target areas. Although there is a range of projects underway that have relevance to building adaptive capacity in the coming decades, many of them have not been designed with long-term climate change in mind. The institutional and human capacities at different levels to assess climate information, and to develop and implement climate change adaptation interventions are still in their early stages of development. An integrated framework and targeted capacity building for assessing, planning, implementing, monitoring, and evaluating climate change risks in coastal areas is urgently needed.

<sup>29</sup> FD, MoEF, 2005. Coastal Charland Afforestation Project (2005-2010)

<sup>30</sup> FD, MoEF, 2008. Climate Change Resilient Afforestation in Bangladesh (2008-2012)

<sup>31</sup> Poverty-Environment Partnership, 2003. *Poverty and Climate Change: Reducing the Vulnerability of the Poor through Adaptation*. UNDP, UNEP, World Bank, ADB, AfDB, GTZ, DFID, OECD, EC on behalf of the Poverty-Environment Partnership. Accessed on 14 April 2008 at <http://www.energyandenvironment.undp.org/undp/indexAction.cfm?module=Library&action=GetFile&DocumentAttachmentID=1033>

<sup>32</sup> Community-Based Adaptation Programme. Information accessed on 14 April 2008 at [http://www.undp-adaptation.org/projects/websites/index.php?option=com\\_content&task=view&id=203](http://www.undp-adaptation.org/projects/websites/index.php?option=com_content&task=view&id=203)



### Threats, Root Causes, and Barriers Analysis

34. Several studies indicate that coastal zone vulnerability will be acute due to the combined effects of sea-level rise, subsidence, and changes in upstream river discharge, cyclones, and coastal embankments (BCAS/RA/Approtech, 1994<sup>33</sup>, WB, 2000<sup>34</sup>). The four types of primary physical effects include saline water intrusion, drainage congestion, damage from extreme events, and changes in coastal morphology (WB, 2000).<sup>35</sup>
- **Saline water intrusion**—The effect of saline water intrusion in estuaries and into the groundwater will be enhanced by low river flows, sea level rise, and subsidence. Pressure from the growing population and rising demand due to economic development will further reduce the relative availability of freshwater supplies in the future. Water supplies for coastal agriculture, public consumption, and industrial use will be severely affected. Salinity intrusion, for different sea level rise scenarios, has been estimated using mathematical models. An analysis in the NAPA found that areas with a salinity level of 5 parts per thousand (ppt) under the “business as usual” scenario are increasing.<sup>36</sup> The 5 ppt line moves from the lower tip of the Sundarbans to a point at the lower Meghna River at Chandpur by 2100 under an assumed SLR of 88 cm. The salinity front will move about 60 km to the north in about 100 years. SLR will increase the salinity level in the Tentulia River which is, currently the only fresh water pocket in the estuary.
  - **Drainage congestion**—The combined effect of higher sea levels, subsidence, siltation of estuary branches, higher riverbed levels, and reduced sedimentation in flood-protected areas will impede drainage and gradually increase water-logging problems. This effect will be particularly strong in the coastal zone. The problem will be aggravated by the continuous development of infrastructure (e.g. roads), reducing further the limited natural drainage capacity in the delta. Increased periods of inundation may hamper agricultural productivity, and it will also threaten human health by increasing the potential for water-borne disease.
  - **Damage from extreme events**—In the coming decades, the number of coastal populations in need of annual emergency relief will continue to increase as more frequent and severe extreme climate events (including cyclones, tidal surge and storms, and floods) occur with climate change.<sup>37</sup>
  - **Changes in coastal morphology**—Disturbances of coastal morphological processes will become a significant problem under a warmer climate change regime. Bangladesh’s coastal morphological processes are extremely dynamic, partly because of the tidal and seasonal variations in river flows and runoff. Climate change is expected to increase these variations through two main processes: a) an increase in bank erosion and bed-level changes in coastal rivers and estuaries; and b) disturbance of the balance between river sediment transport and deposition in rivers, flood plains, and coastal areas. Disturbances of the sedimentation balance will result in higher bed levels of rivers and coastal areas, which in turn will lead to higher water levels.

<sup>33</sup> BCAS/RA/Approtech, 1994. *Vulnerability of Bangladesh to Climate Change and Sea Level Rise: Concepts and Tools for Calculating Risk in Integrated Coastal Zone Management*. BCAS, Dhaka

<sup>34</sup> World Bank, 2000. *Bangladesh: Climate Change and Sustainable Development*, Report No. 21104-BD, Rural Development Unit, South Asia Region, Dhaka.

<sup>35</sup> *Ibid*

<sup>36</sup> MoEF, 2005, *National Adaptation Programme of Action (NAPA)*, Ministry of Environment and Forests, Government of Bangladesh, Dhaka

<sup>37</sup> UNCT, 2004. *Millennium Development Goals Report*

35. Due to the backwater effect, the water levels around polders are also likely to be affected. A hydrodynamic model shows that high water levels in rivers surrounding polders may increase in the range of 30-80 cm for SLR in the range of 32-88 cm (anticipated by 2100). This rise will eventually hamper the proper functioning of a number of polders.<sup>38</sup> Earthen embankments constructed by the Bangladesh Water Development Board (BWDB) are subject to erosion, which is acute on the offshore islands. Embankments often disappear within a year or two after the start of erosion. However, the BWDB's mandate has been restricted to major repairs only when embankments are close to failure or completely failed. Accordingly, physical protection through close supervision is now an urgent issue for coastal farmers whose crop fields are adjacent to the embankments. These vulnerable coastal farmers could be involved in maintaining the embankments, which helps enhance the physical resources for adaptation. Farmers could share the benefits derived from natural resources on the shoulders of coastal embankments. In this regard, special attention is required for resource generation on the outer slopes of these embankments. The intrusion of tidal saline water has often led to erosion through the root systems of planted trees on outer slopes. To overcome this type of erosion, BFRI has developed an effective technique of planting vetiver grass and using wider spacing between trees, including palm species.<sup>39</sup>
36. A recent study on the relationship between livelihoods and adaptive capacity in coastal areas revealed that physical or natural vulnerabilities are greatest in relation to small farmers' livelihoods all along the coastal zone.<sup>40</sup> Cyclones, tidal bores, water logging, drainage congestion, various types of flooding, sand deposition, and soil salinity are major hindrances to farming and production. These are also the major causes of sudden crop damage to small farmers. Physical vulnerability varies across the coastal region. For example, the main hazards for target districts are as follows:
- Patuakhali and Barguna—water logging, soil salinity, and lack of cultivable land are significant
  - Bhola—tidal flooding, cyclones, tidal bores, salinity, erosion, and siltation
  - Noakhali—cyclones, tidal bores, river erosion, and drainage congestion
  - Chittagong—cyclones, tidal bores, different types of flood, and deterioration of soil fertility due to salinity.
37. Rural wage laborers are more vulnerable to economic and social factors, such as lack of employment opportunities and a low wage rate. Physical vulnerabilities, such as a lack of cultivable land and climate stressors, affect agriculture and therefore the employment opportunities available to wage laborers.
38. Bangladesh is already vulnerable to vector- and water-borne diseases, but over the years their prevalence has shown an upward trend. Other diseases like diarrhea and cholera are also on the increase especially during the summer months. Climate change also brings about additional stresses like dehydration, malnutrition, and heat-related morbidity, especially in children and the elderly. These problems are generally closely interlinked with water supply and sanitation issues. For example, Munshigang Union in Shyamnagar Upazila of Satkhira District is a risk-prone coastal area (close to the Bay of Bengal but bounded by the Sundarbans in the south) facing severe problems related to salinity, tidal inundation, and cyclones. A health study conducted in the area indicates a multitude of health risks that vulnerable coastal areas will face with salinization and other climate

<sup>38</sup> MoEF, 2005, *National Adaptation Programme of Action (NAPA)*, Ministry of Environment and Forest, Dhaka, Bangladesh.

<sup>39</sup> BFRI, 2003. *Technologies and Information Generated for Coastal Afforestation in Bangladesh*.

<sup>40</sup> IWM and CEGIS, 2007, *Impacts of Sea Level Rise on Coastal Community and Livelihoods*



change impacts. Locals have reported that the following diseases and ailments are common in the area: acute respiratory infection, thalasemia, early delivery, diarrhea, skin infections and rashes, tuberculosis, malaria, pre-eclamptic toxemia, hypertension, abdominal pain, post-pectum hemorrhage, pregnancy-related complications, dysentery, jaundice, malnutrition, small pox, irritable bowl syndrome, acidity, and diabetes.<sup>41</sup>

39. Greater efforts are needed to strengthen human and institutional capacity and mechanisms to support community-based adaptation, although awareness on extreme climate events and risks has increased since Bangladesh has experienced significant damage from recent events. The key factors of adaptive capacity, such as an understanding of climate change and variability impacts and the measures needed to address them, must be further developed. For example, the incorporation of specific climate risks into coastal planning frameworks at the national or community level is limited. Early warning systems in coastal areas are limited, both in spatial scope and the level of effectiveness needed to support policy formulation. The mechanisms for conveying warnings to vulnerable communities are weak (in terms of area and population coverage), and the timing of responses is not appropriate. Even when warnings are provided, the capacity to act is limited due to a lack of understanding of potential preparedness and response options.
40. It is evident from the coastal zone management policies that climate change-related extreme events have been recognized, but slow onset changes, such as salinity intrusion, have not been addressed. Furthermore, policies, strategies, and action plans are prepared based on historical climatic events. Future changes in the climatic system and related risks are not reflected in the many policies and strategies that influence coastal development. The lack of and/or failure to include findings from climate risk assessments in relevant sectoral (e.g. water, agriculture, and forestry) policies and programs is a major constraint in achieving and sustaining MDGs. This is partly because climate change concerns are relatively new, but also results from a lack of capacity to address a recognized deficiency in the policy and institutional environment.
41. Land ownership, tenure, and competing land use priorities among different government agencies and other stakeholders remain important determining factors for the sustainability of mangrove forest cover. Approximately 20 years after mangrove plantation, the newly accreted char becomes stabilized and forested land allocations by the MoL become a contentious issue. Local communities receiving the land begin to build settlements, which leads to the destruction of coastal forest and exposure to cyclones and storm surges. In addition, benefit sharing systems between land encroachers and absentee landlords create antagonistic relationships between local farmers and the government, resulting in further damage to the coastal forests by outsiders.<sup>42</sup>
42. Since coastal management is a multi-stakeholder issue, the complexities of integrating climate risk into the coastal management policy environment will remain untackled. Existing fragmentation between different government agencies and departments, and little policy integration across sectors—let alone incorporation of climate change risk—will likely continue. Facilitating a national and sub-national dialogue to create the necessary policy environment will remain overlooked in favor of more pressing short-term reactive actions. Without GEF intervention, the institutional and policy environment will continue to cater to pressures arising from current weather, and not lead to the necessary policy options to better manage climate change risks.
43. In order to address the above concerns within the proposed project, national planners and climate change practitioners will be guided to ask the following critical questions and then utilize tools such

<sup>41</sup> BCAS, 2007. *Human Health and Climate Change: Bangladesh Case Study*. BCAS, Dhaka

<sup>42</sup> FD, MoEF, 2005. *Coastal Charland Afforestation Project (2005-2010)*



as the Adaptation Policy Framework (APF), Adaptation Impact Matrix (AIM), or the Local Options for Communities to Adapt and Technologies to Enhance Capacity (LOCATE) while designing and implementing community-based adaptation interventions:

- What is the vulnerability context?
- What are the vulnerable sectors and where are geographical vulnerability hot spots?
- What are the various livelihood groups, e.g. farmers, sharecroppers, fishermen, wage laborers, etc?
- What types of development, livelihood, and disaster management activities are ongoing?
- What types of adaptation activities can be designed at the community level?
- How can the project reduce exposure of the sector and communities to climate threats?
- How can the project improve the community's and other stakeholders' adaptive capacity?
- What changes and benefits can be achieved from different project activities compared to the pre-project baseline?
- How can the project complement long-term national goals to support adaptation and sustainable development?

#### **Stakeholder Analysis**

44. The project formulation team has held stakeholder consultations throughout the PPG phase to ensure ownership and gather feedback on the project design (see Annex 2 for details on stakeholder consultations). These consultations include a PPG Inception Workshop held on 24 October 2007, meetings with the Bangladesh Agricultural Research Council (BARC), Bangladesh Agricultural Research Institute (BARI), the Coastal Land Zoning Project under MoL, and the FD. A number of stakeholder consultation meetings were organized with upazila- and district-level government officials, local journalists, NGOs, chambers of commerce, and community members in six coastal districts (Barguna, Patuakhali, Noakhali, Laxmipur, Bhola, and Chittagong) during January and February 2008. In addition, team members also held discussions with practitioners and experts in the government, academia, and NGOs who are working on climate change issues.
45. See Section IV, Part IV for more details on stakeholder involvement and responsibilities. See also Annex 2 for a list of stakeholder consultations.

