

