**Table 1: Agencies Involved with Project Implementation**

Agency/Name	Role in project
Ministry of Environment and Forests	<ul style="list-style-type: none"> <li>• Implementing Ministry who will be responsible for executing the proposed project.</li> <li>• Delegate implementation responsibilities to its Forest Department, Forest Research Institute, Ministry of Agriculture/DAE, Ministry of Fisheries and Livestock, Ministry of Land/Coastal Land Zoning Project and any other agencies, such as NGOs or NGO Consortium(s) that will be identified during the program implementation phase, particularly in the Inception Workshop.</li> <li>• Chair the National Steering Committee.</li> <li>• Appoint a National Project Director (NPD) from the Ministry of Environment and Forests in the post of Joint Secretary and above.</li> <li>• Primary executive entity for coordination with other stakeholders</li> </ul>



Agency/Name	Role in project
	through its Project Management Unit.
Forest Department, Ministry of Environment and Forests	<ul style="list-style-type: none"> <li>• Lead Executing Agency (EA) and carry out “Climate-Resilient and Community-Based Coastal Afforestation Measures”</li> <li>• House the Project Management Unit (PMU).</li> </ul>
Ministry of Land	<ul style="list-style-type: none"> <li>• Member of the National Steering Committee.</li> <li>• Review impacts of existing land use policies on the sustainability of protective greenbelt structures and develop policy recommendations for MoL to enhance the sustainability of coastal forest cover</li> <li>• Develop a policy study on the feasibility of longer term transfer of newly accreted lands in the coastal areas from MoL to FD for mangrove development with local community participation</li> <li>• Incorporation of climate change aspect to facilitate adaptation in coastal area through developing a dynamic land zoning.</li> <li>• Allocation of newly accreted coastal lands to FD for afforestation and establishment of a community-based management system.</li> </ul>
Bangladesh Forest Research Institute (BFRI)	<ul style="list-style-type: none"> <li>• Member of the National Steering Committee.</li> <li>• Implement Model Demonstration of Mangrove and non-mangrove plantation</li> <li>• Provide training to participating families in model demonstration of mangrove and non-mangrove plantation</li> <li>• Share learning and experiences at national and international level as resources permit.</li> </ul>
Ministry of Food and Disaster Management/Disaster Management Bureau,	<ul style="list-style-type: none"> <li>• Participation in National Steering Committee</li> <li>• Participation in disaster management and climate risk reduction activities at the District and Upazila/ Local Level, particularly in coastal areas</li> <li>• Recipient of input from the project to incorporate climate change projections in the definition of disaster management plans, policies and projects</li> <li>• Bring synergy with future activities by Comprehensive Disaster Management Programme</li> </ul>
Ministry of Fisheries and Livestock/Department of Fisheries/Department of Livestock	<p>Implement activities related to output 1.3 particularly</p> <ul style="list-style-type: none"> <li>• Develop training module and provide training on Poultry, Livestock and Fisheries.</li> <li>• Promote through demonstration of climate resilient aquaculture as alternative livelihoods of the vulnerable coastal communities.</li> <li>• Promote through demonstration of poultry and livestock as livelihood options.</li> <li>• CBO can be engaged if necessary to implement livelihood activities at local level through consultation with District Environment and Forest Development Committee (DEFDC), District Disaster Management Committee (DDMC) and Upazila Development Coordination Committee (UDCC)</li> </ul>
Ministry of Agriculture/Department of	<p>Implement activities related to output 1.3 particularly</p> <ul style="list-style-type: none"> <li>• Provide guidance and training on agriculture-related livelihood</li> </ul>



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Agency/Name	Role in project
Agriculture Extension	activities <ul style="list-style-type: none"> <li>• Contribution of climate tolerant/suitable crops, horticulture and agro-forestry for livelihood diversification</li> <li>• Provision of field-level technical support to farmers in target upazilas</li> <li>• CBO can be engaged if necessary to implement livelihood activities at local level through consultation with District Environment and Forest Development Committee (DEFDC), District Disaster Management Committee (DDMC) and Upazila Development Coordination Committee (UDCC)</li> </ul>
Bangladesh Rice Research Institute (BRRI)	Implement activities related to innovative research by inviting research proposal <ul style="list-style-type: none"> <li>• Conduction of field-level adaptation research on non-rice crop diversification</li> <li>• Demonstration of adaptive technologies in high-salinity areas</li> <li>• Provision of training to project staff and farmers in adopting suitable rice varieties that have been tested in coastal areas (salt and inundation tolerant varieties)</li> </ul>
Bangladesh Agricultural Research Institute (BARI)	Implement activities related to innovative research by inviting research proposal <ul style="list-style-type: none"> <li>• Conduction of field-level adaptation research on the introduction of saline-tolerant rice varieties, including adjusted cropping cycles to avoid high saline periods</li> <li>• Provision of training to project staff and farmers (including women) in adopting suitable vegetable and orchard cultivation technologies that have been tested in coastal areas (inputs from consultation)</li> </ul>
District Environment and Forest Development Committee (DEFDC), District Disaster Management Committee (DDMC) and Upazila Development Coordination Committee (UDCC)	<ul style="list-style-type: none"> <li>• Facilitate effective coordination of project at the district level</li> <li>• Local conflict resolution related to land use issues</li> <li>• Through UDCC, local government bodies such as Union Parishads, will be mobilized to facilitate the project</li> <li>• District committees may assign CBOs if necessary to implement livelihood related activities at local level as part of output 1.3.</li> <li>• Community mobilization by invitation of the Project Management Unit and any other component</li> </ul>
Local Communities/CBOs	<ul style="list-style-type: none"> <li>• Participate in the planning and implementation of project interventions at the village level by invitation of the project management unit and other components through consultation with district committees (district environment and forest committee, and district disaster management committee)</li> </ul>
Research Organizations	<ul style="list-style-type: none"> <li>• Design and development of adaptation plans for pilot areas, on the basis of competitive procurement;</li> <li>• Design and development of climate change awareness campaigns for local communities by invitation of the Project Management Unit</li> </ul>
UNDP Country Office	<ul style="list-style-type: none"> <li>• Assurance and Technical Advisory role for implementation of the</li> </ul>

Agency/Name	Role in project
	<p>proposed Project</p> <ul style="list-style-type: none"> <li>• Support National Project Director (NPD), Project Director (PD) and Project Management Unit in implementing different project components</li> <li>• Progress reporting to GEF</li> <li>• Participation in the National Steering Committee</li> <li>• Coordination of activities with the Project Management Unit (PMU)</li> <li>• Technical and financial monitoring of the use of project funds</li> <li>• Mobilization and coordination of support from international partners through a global network</li> <li>• Facilitation of international dissemination of project knowledge</li> </ul>

## PART II: Strategy

46. The project uses a four-pronged approach to reduce the vulnerability of communities and ecosystems in coastal zones. First, community-based adaptation measures at the local level will assist the diversification of livelihoods, strengthen natural barriers against climate change-induced inundation and erosion, and improve community warning systems to protect livelihood assets and facilitate the flow of climate-related information. Second, institutional capacity will be strengthened to incorporate climate risk reduction into coastal zone development and management at the national and sub-national levels. At the sub-national level, capacity building efforts will focus on the five coastal districts of Barguna and Patuakhali (Western Region), Bhola and Noakhali (Central Region), and Chittagong (Eastern Region). Third, the policy framework regarding coastal zone management will be assessed, and recommendations for climate-resilient policies will be developed, particularly regarding land use in coastal areas. Finally, knowledge gained through the project will be shared through the UNDP Adaptation Learning Mechanism with other areas and countries facing similar climate change threats in coastal communities. This strategy forms an additional component on top of existing and pipelined project activities under various ministries and departments (see Annex 4).

### *Institutional, Sectoral, and Policy Context*

47. More than a dozen sectoral policies support the need for coastal afforestation and integrated coastal management in Bangladesh. The *National Environment Policy* (1992) called for the sustainable use of coastal and marine resources. It indicated that newly accreted lands will be transferred to the Forest Department with the priority to stabilize them through afforestation and protect them from erosion.<sup>43</sup> The *National Forest Policy* (1994) acknowledged the need for massive plantation and the maintenance and preservation of forests in coastal areas to reduce the impacts of cyclones, tornadoes, and tidal surges. It also mentioned that effective measures will be taken for afforestation in the newly accreted chars in the coastal areas.<sup>44</sup> The *National Land Use Policy* (2001) supports both the environment and forest policies and states that 25% of the total land should be under forest coverage, which could be largely achieved through afforestation on chars and other suitable land. The land use policy also stated that forests declared by the MoEF will remain as forested lands and an effective greenbelt will be created all along the coast.<sup>45</sup> The *Coastal Zone Policy* (2005) aims to

<sup>43</sup> MoEF, 1992. *National Environment Policy*

<sup>44</sup> MoEF, 1994. *National Forest Policy*

<sup>45</sup> MoL, 2001. *National Land Use Policy*

achieve a balance between ecological systems and overall development by protecting and improving the environment, which in turn includes protection against natural disasters.<sup>46</sup>

48. However, the majority of policies relevant to coastal management and risk reduction in Bangladesh address recurrent natural hazards, such as cyclones and storm surges. Due to a lack of institutional and human capacity, and a lack of technical expertise to apply emerging climate change information, these policies and frameworks largely ignore the new dimensions of threats that are associated with more consistent and gradual climate change effects, such as SLR, increasing inundation, dynamic changes in precipitation, and higher salinity. Bangladesh's coastal development policies address the coastal ecosystem in a "static" state rather than taking climate change and its dynamic impacts on communities into consideration, which hinders the ability of individuals and communities to act, or makes certain adaptation strategies unviable.
49. The Forest Department has the mandate to carry out afforestation in coastal areas to protect land and people from natural disasters. Ongoing afforestation activities are described in Part I (Baseline Analysis) and are summarized in Annex 4 of this project document. Coastal mangrove afforestation along the entire southern coastal frontier is an innovative measure that began in 1960; This initiative gained momentum in the 1980s with the aid of development partners when afforestation programs were extended over foreshore islands, embankments, and along the open coasts. Between 1960 and 2000, 142,835 ha of mangroves have been raised under a number of coastal afforestation projects. The present area of mangrove plantation is less than the total planted area due to loss by natural calamities.
50. Interventions related to climate risk reduction in coastal areas have predominantly focused on stand-alone reactive interventions. The Government of Bangladesh, in its coastal development strategy, has mobilized resources to create greenbelts through the auspices of the **Forest Management Plan (FMP)** and in particular a **Coastal Greenbelt Project**. The Forest Department is currently implementing a social forestry-based coastal island development and resettlement project with financial support from the Government of The Netherlands. The Coastal Greenbelt Project has been implemented with assistance from the Asian Development Bank to support disaster risk reduction by stabilizing embankments.
51. The **Coastal Land Zoning Project** will prepare land zoning maps and identify opportunities within that process to shift towards a dynamic land zoning system that incorporates climate change impacts, particularly sea level rise, salinity intrusion, and storm surges.
52. All development plans, including the PRSP, prioritize agriculture and rural development as instruments of reducing widespread rural poverty. The **First Five Year Plan (FYP, 1973-1978)** emphasized agricultural productivity and attaining food-grain self-sufficiency through introducing new seeds varieties, fertilizer, and irrigation technologies as the dominant strategy. The **Second FYP (1981-1985)** and **Third FYP (1985-1990)** emphasized intensifying the use of modern technology. The **Fourth FYP (1990-1995)** emphasized a participatory "bottom-up" planning process, and the **Fifth FYP (1995-2000)** emphasizes broad-based rural development.

### ***Project Rationale and Policy Conformity***

53. The proposed project will pilot interventions that a country-driven process has deemed urgent and immediate, and in this respect, it meets the eligibility criteria of the Least Developed Country Fund

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<sup>46</sup> MoWR, 2005. *Coastal Zone Policy*





(LDCF) as outlined in the LDCF guidance paper.<sup>47</sup> The project fits within the scope of an LDCF project, as it will address immediate and urgent needs, such as monitoring of conditions for and development of measures to respond to coastal flooding, raising awareness and understanding of local communities and national policy makers about the necessity and benefits of preparedness for climate change and climate hazards, and early warnings against climate-related extreme events. The proposed project will be implemented in full coordination with the National Communication (NC) process. If successfully implemented, the benefits of the project will continue after project completion. The project has been designed on the basis of multi-stakeholder consultations and participation (see Annex 2).

54. The proposed project will link with regional and national programs where UNDP is the Implementing Agency, including the **Second National Communication (SNC)** to the UNFCCC. In addition, the **Comprehensive Disaster Management Programme (CDMP)** of UNDP/DFID supports participatory community-based risk reduction, multi-hazard preparedness, response and mitigation plans for disaster risk management. The latter will serve as a key linkage to the proposed project. Other ongoing UNDP-led programs of relevance include a **Coastal and Wetland Biodiversity Project** and **Empowerment of Coastal Fishing Communities for Sustainable Livelihood**. Many of these programs address baseline natural resource, disaster response, and economic development issues. The lessons from these ongoing projects, including project development and implementation experience, will be brought to bear in the implementation of the proposed LDCF intervention. In this respect, the project will be linked to UNDP-GEF's **Adaptation Learning Mechanism**.
55. This project will ensure coordination with the GEF-funded Coastal and Wetland Biodiversity Management Project. Bangladesh is also one of the countries to implement the **Sustainable Land Management Programme** (a UNDP-GEF initiative that will look into coastal land use planning and land zoning issues) and is one of 10 pilot countries for the UNDP-GEF (Council-approved) **Community-Based Adaptation Programme**. This LDCF project will ensure coordination through CBA mechanisms at the local level through the Climate Change Cell at the MOEF (focal point for the CBA) and through UNDP. Recently, Bangladesh also became a new member of the **GEF/Small Grants Programme** which has relevance to the proposed LDCF intervention as the Country Strategy for adaptation highlights community-based adaptation to climate change projects as one of the highest priorities.
56. The MoEF led the preparation of Bangladesh's **National Adaptation Program of Action (NAPA)** in response to the decision of the Seventh Session of the Conference of the Parties of the United Nations Framework Convention on Climate Change (UNFCCC). The preparation process followed the principles outlined in the annotated guidelines prepared by the Least Developed Countries Expert Group (LEG). The basic approach to NAPA preparation was to uphold the country's sustainable development goals, while recognizing the need to address environmental issues. A wide range of stakeholders participated in the process to identify urgent priorities and allocate valuable resources. The Bangladesh NAPA was submitted to the UNFCCC Secretariat in 2005, and it identifies the first priority as a "Community-Based Adaptation Coastal Afforestation Project". The proposed project is the first community-based adaptation project to be implemented by the Government of Bangladesh to deal with adverse impacts of climate change with special focus on cyclone, storm surges, salinity, and community livelihoods.

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<sup>47</sup> GEF/C.28/18, 12 May 2006



57. The project is fully in line with the UN Development Assistance Framework (UNDAF), the UNDP Country Programme Document (CPD), and the Country Programme Action Plan (CPAP)<sup>48</sup>, specifically UNDAF Outcome 4 (*Human security is strengthened and vulnerability to social, economic and natural risks is reduced*).<sup>49</sup> This project is aligned with UNDP's strategic priorities for adaptation on climate change-related risk management (*exposure and vulnerability to climate change-driven risk and hazards reduced*) and coastal development (*exposure and vulnerability of population, infrastructure, and economic activity reduced*). The project also addresses the Millennium Development Goals (MDGs), specifically MDG Goal 7: "Ensure Environmental Sustainability" and MDG 1: "Eradicate Extreme Poverty and Hunger".
58. The proposed project is consistent with Bangladesh's National Priority 4 (Social Protection and Disaster Risk Reduction) and with the *UNDP Country Program for Bangladesh (2006-2010)*<sup>50</sup> and Poverty Reduction Strategy Paper (PRSP)<sup>51</sup> goals for disaster management. UNDP has been assisting Bangladesh in disaster management since 2001, with a shift in approach from the conventional "disaster response" to the more comprehensive "disaster risk reduction" including climate change risks. Responding to the needs of Bangladesh, UNDP will extend support to strengthen the national disaster management system, communities' institutional mechanisms for disaster management, and promote the mainstreaming of risk reduction in development planning through the current UNDP Country Program.
59. In line with the above efforts, the proposed project addresses the intersection of disaster risk reduction and climate change adaptation, and supports the achievement of UNDAF outcomes for Bangladesh. All of these major guiding strategies emphasize the UN's goal to promote an equitable and sustainable growth in Bangladesh that contribute to faster and more efficient poverty reduction and sustainable use of natural resources.

#### ***Project Goal, Objectives, Outcomes, and Outputs/Activities***

60. The **goal** of the project is to promote climate-resilient development in the coastal areas of Bangladesh. The **objective** of the project is to reduce vulnerability of coastal communities to the impacts of climate change-induced risks in four upazilas in the coastal districts of Barguna and Patuakhali (Western Region), Bhola (Central Region), Noakhali (Central Region), and Chittagong (Eastern Region).

#### **OUTCOME 1: Enhanced Resilience of Vulnerable Coastal Communities and Protective Systems to Climate Risks**

##### *Without GEF intervention (baseline Project)*

61. Improving coastal resilience in Bangladesh has predominantly focused on stand-alone reactive interventions following climate disasters at both the formal and informal levels, but greater attention to the long-term maintenance of greenbelt ecosystems is needed. Although greenbelts of mangroves and mainland forests along the coastline would reduce loss of life and damages from climate-related

<sup>48</sup> [www.un-bd.org/undp](http://www.un-bd.org/undp)

<sup>49</sup> UN and GoB, 2005. *United Nations Development Assistance Framework (UNDAF) 2006-2010*. Accessed on 14 April 2008 at [http://www.un-bd.org/docs/BGD%20UNDAF%20\(2006-2010\).pdf](http://www.un-bd.org/docs/BGD%20UNDAF%20(2006-2010).pdf)

<sup>50</sup> UNDP, 2005. *UNDP Country Programme for Bangladesh (2006-2010)*. October 2005. Accessed 14 April 2008 at [http://www.undp.org/rbap/Country\\_Office/CP/CP\\_BGD.pdf](http://www.undp.org/rbap/Country_Office/CP/CP_BGD.pdf)

<sup>51</sup> Planning Commission, 2005. *Bangladesh: Unlocking the Potential: National Strategy for Accelerated Poverty Reduction*. Prepared by the General Economics Division, 16 October 2005. Accessed 14 April 2008 at [http://siteresources.worldbank.org/INTPRS1/Resources/Bangladesh\\_PRSP\(Oct-16-2005\).pdf](http://siteresources.worldbank.org/INTPRS1/Resources/Bangladesh_PRSP(Oct-16-2005).pdf)



impacts, important factors of sustainability in the context of emerging climate change risks have largely been ignored. Under the current coastal land use system, newly accreted coastal lands are handed over to the FD for mangrove development for a period of 25 years. After mangroves are fully grown, the forested lands are taken back from the FD and distributed among local people for settlement or farming. For example, over 40,000 ha of mangrove forests developed by the FD have been subsequently cleared by the people whom the forest lands were meant to benefit. The forests were cleared for agriculture, shrimp farming, salt pans, and settlements after the redistribution of land to locals. Therefore, the greenbelts do not support adaptation as physical barriers against extreme climatic events and as sources of local livelihoods in the coming years of climate change.

62. There is a clear requirement for active community participation and incentives for maintaining new mangrove plantations. As the frequency of extreme climatic events, such as cyclones and storm surges, as well as gradual climatic effects such as salinization, gradual erosion, and coastal inundation are projected to increase, there is concern that the technical range and geographical reach of current baseline interventions in the creation of coastal greenbelts will be insufficient to reduce vulnerability. For example, in response to high salinity, BARI and BRRI have demonstrated some farming technologies and crop varieties suitable for coastal areas, but they are yet to be disseminated among the wider coastal communities. Opportunities for reducing vulnerability through alternative climate-resilient livelihoods in the coastal area remain to be explored in their full potential. Without GEF intervention, climate change will not be adequately factored into current and planned afforestation projects, and the potential of climate-resilient livelihood options will not be fully analyzed and exploited.
63. Another factor compounding the vulnerability of coastal communities are insufficiencies in the current communication mechanisms that convey hazard warnings to fishermen and other community members. The existing systems are weak in terms of area and population coverage and the timing of responses is not appropriate. Even when warnings are provided, the capacity to act is limited due to a lack of awareness of potential response options, a lack of warning infrastructure, and inadequate communication procedures.
64. Baseline activities include a coastal development strategy to create greenbelts through the auspices of the Forest Management Plan (FMP), and in particular through the Coastal Greenbelt Project. The FD is currently implementing a social forestry-based coastal island development and resettlement project with financial support from the Netherlands Government. In addition, a coastal greenbelt project has been implemented with assistance from the Asian Development Bank to support stabilization of embankments. Recently, the GOB requested USD 57.14 million from the World Bank for a Forest Resources Management Project.

*With GEF intervention (additionality argument)*

65. With GEF intervention and funding through the LDCF, coastal communities will be actively involved in mangrove afforestation, and the development of climate-resilient livelihoods, which will improve the sustainability of ecosystems needed to protect against climate change-induced hazards. The project will implement risk reduction measures in communities exposed to climate change risks and ensure the sustainability and resilience of protective buffer zones. By ensuring that these buffer zones incorporate climate change projections (expected salinity, water tables, inundation times, etc.) into their design and implementation, this project will help reduce climate-induced coastal damages. For example, plantations will use improved seed sources that are more tolerant to climate change and provide twice the existing gain per unit planted, indicating a two-fold safety assurance against

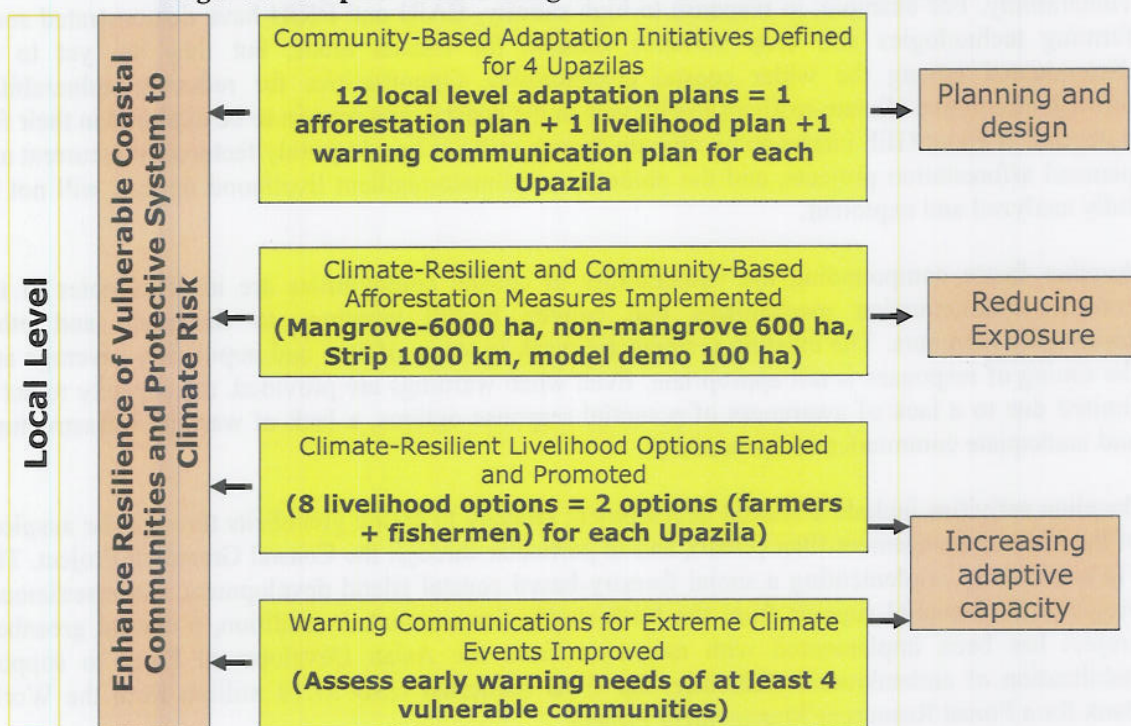


climatic hazards.<sup>52</sup> Facilitating alternative climate-resilient livelihoods will reduce land clearing and other threats to protective buffer ecosystems. LDCF funding will help to develop mechanisms for community-based mangrove development, as described in indicative activities below. Other interventions will include facilitating alternative livelihood options through crop diversification, creating freshwater reservoirs for dry season agriculture, clustering villages in raised lands, creating community ponds for domestic and small-scale irrigation, harvesting rainwater, securing ground water provisions, intensifying brackish water aquaculture, and strengthening hazard early warning. These will be piloted at project sites, with upscaling mechanisms identified.

Outputs and indicative activities

66. Enhancing the adaptive capacity of vulnerable coastal communities and protective systems will be accomplished through undertaking activities under four key Outputs (see Figure 3):

**Figure 3: Outputs Contributing to the Achievement of Outcome 1**



**Output 1.1 – Community-Based Adaptation Initiatives Defined for 4 Upazilas**

67. This Output will focus on the participatory development of 12 community-based adaptation plans in 5 districts (Barguna, Patuakhali, Bhola, Noakhali, and Chittagong), encompassing the following initiatives: i) Coastal afforestation (mangroves, non-mangroves, and model demonstrations); ii) Local livelihood diversification; and iii) Improving climate information and early warning communications for vulnerable communities. Site-specific adaptation plans will include the definition of roles and responsibilities among community members, government institutions, and CBOs, and mechanisms to monitor the impacts of interventions. The adaptation plans will detail the

<sup>52</sup> Nandy, 2008. Climate Change Resilient Coastal Development, PPG Inception Workshop - CBACCCB, Oct. 24, 2007.



specific areas for mangrove and non-mangrove plantation, as well as identify the communities involved and families that will receive livelihood support based on their vulnerability to climate change-related challenges and opportunities.

68. During the Project Preparatory Grant (PPG) phase by UNDP, the baseline on biophysical, socioeconomic and climate vulnerabilities for different communities was assessed and possible types of interventions were developed (see Annex 1 / Tab. 3 for a needs assessment in target areas and adaptation actions required / supported by communities). Local adaptation needs were assessed and currently available adaptation measures regarding coastal afforestation, existing livelihood options (agriculture-based (crop/livestock), fisheries-based (river/sea), forestry-based (timber/non-timber)), and local preparedness systems for extreme events were documented with the active participation of local communities. Information gained during the PPG will be used to design site-specific activities during the adaptation planning process.

#### *Indicative Activities under Output 1.1*

- 1.1.1 Facilitate community consensus in a participatory manner for **mangrove and non-mangrove coastal afforestation** activities in 4 upazilas in Patuakhali Barguna, Bhola, Noakhali, and Chittagong and develop 1 community-based afforestation plan for each upazila. These four plans will guide the afforestation of at least 6,000 ha of mangrove afforestation, 350 ha of non-mangrove (dyke) plantation, 250 ha (mount) plantation and 1000 km strip plantation of new greenbelt structures. This activity will focus on training in nursery development, maintenance of plantations and sustainable natural resource management with additional livelihood perspectives. At least 15,000 families will be involved in nursery development, plantation, and maintenance of the plantations, which will provide direct livelihood support to the involved families. Household-level information, particularly their livelihood assets, will be used during the selection process to identify participating families. The location of plantations will be based on the availability of land and maximization of protective benefits of the physical and social system.
- 1.1.2 Facilitate community consensus in a participatory manner for **livelihood diversification initiatives** in 4 target upazilas in Patuakhali, Barguna, Bhola, Noakhali, and Chittagong, and develop 1 site-specific adaptation plan in each upazila. At least 400 households will participate in each upazila, for a total of 1,600 participating households. The plans will focus on the following initiatives and promotion of different alternative livelihood options will vary by pilot area as appropriate (see Annex 1/Tab.3 for potential alternatives):
- Crop diversification which will include promotion of salt-tolerant varieties (BRRI 47 and 41) in 12 ha;
  - Promotion of salt and water stress tolerant varieties (Chilli and Maize) in 4 ha;
  - Promotion of water stress varieties (Soybean) in 8 ha;
  - Promotion of horticulture (Kul and Guava) in 8 ha; and
  - Promotion of poultry and livestock in 360 families; and promotion of modern aquaculture with 60 families.
- 1.1.3 Develop one site-specific adaptation plan and build community consensus in a participatory manner for improving **climate information and early warning communications** for 4 upazilas in Barguna, Patuakhali, Bhola, Noakhali, and Chittagong. These plans will focus on measures to improve communications about extreme climate events to vulnerable groups at the community level in time to protect livelihood assets (livestock, harvest, homesteads, means of production).



***Output 1.2 – Climate-Resilient and Community-Based Coastal Afforestation Measures Implemented***

*Indicative Activities under Output 1.2*

- 1.2.1 Organization and training of 12,200 people (in 400 batches) in coastal afforestation activities (nursery, maintenance, guarding, sustainable use of forestry products, and benefits sharing), based on plans developed in Activity 1.1.1;
- 1.2.2 Selection, planting, and maintenance of climate change-resilient mangrove and non-mangrove species in each of the four project sites. Selection of mangrove species is defined in adaptation plans under Output 1.1 and will be accorded with BFRI (see Part IV (Stakeholder involvement plan)). The aim will be to adopt a mix of species that are able to withstand higher salinity and inundation levels, longer inundation times and ensure overall protective functions in extreme weather conditions. The plantation will include a) mangrove plantation of 6,000 ha; non-mangrove plantation (mount) of 250 ha; non-mangrove Plantation (with dykes) of 350 ha; strip plantations on roads and embankments of 1000 km; and a new model demonstration (of both mangroves and non-mangroves) of 100 ha;
- 1.2.3 Regular monitoring and evaluation of afforestation-based adaptation interventions, including impact assessment, project adjustments, and lessons learned;

***Output 1.3 – Climate-Resilient Livelihood Options Enabled and Promoted***

*Indicative Activities under Output 1.3*

- 1.3.1 Based on the needs assessment detailed in Annex 1 / Tab.3 and the potential livelihood options outlined (agriculture-based (crop/livestock), fisheries-based (river/sea/pond), forestry-based (timber/non-timber), community-based (construction/service provision)) the project will implement 2 targeted initiatives to increase the climate resilience of livelihoods in each target Upazila. These measures will include tangible investments that diversify the income generation options and livelihoods resilience in target communities (see Annex 1 / Tab. 3 for potential options assessed during the PPG phase) and provide complementary training to enhance the skills required for such a diversification. Envisaged activities in the agriculture sector will include crop diversification through promoting new salt-tolerant varieties (300 families); promotion of salt- and water-tolerant crop varieties, such as chilli and maize (150 families); promotion of water-tolerant crop varieties, such as soybeans (300 families); promotion of horticulture, such as zuzubi and guava (400 families); promotion of poultry and livestock (360 families); and promotion of modern aquaculture (60 families) in Barguna, Patuakhali, Bhola, Noakhali, and Chittagong, based on plans developed in Activity 1.1.2.
- 1.3.2 Link farmers and fishermen with local-level livelihood assistance providers within the government and private sector. This will include linking the Department of Agricultural Extension (DAE) with farmers as a critical service provider in the agriculture sector.
- 1.3.3 Analyze the value chain of selected products, particularly new agricultural crops that will be promoted by this project and other local products, i.e. agriculture and homestead based products, in 5 districts of Patuakhali, Barguna, Bhola, Noakhali, and Chittagong. This will increase access to marketing channels for community members in the agriculture, fishing, and livestock livelihood groups;



- 1.3.4 Provide systematic technical and financial support to critical elements of the value chains for fishery and agricultural products and ensure access to markets.
- 1.3.5 Regularly monitor and evaluate non-afforestation-based livelihood diversification interventions, including participatory benefits assessment, project adjustments, and lessons learned

**Output 1.4 – Warning Communications for Extreme Climate Events Improved**

- 1.4.1 Assess early warning needs of at least 4 vulnerable communities in 5 districts of Patuakhali, Barguna, Bhola, Noakhali, and Chittagong to safeguard investments in alternative livelihoods and protective ecosystems, based on plans developed in Activity 1.1.3. While activities to enhance early warning systems and disaster preparedness will be addressed through complementary projects such as the CDMP, this activity will ensure tie-in of pilot communities with existing disaster preparedness programs to safeguard adaptation investments and protect alternative livelihood options. The awareness needs of communities as specifically related to climate change resilience will also be addressed under Output 2.5 (Community Awareness Campaign on Climate Risks and Community-based Adaptation Defined and Implemented).

**OUTCOME 2: Climate Risk Reduction Measures incorporated into Coastal Area Management Frameworks**

Without GEF intervention (baseline)

69. The understanding of climate change risks, impacts and potential adaptation measures is currently limited in government agencies as well as civil society in Bangladesh. Climate risks have not been incorporated into coastal planning frameworks at the national and local levels. This is partly because climate change concerns are relatively new, but also because of capacity gaps in accessing, understanding, and applying climate information in sectoral planning.
70. Baseline activities include the CDMP, which is undertaking community risk assessment and developing local level risk reduction action plans. However, the action plans focus primarily on disasters such as floods, cyclones, and erosion; thus, the scope of current initiatives to incorporate climate change risks and adaptation measures into national and local planning must be broadened. Existing disaster management committees deal with extreme events and become functional only when a disaster occurs. Attention to the multiplicity of climate change-induced threats is extremely limited within current institutional frameworks. The capacity of planners to assess, plan, and respond to emerging climate change risks—in an integrated manner, both within their departments and in coordination with other sectors—must be enhanced.

With GEF intervention (additionality argument)

71. The proposed training and other capacity building activities for national, district, and local level planners, policymakers, and community members will create a better understanding of climate change and adaptation, as well as strengthen linkages between institutions. Local institutions at the upazila and union levels, such as disaster management committees, will be able to better integrate climate change risk management into their local planning processes. National and district-level officials will be better equipped to support community-based adaptation. Linkages will be strengthened between climate monitoring and forecasting services and vulnerable communities in coastal areas.

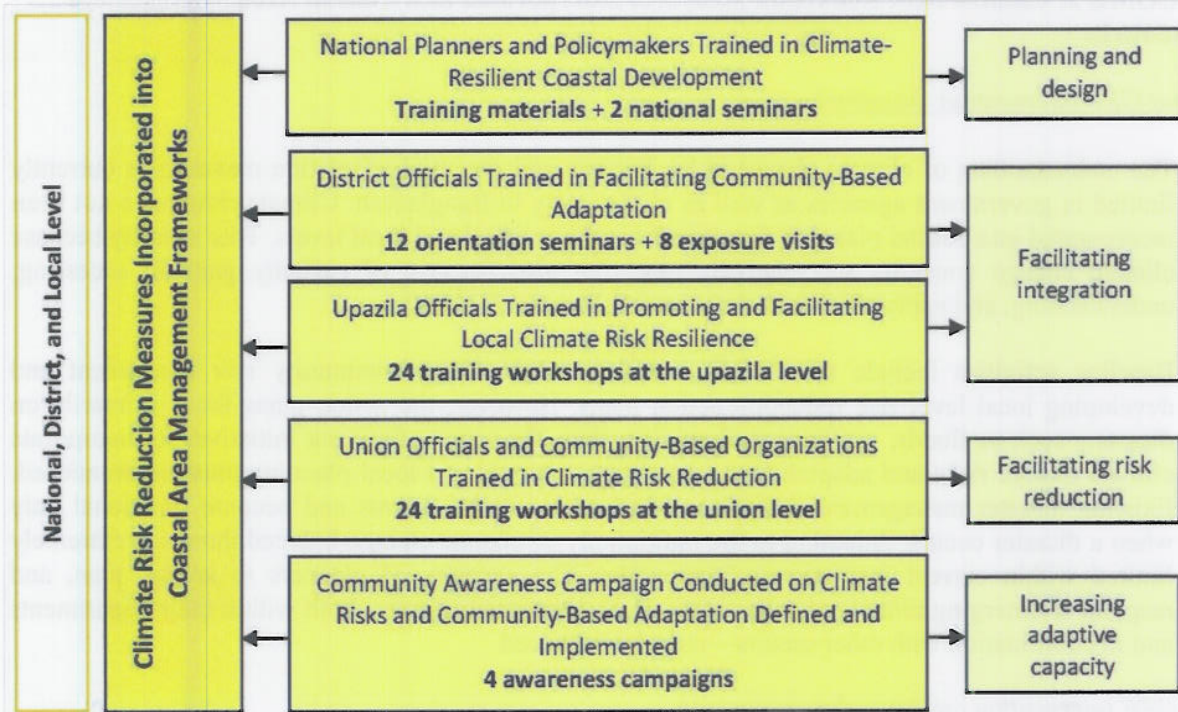


72. LDCF funding will support training, awareness raising, technical guidance and support through local and international expertise, and enhanced institutional coordination between sectoral planners and policymakers in coastal management-related organizations, including the FD, Ministry of Water Resources, Ministry of Agriculture, research institutions, and NGOs. Sectoral planners from government agencies and NGOs will be trained on climate risk assessment and reduction, vulnerability assessment, identification and design of appropriate adaptation options, and climate-considerate multi-sectoral planning. Decision support tools to assist the integration of climate risk reduction into sectoral strategies and programs will be developed.

Outputs and indicative activities

73. Enhancement of technical capacity of planners at different levels includes material development and targeted training for government officials and representatives of organizations involved in coastal management. The current understanding of climate change among sectoral departments and organizations has been assessed during the PPG phase and gaps specifically related to climate-resilient coastal development planning identified. Based on those findings, capacity development activities for the integration of climate change risks into sectoral planning have been developed for national, district, upazila, and local levels.

**Figure 4: Outputs Contributing to the Achievement of Outcome 2**



**Output 2.1 – National Planners and Policymakers Trained on Climate -Resilient Coastal Development**

*Indicative Activities under Output 2.1*

2.1.1 Develop awareness and training materials (such as briefing notes, fact sheets, and cross-sectoral guidelines) on climate-resilient coastal development planning for use by sectoral planners. These materials will be used for capacity development and policy advocacy by the Project Management Unit.





- 2.1.2 Design and conduct two national training seminars on climate-resilient coastal development planning, involving participants from the Ministry of Environment and Forest; Ministry of Land; Ministry of Agriculture; Ministry of Food and Disaster Management; Ministry of Fisheries and Livestock; Ministry of Local Government, Rural Development, and Cooperatives; and the Ministry of Water Resources. At least 60 government officials working in the planning section of the relevant ministries/department, including the ministries mentioned above, will be trained in two batches.

***Output 2.2 – District Officials Trained in Facilitating Community-based Adaptation***

*Indicative Activities under Output 2.2*

- 2.2.1 Design and conduct three seminars each in Patuakhali, Barguna, Bhola, Noakhali, and Chittagong districts: the first on climate change impacts in coastal areas; the second on managing climate risks for natural resources and infrastructure in coastal areas; and the third on facilitating policy dialogue between the national and upazila levels (which will include the provision of adaptation examples to support policy revision and coastal development planning). At least 30 officials from each pilot area will attend each seminar; therefore, the total number of government participants will be 120.
- 2.2.2 Conduct at least eight exposure visits of district officials to project villages to enhance their knowledge base on community-based adaptation and sustainable management of protective systems. Over the course of 8 visits, at least 120 officials will visit pilot villages where different climate-resilient activities and measures will be implemented. 15 officials will visit the project area in one batch.

***Output 2.3 – Upazila Officials Trained in Promoting and Facilitating Local Climate Risk Resilience***

*Indicative Activities under Output 2.3*

- 2.3.1 Design and conduct 30 training workshops (6 in each of the 5 target districts) for District Environment and Forest Development Committee (DEFDC), District Disaster Management Committee (DDMC), Upazila Development Coordination Committees (UzDCCs), Upazila Environment and Forest Development Committee (UEFDC), Upazila Disaster Management Committees (UzDMCs), and other relevant local institutions on assessing, planning, and implementing community-based adaptation measures, and strengthening linkages between key institutions, such as the UDMCs and CBOs. Each training workshop will be attended by 20 officials from government and non-government organizations. Altogether 500 officials will receive training over the project period.
- 2.3.2 Integrate climate resilience considerations and provisions into each sectoral development plan of 5 districts, including health, water resources, agriculture, fisheries, and others. Two sectors will be selected from each site to integrate climate change and develop climate-resilient sectoral plans. A total of 8 sectoral-level plans will integrate climate resilience at the upazila level.
- 2.3.3 Provide technical and financial support to local institutions, such as the UzDMCs, to act as “Local Climate Resource and Support Centers” and ensure coordination among different stakeholders of vulnerable sectors and their current portfolios. This includes consistent monitoring by UzDMCs of links between climate change, current climate risks, and community-based adaptation measures. Project support will enable UzDMCs facilitate meetings, review community-based adaptation initiatives to identify complementary activities

and mandates, and assessing organizations' specific expertise in implementing community-based adaptation.

- 2.3.4 Support the development of a civil society network at upazila level and build advocacy capacity to govern citizens' rights for protection against climate change-induced disasters. The civil society network will meet 12 times over the course of the project to discuss different measures to protect natural and human systems from adverse climate change impacts and identify urgent and immediate gaps in government action that relate to the rights for protection. Project support to the network will include the development and maintenance of a network members list, organization of regular, agenda-based meetings, and dissemination of advocacy materials.

#### ***Output 2.4 – Union Officials and Community-based Organizations Trained in Climate Risk Reduction***

##### *Indicative Activities under Output 2.4*

- 2.4.1 Identify capacity gaps of local institutions, such as Union Disaster Management Committees (UDMCs), in accessing, understanding, utilizing and disseminating climate information
- 2.4.2 Design and conduct 24 training workshops for local institutions on assessing, planning, and implementing community-based adaptation measures.<sup>53</sup> Each training workshop will be attended by 25-30 officials from the local-level institutions; therefore, approximately 500 officials will receive training over the project period.
- 2.4.3 Establish a systematic dialogue between UzDMCs, CBOs, research institutes and others working on coastal management, and community members
- 2.4.4 Train at least 100 women members of Union Parishads and other vulnerable groups on climate change risks and adaptation measures.
- 2.4.5 Establish union-level climate change networks of CBOs and support them in raising community awareness of climate risk reduction, local participation and decision making, and livelihood security. Knowledge gained through the networks will be shared at district and national levels, with a central depository at the Climate Change Cell.

#### ***Output 2.5 – Community Awareness Campaign on Climate Risks and Community-based Adaptation Defined and Implemented***

##### *Indicative Activities under Output 2.5*

- 2.5.1 Conduct Participatory Rural Appraisals (PRA) in at the community level in 4 upazilas in five districts in Patuakhali, Barguna, Bhola, Noakhali, and Chittagong to determine existing capacities and training needs for vulnerable communities on longer-term climatic and environmental changes. These assessments will be coordinated with the definition of Community-based Adaptation Plans under Output 1.1.
- 2.5.2 Design and conduct a community awareness campaign on climate change risks using culturally appropriate tools and aimed at all genders, including information packs that comprise examples of community-based adaptation measures in all relevant livelihood segments (fisheries, agriculture, livestock, forestry, water, communal services, etc.)

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<sup>53</sup> The District Committee will select the local institutions to participate in training workshops based on their appropriate mandates, expertise, and portfolio of activities related to community-based adaptation. The selection criteria will be identified during the workshop design process.

- 2.5.3 Train at least 100 CBO representatives, ward/village level Red Crescent volunteers, and other community members on applying PRA methods to assess climate change issues, community-based adaptation planning, and household-level risk reduction interventions
- 2.5.4 Monitor the effectiveness of awareness programs and improve quality of local capacity building efforts based on monitoring results

### **OUTCOME 3: National Policies Revised to Increase Climate Risk Resilience of Coastal Communities**

#### *Without GEF intervention (baseline)*

- 74. Although Bangladesh is one of the most vulnerable countries regarding climate change, adaptation is yet to be mainstreamed into the national development policy framework. Findings from climate risk assessments have not been incorporated into coastal development strategies or sectoral planning processes. For example, coastal mangroves have a high potential to reduce current and anticipated climate risks, as well as support livelihoods for the vulnerable coastal communities, but this has not been recognized and reflected under the MoL's current land distribution policy. Competing inter-agency land use priorities are another constraint in facilitating sustainable and climate-resilient development in coastal areas.
- 75. Baseline activities include the recently completed Integrated Coastal Zone Management Project (ICZMP), which delineates the coastal zone based on standard criteria, such as tidal extent and salinity. It also compiled social, economic, and resource profiles for various coastal zones, but there was inadequate consideration to current and projected climate risks. Without GEF intervention, climate change impacts will remain largely ignored, even though salinization and inundation already affect communities and are projected to increase.

#### *With GEF intervention (additionality argument)*

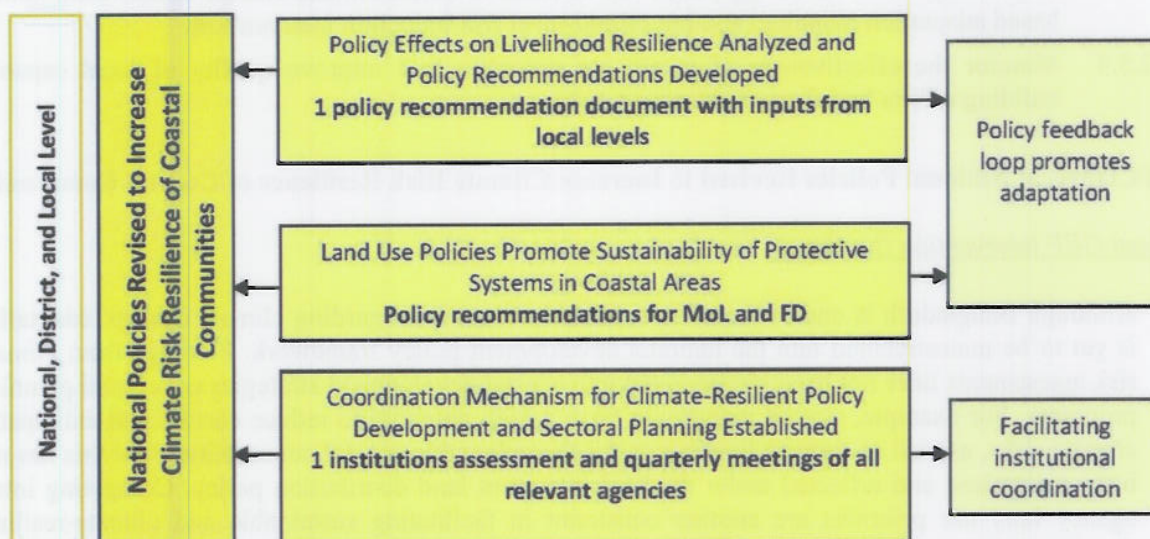
- 76. With LDC funding, existing coastal zone policies and programs will be modified to better reflect the risks posed by climate variability and climate change on coastal communities. Regulatory frameworks will be strengthened to include consideration of relevant climate risks and enforcement mechanisms for sustainable land use. Policymakers will be sensitized to the imminent climate change-induced risks, which will facilitate the integration of these risks into policies and programs. The project will review existing and proposed coastal development policies, while developing policy recommendations that protect coastal mangrove afforestation over the long term. This will complement Outcome 1, which includes the establishment of a co-management framework where local communities will be actively involved in afforestation, livelihood diversification, and other community-based adaptation measures. Coordination among the different departments and agencies, and between policymakers and coastal communities, will ensure that policy impacts are communicated to the national level. Greater stakeholder involvement in policy development and implementation will be promoted. Activities under this Outcome will establish a mechanism to ensure that climate risks and adaptation priorities identified in the National Communications, NAPA, and other relevant programs are factored into development planning.

#### *Outputs and indicative activities*

- 77. Recommendations for integrating climate change into national and sectoral policies will be developed on the basis of local needs. A special focus will be on improving the sustainability of coastal afforestation, land use, and livelihoods systems. Regular dialogue among stakeholders at the national to local levels established for effective coordination among institutions.



**Figure 5: Outputs Contributing to the Achievement of Outcome 3**



**Output 3.1 – Policy Effects on Livelihood Resilience Analyzed and Policy Recommendations Developed**

*Indicative Activities under Output 3.1*

- 3.1.1 Analyze at least 4 sectoral policies that promote or impede coastal community resilience, including the *National Environment Policy*, *National Forest Policy*, *National Land Use Policy*, and the *Coastal Zone Policy*, with a focus on livelihoods and financial impacts at the community level.
- 3.1.2 Develop at least 4 policy notes outlining and demonstrating the impacts, costs and benefits of a particular sectoral policy on the resilience of livelihoods in coastal areas

**Output 3.2 – Land Use Policies Promote Sustainability of Protective Systems in Coastal Areas**

*Indicative Activities under Output 3.2*

- 3.2.1 Review impacts of existing land use policies on the sustainability of protective greenbelt structures and develop policy recommendations for MoL to enhance the sustainability of coastal forest cover
- 3.2.2 Develop a policy study on the feasibility of longer term transfer of newly accreted lands in the coastal areas from MoL to FD for mangrove development with local community participation
- 3.2.3 Review and incorporation of climate change aspects in coastal area development through developing a dynamic land zoning process. This will be in addition to the baseline land zoning currently implemented by MoL
- 3.2.4 Disseminate project lessons and monitoring and evaluation reports to MoL to inform policy revisions and improve sectoral planning

**Output 3.3 – Coordination Mechanism for Climate-Resilient Policy Development and Coastal Planning Established**

*Indicative Activities under Output 3.3*

- 3.3.1 Review current roles and mandates of different government agencies working on policy issues affecting coastal areas and identify gaps as well as overlapping issues and aspects
- 3.3.2 Assess barriers and challenges of institutional coordination and suggest mechanisms for integrated and synergistic approaches to joint climate-resilient development planning in coastal zones
- 3.3.3 Establish a regular dialogue between members of the UDCC and DDCC to enable a coordinated approach in climate-resilient coastal development at the local level
- 3.3.4 Monitor the institutional coordination process over the project lifetime and communicate monitoring results to policy stakeholders at all levels

**OUTCOME 4: Learning, Evaluation, and Adaptive Management Enhanced**

Without GEF intervention (baseline)

78. Although climate change is a broad issue that cuts across every development sector, relevant knowledge and expertise has been limited to a core group of experts within a handful of ministries and academic research institutions. There are effective institutional mechanisms for knowledge sharing on certain issues such as disaster risk management; however, climate risks must be incorporated into disaster risk reduction and other development planning. Without the project, exchange of best practices on the development of adaptive capacity will not take place in a systematic manner. Lessons and results from planning and implementation of adaptation interventions will not be systematically documented, synthesized, and communicated to wider audiences. Therefore, it is likely that valuable information which is already available or which will be generated through the proposed project would remain largely inaccessible to users and planners in other regions and countries facing similar challenges.

With GEF intervention (additionality argument)

79. The project will enhance learning and knowledge exchange, enabling the replication of effective coastal management and adaptation to climate change both within Bangladesh and in other countries facing climate change-induced coastal hazards such as cyclones and storm surges, coastal inundation, and erosion. Activities include systematic contribution to the Adaptation Learning Mechanism (ALM) and hosting of national and international workshops on coastal afforestation and other community-based adaptation measures.

Outputs and Indicative Activities

**Output 4.1 – Project Lessons Captured in, and Disseminated through the Adaptation Learning Mechanism**

*Indicative Activities under Output 4.1*

- 4.1.1 Capture lessons learned from the project on a continual basis and synthesize results of activities under Outcomes 1, 2, and 3. New learning from the project will include new

approaches and methodologies for mangrove and non-mangrove afforestation, facilitating alternative climate-resilient livelihoods, removing policy barriers to building adaptive capacity, and effectively building human and institutional capacity for community-based adaptation.

- 4.1.2 Collate technical reports and other documents from the project and contribute to the ALM. Guidelines for extracting lessons learned will be drawn from the ALM.

***Output 4.2 – Project Knowledge Shared with Other Regions and Countries Facing Climate-Induced Coastal Hazards***

*Indicative Activities under Output 4.2*

- 4.2.1 Develop a briefing paper on project lessons, drawn from Output 4.1
- 4.2.2 Conduct one national and one international workshop for dissemination of project lessons within Bangladesh and share project knowledge with other countries that may benefit from implementation of coastal afforestation and livelihood diversification measures to promote adaptive capacity in vulnerable communities
- 4.2.3 Publish workshop proceedings and distribute in hardcopy as well as electronically (including publication on a project website)

***Output 4.3 – Project Knowledge Incorporated into Other Coastal Afforestation and Livelihoods Programs in Bangladesh***

*Indicative Activities under Output 4.3*

- 4.3.1. Review opportunities for incorporating new knowledge from the project into proposed or ongoing coastal afforestation and livelihoods programs in other districts of Bangladesh
- 4.3.2. Ensure that at least four other proposed or ongoing coastal development programs in Bangladesh incorporate new methodologies and knowledge from the project to promote community-based adaptation
- 4.3.3. Upon completion of Outputs 4.1 and 4.2, identify knowledge gaps regarding community-based adaptation in coastal areas and facilitate at least 3 new research initiatives to address gaps.

***Project Indicators, Risks, and Assumptions***

80. The key indicator to measure achievement of the project's objective is the number of households with livelihood strategies that directly contribute to the long-term maintenance and safeguarding of protective natural systems or do not adversely impact on their long-term protective functions in Patuakhali, Barguna, Bhola, Noakhali, and Chittagong. The monitoring indicators of the proposed project were formulated in coherence with UNDP's *Monitoring and Evaluation Framework for Adaptation to Climate Change*.
81. Indicators for the proposed project have been defined in the Strategic Results Framework (see Section II, Part I), based on UNDP's Monitoring and Evaluation Framework for Adaptation to Climate Change. These Indicators track progress in achieving project Outputs, and the degree of their collective achievement will be a measure of the degree of progress in meeting project objectives.

82. The project assumes that the concerned government ministries will continue to support climate-resilient development interventions; that the Ministry of Land will resolve land tenure issues and continue to allocate newly accreted coastal lands, and land that has already been forested with mangroves, to the FD for long-term protection against climate hazards; that staff turnover will not negate training and learning benefits; and that coastal land in project areas will not be lost to extreme events or sea level rise. A selection of risks and assumptions include the following:

- Coordination between agencies and various stakeholders continues
  - Effective coordination between MoL and MoEF exists and institutional linkages with other relevant ministries and institutions is functional and supportive
  - Staff who are unfamiliar with climate change, rather than previously identified “climate change experts” or focal points within ministries, will attend trainings, and staff turnover does not negate training benefits
  - Sectoral planners attend coordination meetings consistently to ensure continuous and effective information sharing
- Stakeholder support continues
  - Communities, government officials, policymakers, and non-government sectoral planners continue to be supportive of community-based adaptation and continue to provide participate in project activities at the national, district, and local levels
  - Climate-resilient livelihood options provide at least as much income as non-climate-resilient options
  - Champions exist at each target upazila and union who are willing to establish and maintain the civil society networks
- Corruption does not impede project
  - Corruption does not impede revision and passage of policies, action plans, or zoning regulations that promote resilient livelihoods and sustainability of protective ecosystems
  - The government remains stable and climate change remains a policy priority throughout the project

83. For more information, see the Strategic Results Framework in Section II.

#### ***Expected National and Local Adaptation Benefits***

84. At the national level, the expected adaptation benefits include improved government capacity to deal with dynamic, climate-induced hazards by designing, implementing, evaluating, and replicating risk reduction systems for climate-resilient coastal development. Community vulnerability in high risk coastal sites will be reduced as the project catalyzes community-based adaptation through afforestation, livelihood diversification, and the adjustment of local early-warning systems. In the process of achieving climate resilience, the awareness and abilities of community members and CBOs will be strengthened to undertake improved communication and preparedness activities to counter the risks of cyclones, SLR, salinization, and other climate change impacts. Specifically, national and local adaptation benefits include:

- 7,870 households utilize livelihood strategies (forestry and agriculture) that directly contribute to the long-term maintenance and safeguarding of protective natural systems or do not adversely impact on their long-term protective functions in Barguna, Patuakhali, Bhola, Noakhali, and Chittagong.



- Over 80% of the adaptation measures employed by the project demonstrate their effectiveness and sustainability in directly contributing to long-term maintenance and safeguarding of protective natural ecosystems or do not adversely impact on their long-term protective functions in Barguna, Patuakhali, Bhola, Noakhali, and Chittagong, which can then be replicated in other vulnerable coastal areas
- 75% of national, district, and local coastal development planners in the MoL and MoEF are able to identify climate risks and prioritize, plan, and implement measures for adaptation in target districts
- 4 national policies and action plans on coastal management and land use promote sustainable, climate-resilient development
- 4 proposed or ongoing programs related to coastal development incorporate lessons learned through the project, demonstrating the upscaling of the community-based adaptation measures

***Country Ownership: Country Eligibility and Country Drivenness***

85. As stated in paragraphs 19 and 50-56, the project fits with objectives of the LDCF, Bangladesh's national development priorities, the UNDAF, and MDGs. Bangladesh, one of the 48 LDCs, ratified the UNFCCC on 15 April 1994, and is eligible for technical assistance from UNDP. This project is endorsed by the national operational focal point.
86. This project has emerged from the Bangladesh NAPA document, which was completed in 2005. The methodology used to develop the NAPA was a widely consultative process involving stakeholders at the national, district, and grassroots levels, and it covers agriculture, forestry, livestock, environment, roads, health, finance, planning, and home affairs. See Section I, Part I and Section IV, Part IV for stakeholder involvement in project preparation.
87. The project is based on UNDP's comparative advantage in capacity building. The Country Office has built strong linkages with the Government of Bangladesh, as well as with key partners in the international donor community, academic institutions, and civil society organizations. Its completed and ongoing programs provide successful experiences that will be applied in the proposed project. For example, a pilot UNDP-United Nations Capital Development Fund initiative for good governance strengthened the capacity of the locally elected Union Parishads (local councils) to design and manage local development activities in a participatory manner, which will be valuable in implementing proposed community-based coastal afforestation and livelihoods initiatives. Through another project, the government, UNDP, and UN-Habitat worked together to mobilize poor communities to improve their own economic, social, and political standing. These communities now lead participatory planning processes and operate funds for use in accordance with community plans. UNDP also has experience in the upstream policy advocacy necessary for providing the vision for strategic interventions at the downstream level, which will support the policy feedback loop as part of proposed project. Sustainable development and climate resilience in Bangladesh have been supported through institutional capacity development at all levels and with a range of stakeholders from different government departments. Hence, the project will be able to efficiently connect to the national policy processes that currently shape Bangladesh's approach on how to deal with future climatic hazards.

***Sustainability***





88. Regarding political and institutional sustainability, the project has strong government support at the central, district, and local levels. Various stakeholders from the government and civil society were involved in the NAPA process, and several of those agencies are keen on carrying forward the implementation of the top identified priorities (see Annex 2 “Protocol for Stakeholder Consultations” during the PPG phase). The long-term viability of the project will depend greatly on institutional coordination. This will be achieved through capacity building at all levels, following the principle of using this initiative to help mainstream climate change and climate-resilient development, rather than viewing the project as a short-term activity. Institutional linkages will be strengthened, and community-based adaptation measures will include innovative mechanisms for sustainable livelihoods, which in turn will enhance the sustainability of project outcomes. The capacity-building components of the project will empower stakeholders at all levels—from community members to district authorities to policymakers—with a greater understanding of climate change risks, adaptation options, and enhanced adaptive capacity.
89. The cultural sustainability of the project activities will be ensured through community participation in the design and implementation of afforestation and livelihoods activities. During consultations, community members expressed strong interest in climate-resilient livelihoods and measures to reduce their vulnerability from increasingly frequent extreme climate events.
90. Regarding financial sustainability, the proposed project has attracted co-finance to the tune of USD 7.1 million (USD 3 million government support in kind and professional services related to enhance coastal forestry initiatives of MoEF/FD and USD 4.1 million from UNDP in the form of US\$1.1m core resource and US\$3m parallel projects for complimentary support to this project in line of climate resilient development) This co-financing would strengthen the proposed initiative through policy reform and enhancing institutional capacity to mainstreaming climate change adaptation and disaster risk reduction including support to innovative initiatives. This contribution demonstrates the willingness of the GoB and UNDP to support community-based adaptation through coastal afforestation and climate-resilient livelihoods.

### ***Replicability***

91. Once the project demonstrates the viability of adaptation interventions and effectively builds national and local adaptive capacity, there will be opportunities for further up scaling and replication in other coastal sites exposed to climate-induced hazards, as described in Output 4.3 and the Strategic Results Framework. Learning is ensured through activities in Outcome 4, including contributions to the Adaptation Learning Mechanism, so that government ministries and other organizations will have access to new knowledge and resources developed through the project. National and international dialogue forums will provide opportunities for identifying similarly vulnerable areas within and outside of Bangladesh. The approach used will be replicated in other non-coastal areas where climate change-induced risks are very high, for example, the haors, or low-lying floodplain depressions located mostly in the north-eastern region of the country and covering about 25% of the entire region. In the northeast, flashfloods have been occurring earlier in the season and with increasing intensity, causing much damage to crops and livelihoods.
92. Over time, the new adaptive capacity in project sites and in institutions will be used in coastal development planning processes for the entire coastal zone. The project will establish an evaluation and learning process, which will feed directly into the development of climate-resilient national strategies, such as plans to implement dynamic coastal land use zoning. The close involvement of government agencies and other organizations demonstrates the potential for future incorporation of the project’s approaches—such as community-based afforestation combined with the facilitation of climate-resilient livelihoods, and promoting feedback loops between local communities and national



policymaking processes—into their ongoing planning and programs. Careful monitoring of performance, efficiency, cost-effectiveness, and robustness will prove useful in developing similar systems in the future.

### **PART III: Management Arrangements**

93. The project will be implemented over four years beginning in March 2009. The project will be executed by the Ministry of Environment and Forests (MoEF) and the Forest Department as the lead Implementing Agency. The Secretary, MoEF will chair the National Steering Committee (NSC). UNDP will serve as the GEF Implementing Agency for this Project. MoEF, FD, IMED and UNDP will jointly monitor and evaluate all project activities. The project will be governed in accordance with the UNDP's Results Management Guideline (RMG), GEF Rules and Procedures and the Government of Bangladesh operational principles within a governance structure as described in paragraphs 90-97.
94. **Outcome Board (National Steering Committee):** The Outcome Board/National Steering Committee will meet at least once per year. It is the highest oversight body and will ensure that the project is consistently aligned with the Government's broader climate change, environmental and development objectives as well as complimentary to the implementation of PRS and MDGs (for detailed TORs, see Section IV, Part III). The Secretary of MoEF will chair the meetings of the National Steering Committee, and representation from other ministries will not be below the rank of Joint Secretary. Other members of the National Steering Committee will include the MoL, MoA, MoWR, MoLGRDC, MoDMF, MoFL, DAE, DoF, BFRI, DMB, Deputy Commissioners from project site specific districts, UNDP, and others relevant may be co-opted. Further details indicated in the organogram in Section IV, Part II.
95. **Project Board:** The Project Board will meet once per quarter, or more frequently as necessary. The Project Board will be the main decision-making body of the project. Work of the Project Board will be guided by the continuous review, alignment and approval of Annual Work Plans (AWPs), which will be endorsed by the Implementing Partners and UNDP. The approved annual/quarterly work plans will be the instruments of authorization through which the Project Manager will deliver results. The Project Board will consist of: (1) the *National Project Director (NPD)* (the Executive), representing project ownership and chairing the Project Board. The MoEF will nominate the NPD, who, given the strategic importance of the project, is expected to be a senior official from the MoEF (not below the rank of Joint Secretary); (2) *Project Directors from FD, DAE, Fisheries & Livestock, BFRI, MoL* who will be nominated by the respective Ministry and will be responsible for implementing specific project components; (3) a *UNDP representative* in the role of Senior Supplier (representing the interests of the parties concerned which provide funding and/or technical expertise to the project) will provide guidance regarding technical feasibility and support to the project, and (4) Representatives of other implementing *partner organizations* (listed in Table 1: Agencies Involved with Project Implementation) as the direct beneficiaries.
96. The District Environment and Forest Development Committee and the District Disaster Management Committee will jointly act as local Steering Committees in each pilot site to promote district level ownership over the project and ensure the appropriateness of interventions in meeting district priorities.
97. **Project Management Unit (PMU):** The Forest Department will provide office space for the Project Management Unit (PMU) and professional staff. The PMU will be composed of the following project staff.
  - 1 Project Manager

- 1 Finance Assistant
- 1 Office Executive
- 1 Office Attendant
- 1 Database Manager

98. **Programme Implementation Technical Support Team (PITST):** The Programme Implementation Technical Support Team will consist of short-term and medium-term experts of different scale and types of individual who will be engaged to deliver different Outputs and Outcomes of the project. These include:

**Experts:** One climate change adaptation expert for Output 1.1 for 6 months; one Climate Resilient Livelihood Expert for Output 1.1 for 4 months; one Land-use and Land-zoning Expert for Output 1.1 and Output 3.2 for 10 months; one Policy and Institutional expert for Output 3.3 and Output 4.3 for 10 months; one Knowledge Management Expert for Output 4.1 and Output 4.2 for 24 months; one Monitoring and Evaluation Expert for 18 months to develop the overall progress monitoring system and for Output 1.2, Output 1.3, Outcome 2, and Outcome 4; one Communication Specialist for Outcome 4 for 12 months; one Management Information Systems Expert for 6 months for Outcome 4.

**Field staff** based at 4 Divisional Forest Offices in project areas: Divisional Forest Offices will provide office space for the field-based staff. 10 Community Organizers will be appointed to facilitate activities at the local site level and report to the Project Management Unit. 2 local UN Volunteers will be engaged for field-level activities.

99. The Forest Department will provide logistics such as telephone and fax services for the PMU and field offices. PMU staff will be funded by the project throughout its duration to ensure delivery of results as specified in the Strategic Results Framework. The Project Manager will be responsible for delivery of Outputs as indicated in the Strategic Results Framework. The NPD will be responsible for coordinating the flow of results and knowledge from the project to the National Steering Committee and relevant Government ministries, departments, or divisions as appropriate. The Project Manager will ensure provision of high-quality expertise and inputs to the project and also be responsible for day-to-day operations.

100. See Terms of Reference for the above positions and managing bodies in Section IV, Part III.

#### **PART IV: Monitoring and Evaluation Plan and Budget**

101. Project monitoring and evaluation will be conducted in accordance with established GoB and UNDP-GEF procedures by the project team and the UNDP CO with backstopping support by the UNDP Regional Centre in Bangkok. The Strategic Results Framework in Section II provides *performance* and *impact* indicators for project implementation along with their corresponding *means of verification*. These will form the basis on which the project's Monitoring and Evaluation system will be built.

102. The following sections outline the principle components of the Monitoring and Evaluation Plan and indicative cost estimates related to M&E activities.

#### **Monitoring and Reporting**

### ***Project Inception Phase***

103. Work Plans and Progress Reports: Work Plans will be the main management instrument governing the implementation of the project. The project will prepare an Annual Work Plan (AWP) with well-defined result indicators, using the standard format for UNDP-supported projects. Annual Work Plans will be appraised and endorsed by the NPD/MoEF and UNDP. Upon approval, the work plan will be an instrument of authorization to the Project Manager for implementation of the project. Human resources mobilization and procurement plans will be added to the AWP as annexes and be subject to review and endorsement by the NPD/MoEF and UNDP.
104. A Project Inception Workshop will be conducted with the National Project Director, Project Manager, MoEF and other relevant ministries and implementing partners of the National Steering Committee, co-financing partners, the UNDP-CO and representation from the UNDP Regional Coordination Unit, as well as UNDP HQ as appropriate.
105. A fundamental objective of this Inception Workshop will be to finalize preparation of the project's first annual work plan (AWP) on the basis of the project's strategic results framework (SRF). This will include reviewing the SRF (indicators, means of verification, and assumptions) and imparting additional details as needed. On the basis of this exercise, the AWP will be finalized with precise and measurable performance indicators, and in a manner consistent with the expected outcomes for the project.
106. Additionally, the purpose and objective of the Inception Workshop will be to: (i) introduce project staff to the UNDP-GEF *expanded team* which will support the project during its implementation, namely the CO and responsible Regional Coordination Unit staff; (ii) detail the roles, support services, and complementary responsibilities of UNDP-CO staff vis à vis the project team; (iii) provide a detailed overview of UNDP-GEF reporting and M&E requirements, with particular emphasis on the annual Project Implementation Reviews (PIRs) and related documentation, the Annual Project Report (APR), Tripartite Review Meetings, as well as mid-term and final evaluations. Equally, the IW will provide an opportunity to inform the project team on UNDP project-related budgetary planning, budget reviews, and mandatory budget rephrasing.
107. The workshop will also provide an opportunity for all parties to understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff and decision-making structures will be discussed again, as needed, in order to clarify each party's responsibilities during the project's implementation phase.

### ***Monitoring Responsibilities and Events***

108. A detailed schedule of project review meetings will be developed by the project management, in consultation with project implementation partners and other stakeholder, and incorporated into the Project Inception Report. Such a schedule will include: (i) timeframes for Tripartite Reviews, National Steering Committee Meetings, and other relevant advisory and/or coordination mechanisms; and (ii) project-related M&E activities.
109. Day-to-day monitoring of implementation progress will be the responsibility of the Project Manager based on the Annual Work Plan and its indicators, with overall guidance from the National Project Director. Project team members will inform the Project Manager and UNDP-CO of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.



110. Quarterly monitoring of implementation progress will be undertaken jointly by the Project Manager and UNDP-CO through quarterly meetings, or more frequently as deemed necessary. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities. The project's performance indicators will be fine-tuned in consultation with stakeholders at the Inception Workshop, with support from the UNDP-CO and UNDP-GEF Regional Coordination Unit. Specific targets for the first year of implementation will form part of the AWP and will be used to assess whether implementation is proceeding at the intended pace. Targets and indicators for subsequent years would be defined annually as part of the internal evaluation and planning processes.
111. Annual Monitoring will occur through the *Tripartite Review (TPR)*. This is the highest policy-level meeting of the parties directly involved in the implementation of a project, consisting of the three signatories to the prodoc (UNDP, ERD, MoEF, and the GEF Operational Focal Point). TPR meetings are frequently synchronized with an Outcome Board meeting. The project will be subject to TPR at least once every year. The first such meeting will be held within the first twelve months of the start of full implementation. With support by the Project Manager, the Project Director will prepare an Annual Project Report and submit it to UNDP-CO and the UNDP-GEF regional office at least two weeks prior to the TPR for review and comments. The TPR has the authority to suspend disbursement if project performance benchmarks are not met, based on delivery rates, and qualitative assessments of achievements of outputs.
112. The Annual Project Report (APR) will be used as one of the basic documents for discussions in the TPR meeting. With support by the Project Manager, the Project Director will present the APR to the TPR, highlighting policy issues and recommendations for the decision of the TPR participants. The project proponent also informs the participants of any agreement reached by stakeholders during the APR preparation on how to resolve operational issues. Separate reviews of each project component may also be conducted if necessary.
113. UNDP Country Offices and UNDP-GEF RCUs as appropriate, will conduct yearly visits to the project field sites (based on an agreed upon schedules to be detailed in the project's Inception Report and Annual Work Plan) to assess firsthand project progress. Any member of the National Steering Committee can also accompany the visit, as decided by the National Steering Committee. A Field Visit Report will be prepared by the CO and circulated no less than one month after the visit to the project team, all National Steering Committee members, and UNDP-GEF.
114. The Terminal Tripartite Review (TTR) is held in the last month of project operations. With support by the Project Manager, the Project Director is responsible for preparing the Terminal Report and submitting it to UNDP-CO and GEF's Regional Coordination Unit. It shall be prepared in draft at least two months in advance of the TTR in order to allow review, and will serve as the basis for discussions in the TTR. The terminal tripartite review considers the implementation of the project as a whole, paying particular attention to whether the project has achieved its stated objectives and contributed to the broader environmental objective. It decides whether any actions are still necessary, particularly in relation to sustainability of project results, and acts as a vehicle through which lessons learnt can be captured to feed into other projects under implementation or formulation.

### ***Project Monitoring Reporting***

115. The Project Manager in conjunction with the UNDP-GEF extended team will be responsible for the preparation and submission of the following reports that form part of the monitoring process. Items



(a) through (f) are mandatory and strictly related to monitoring, while (g) through (h) have a broader function and the frequency and nature is project specific to be defined throughout implementation.

(a) Inception Report (IR)

116. The Project Inception Report will be prepared immediately following the Inception Workshop. It will include a detailed First-Year AWP divided in quarterly timeframes detailing the activities and progress indicators that will guide implementation during the first year of the project. This AWP includes the dates of specific field visits, support missions from the UNDP-CO or the Regional Coordination Unit (RCU) or consultants, as well as timeframes for meetings of the project's decision-making structures. The Report will also include the detailed project budget for the first full year of implementation and any M&E requirements to effectively measure project performance during the targeted 12 months.
117. The Inception Report will include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project partners. In addition, a section will be included on progress to date on project establishment and start-up activities and an update of any changed external conditions that may effect project implementation.
118. When finalized the report will be circulated to project counterparts who will be given a period of one calendar month in which to respond with comments or queries. Prior to this circulation of the IR, the UNDP-CO and UNDP-GEF's Regional Coordination Unit will review the document.

(b) Annual Project Report (APR)

119. The APR is a UNDP requirement and part of UNDP's Country Office central oversight, monitoring, and project management. It is a self-assessment report by project management to the CO and provides input to the country office reporting process, as well as forming a key input to the Tripartite Project Review. An APR will be prepared on an annual basis prior to the Tripartite Project Review, to reflect progress achieved in meeting the project's AWP and assess performance of the project in contributing to intended outcomes through outputs and partnership work.
120. The format of the APR is flexible but should include the following:
- An analysis of project performance over the reporting period, including outputs produced and, where possible, information on the status of the outcome
  - The constraints experienced in the progress towards results and the reasons for these
  - The three (at most) major constraints to achievement of results
  - AWP, Country Assistance Evaluation (CAE), and other expenditure reports generated
  - Lessons learned
  - Clear recommendations for future orientation in addressing key problems

(c) Project Implementation Review (PIR)

121. The PIR is an annual monitoring process mandated by the GEF. It has become an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing projects. Once the project has been under implementation for a year, a Project Implementation Report must be completed by the UNDP Country Office together with the Project Management Unit. The PIR can be prepared any time during the year (July-June) and ideally prior to the TPR. The PIR should then be discussed in the TPR so that the result would be a PIR that has



been agreed upon by the project, the executing agency, UNDP CO and the concerned Regional Coordinating Unit (RCU).

122. The individual PIRs are collected, reviewed, and analyzed by the RCUs prior to sending them to the focal area clusters at the UNDP-GEF headquarters. The focal area clusters supported by the UNDP-GEF M&E Unit analyze the PIRs by focal area, theme and region for common issues/results and lessons. The TAs and PTAs play a key role in this consolidating analysis.
123. The focal area PIRs are then discussed in the GEF Interagency Focal Area Task Forces in or around November each year and consolidated reports by focal area are collated by the GEF Independent M&E Unit based on the Task Force findings.
124. The GEF M&E Unit provides the scope and content of the PIR. In light of the similarities of both APR and PIR, UNDP-GEF has prepared a harmonized format for reference.

*(d) Quarterly Progress Reports*

125. Short reports outlining main updates in project progress will be provided quarterly to the local UNDP Country Office and the UNDP Regional Center in Bangkok by the PMU.

*(e) Periodic Thematic Reports*

126. As and when called for by UNDP, UNDP Regional Center or project financing partners, the PMU will prepare specific thematic reports, focusing on specific issues or areas of activity. The request for a thematic report will be provided to the project team in written form by UNDP and will clearly state the issue or activities that need to be reported on. These reports can be used as a form of lessons learnt exercise, specific oversight in key areas, or as troubleshooting exercises to evaluate and overcome obstacles and difficulties encountered. UNDP is requested to minimize its requests for thematic reports, and when such are necessary will allow reasonable timeframes for their preparation by the project team.

*(f) Project Terminal Report*

127. During the last three months of the project the project team will prepare the Project Terminal Report. This comprehensive report will summarize all activities, achievements and outputs of the Project, lessons learnt, objectives met, or not achieved, structures and systems implemented, etc. and will be the definitive statement of the Project's activities during its lifetime. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the Project's activities.

***Independent Evaluations***

128. The project will be subjected to at least two independent external evaluations as follows:

*Mid-term Evaluation*

129. An independent Mid-Term Evaluation will be undertaken at the end of the second year of implementation. The Mid-Term Evaluation will determine progress being made towards the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring



decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference, and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordination Unit and UNDP-GEF.

#### Final Evaluation

130. An independent Final Evaluation will take place three months prior to the terminal tripartite review meeting, and will focus on the same issues as the mid-term evaluation. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordination Unit and UNDP-GEF.

#### ***Learning and Knowledge Sharing***

131. Results from the project will be disseminated within and beyond the project management cycle through a number of existing information sharing networks and forums. In addition:

- The project will participate, as relevant and appropriate, in UNDP-GEF sponsored networks, organized for senior personnel working on projects that share common characteristics. The **Adaptation Learning Mechanism (ALM)** will function as key electronic platform to capture project learning. The ALM lessons learned template will be adapted for use by the project. To support this goal, adaptation-related activities from the project will contribute knowledge to the ALM, such as the following:
- The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned.
- The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Identifying and analyzing lessons learned is a continuous process, and the need to communicate such lessons as one of the project's central contributions is a requirement to be delivered not less frequently than once every 12 months. UNDP-GEF shall provide a format and assist the project team in categorizing, documenting and reporting on lessons learned. To this end a percentage of project resources will need to be allocated for these activities.
- The project will capture best practices in integrating adaptation into national and local development policy, and project design and implementation mechanisms.
- The project will capture lessons learned on removing the most common barriers to adaptation, with special attention to the roles of local partners, international partners, UNDP, and GEF in designing and implementing projects
- The project will capture conditions for success (or failure) in community-based adaptation, including conditions for replication and scaling up.



**Indicative Monitoring and Evaluation Work Plan and Corresponding Budget**

Type of M&E activity	Responsible Parties	Budget US\$ Excluding project team Staff time	Timeframe
Inception Workshop (IW)	National Project Director (NPD) Project Manager (PM) UNDP Country Office (CO) UNDP-GEF Regional Coordination Unit (RCU)	\$5,000	Within first two months of the appointment of NPD and Project Manager
Inception Report	NPD PM and PMU staff UNDP CO	None	Immediately following IW
Measurement of Means of Verification for Project Purpose Indicators	PM under close supervision of NPD will oversee the hiring of specific institutions and delegate tasks and responsibilities to relevant PMU members	To be finalized in Inception Phase and Workshop.	Start, mid and end of project
Measurement of Means of Verification for Project Progress and Performance (measured on an annual basis)	National Steering Committee chaired by Secretary, MoEF, and co-chaired by Joint Secretary, MoL; Project Board with oversight by UNDP CO and NPD; Measurement of progress conducted by regional field officers and local Implementing Agencies (IAs)	To be determined as part of the Annual Work Plan's preparation.	Annually prior to Annual Project Report/Project Implementation Review (APR/PIR) and to the definition of annual work plans
APR and PIR	NPD PM and PMU staff UNDP-CO UNDP-GEF	None	Annually
TPR and TPR report	GEF OFP UNDP CO NPD	None	Every year, upon receipt of APR
National Steering Committee Meetings	NPD National Steering Committee Members PM UNDP CO,	None	Following Project IW and subsequently at least once a year
Annual status reports /seminar /workshop	PM and PMU members	\$5,000	To be determined by Project team and UNDP
Technical reports/ knowledge and advocacy material	MoEF, FD, PM and PMU members And UNDP. External consultants as needed	\$10,000	To be determined by Project Team and UNDP
Mid-term External Evaluation	PM and PMU members UNDP-CO, UNDP-GEF RCU, External Consultants (i.e. evaluation	\$25,000	At the mid-point of project implementation.

	team)		
Terminal External Evaluation	PM and PMU members UNDP-CO UNDP-GEF RCU External Consultants (i.e. evaluation team)	\$25,000	At the end of project implementation
Lessons learned and shared at international level	PMU and UNDP	Will cover from Outcome 4	Yearly
Audit	FAPAD and UNDP	None	Yearly
Visits to field sites (UNDP staff travel costs to be charged to IA fees)	UNDP CO UNDP-GEF RCU (as appropriate) National Steering Committee members		Yearly
TOTAL INDICATIVE COST Excluding project team staff time and UNDP staff and travel expenses		USD 70,000	

#### PART V: Legal Context

132. This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Assistance Agreement (SBAA) between the Government of Bangladesh and the United Nations Development Program, signed by the parties on 26 November 1986. This project document has the reference of the Country Program Action Plan (CPAP) signed between the Government and UNDP on 7 September 2006. This Project Document will follow national implementation arrangement (formally known as NEX) and related UNDP's rules and procedures.

133. The following types of revisions may be made to this project document with the signature of the UNDP Country Director and the agreement of the NPD:

- Revisions in or additions to, any of the annexes of the project document;
- Revisions that do not involve significant changes in the immediate objectives, outputs, or activities of the project, which are caused by the re-arrangement of inputs agreed to or by cost increases due to inflation; and
- Mandatory annual budget revisions that rephrase the delivery of agreed inputs, increases in the cost of experts or other items due to inflation, or that take into account agency expenditure flexibility.

134. This project document is, for all purposes related to implementation, the legal document by which UNDP will be bound. The Government of Bangladesh may prepare for its own internal planning and approval purposes a matching document such as the TPP or Project Proforma of which this document is a part. In the event of any discrepancies between the project document and a related GoB document (including, but not limited to, discrepancies in terms of financial provisions), the provisions outlined in this signed project document are to be upheld.

**SECTION II: STRATEGIC RESULTS FRAMEWORK (SRF) AND GEF INCREMENT**

**PART I: Strategic Results Framework (SRF, formerly GEF Logical Framework)**

Project Strategy		Objectively verifiable indicators			
Goal		Promote climate-resilient development in the coastal areas of Bangladesh			
Outcome/Output	Indicator	Baseline	Target	Sources of verification	Risks and Assumptions
Objective – Reduce vulnerability of coastal communities to the impacts of climate change-induced risks in four upazilas in the coastal districts of Barguna and Patuakhali (Western Region), Bhola (Central Region), Noakhali (Central Region), and Chittagong (Eastern Region)	Number of households that have increased adaptive capacity to climate change-induced risks in targeted coastal districts	Coastal communities face climate change risks largely due to lack of adaptive capacity  Recent scientific findings project 15% increases in salinity, cyclonic events, and inundation of coastal areas, with up to 35 million people becoming climate refugees from the coastal areas by 2050	<ul style="list-style-type: none"> <li>By the end of the project, over 80% of households in project communities are able to anticipate climate risks and select the most effective risk reduction options</li> <li>By the end of the project, at least 75% of MoL and MoEF government officials and coastal management planners in target districts are able to identify climate-induced risks in coastal areas and are capable of prioritizing, planning, and implementing effective adaptation measures with the involvement of communities</li> </ul>	Qualitative-based surveys (QBS)/Interviews/Vulnerability reduction assessment (VRA)  DMB Legislation  End of project evaluation report	Stakeholders are able to perceive reductions in vulnerability over the time-scale determined by project duration  Effective coordination between MoL and MoEF exists and institutional linkages with other relevant ministries and institutions is functional and supportive
Outcome 1 – Enhanced Resilience of Vulnerable Coastal Communities and Protective Systems to Climate Risks	Percentage of locally designed, sustainable adaptation measures demonstrating effectiveness in reducing climate vulnerability	Disaster management efforts have increased preparedness for cyclones in some areas; however, there is a lack of planned measures and structured analysis of options to adapt to a broader range	<ul style="list-style-type: none"> <li>By end of the project, over 80% of the adaptation measures employed by the project demonstrate their effectiveness and sustainability in reducing climate vulnerability in coastal communities</li> </ul>	Project progress reports and end of project evaluation report	Communities continue to be supportive of CBA  Extreme climate events have not irreparably destroyed coastal lands in

Outcome/Output	Indicator	Baseline	Target	Sources of verification	Risks and Assumptions
		of both extreme and gradual climate change – induced hazards in coastal areas			project sites Corruption does not significantly impede implementation of adaptation measures Mangrove and non-mangrove species chosen for afforestation can thrive in project sites
Output 1.1 – Community-Based Adaptation Initiatives Defined for 4 Upazilas	Number of CBA plans developed with active participation of local communities for afforestation, livelihood diversification, and local warning systems	Local-level adaptation plans to deal with climate change risks do not exist in target upazilas	<ul style="list-style-type: none"> <li>By the end of Year 1, 1 CBA plan on coastal afforestation developed for each target upazila (4 total)</li> <li>By the end of Year 1, 1 CBA plan on livelihood diversification developed for each target upazila (4 total)</li> <li>By the end of Year 1, 1 CBA plan on extreme climate warning communications developed for each target upazila (4 total)</li> </ul>	<p>CBA plans</p> <p>Reports describing community involvement in the process, including: vulnerability and needs assessment reports, feasibility reports, assessment methodologies, and maps</p>	<p>Communities are willing to participate and contribute in the assessment and design process of developing CBA plans</p> <p>FD field staff, Forest Research Institute, and district/ local administrations extend required assistance to project team and communities</p>
Output 1.2 – Climate-Resilient and Community-Based Coastal Afforestation Measures Implemented	Number of hectares of mangrove and non-mangrove species planted and continuously maintained by communities  Number of people	Coastal afforestation programs have been ongoing since 1960 in some coastal areas (e.g. Coastal Greenbelt Project); however, measures to ensure the sustainability of forested lands are not	<ul style="list-style-type: none"> <li>By the end of the project, 6000 ha of mangrove species, 600 ha of non-mangrove species, 1000 km of coastal strip, and 100 ha of model demonstration species are planted in each of the target upazilas (6,700 ha</li> </ul>	<p>Project progress reports</p> <p>Independent evaluation reports</p> <p>Inventory stock list of seedlings</p> <p>Training protocols</p>	<p>Communities will be willing to participate in coastal afforestation activities.</p> <p>A sufficient number of seedlings survive the nursery stage and can be planted</p>

Outcome/Output	Indicator	Baseline	Target	Sources of verification	Risks and Assumptions
	trained and participating in mangrove nursery and maintenance	implemented, and the potential for protection against climate change-induced hazards is not fully realized	and 1,000 km in total) <ul style="list-style-type: none"> <li>By the end of the project, 15,000 people trained on mangrove nursery establishment and community-based forest management</li> <li>By the end of the project, at least 4,000 local people have participated in the management and protection of new plantations financed by the project</li> </ul>		Land for the pilot areas is not lost to an extreme event during the project
Output 1.3 – Climate-Resilient Livelihood Options Enabled and Promoted	Number of households in target upazilas with access to climate-resilient livelihood options	Livelihood programs are ongoing in some coastal areas (e.g. Chittagong); however, they do not take climate change impacts into account and are not integrated with afforestation measures	<ul style="list-style-type: none"> <li>By Year 2, at least 60% of villages in the target upazilas promote alternative livelihood options and create conducive structures that enable at least 1,600 households to actively adopt them.</li> <li>By the end of the project, 400 households in each of the target upazilas have actively expanded their livelihood options through the project (1,600 total)</li> </ul>	Project progress reports QBS/VRA	<p>Natural resources required for livelihood options are not damaged in extreme events</p> <p>Government and NGOs continue to be willing to provide required support for livelihood options</p> <p>Climate-resilient livelihood options provide at least as much income as non-climate-resilient options</p>
Output 1.4 – Warning Communications for Extreme Climate	Number of communities with effective local warning systems for	Basic warning systems for cyclones exist in limited areas (e.g. different colored flags	<ul style="list-style-type: none"> <li>By Year 3, assessments of local early warning needs, as required for sustainability of climate-</li> </ul>	Project progress reports, including reports on public awareness campaigns	In the event of warnings, safe response actions exist for vulnerable

Outcome/Output	Indicator	Baseline	Target	Sources of verification	Risks and Assumptions
Events Improved	increasingly frequent climate hazards Percentage of fishermen able to receive and respond to warning signals from the system in time to avoid human and material losses	displayed on towers according to sea conditions); however, most communities in the target upazilas have inadequate access to warning information for communicating information to vulnerable fishermen.	resilient alternative livelihood options, conducted in communities in target upazilas (4 assessments in total)	Mock drill reports QBS	fishermen Government and NGOs continue to be willing to provide required support for local warning systems Infrastructure exists for receiving cyclone warnings from national climate information services at the target district and local levels in a timely manner
<b>Outcome 2 – Climate Risk Reduction Measures Incorporated into Coastal Area Management Frameworks</b>	Percentage of national planners, district authorities, and communities able to identify climate risks and prioritize, plan, and implement effective adaptation measures	Coastal development planners currently take certain extreme events into account at the national, district, and local levels, but the capacity to plan for and react to dynamic climate change risks is very low. There is a lack of an integrated framework and human and institutional capacity for assessing, planning for, and addressing climate change-induced risks at coastal areas.	<ul style="list-style-type: none"> <li>By the end of the project, at least 75% of MoL and MoEF civil servants at the national level and in targeted districts are able to identify climate risks and prioritize, plan, and implement measures for adaptation in coastal areas</li> </ul>	QBS/interviews Training reports	MoL and MoEF officials remain supportive to the project's capacity building initiative Appropriate staff members undergo training and staff turnover does not negate training benefits MoL and MoEF continue to support adaptation within coastal development programs, and to apply and maintain adaptive capacity built during the project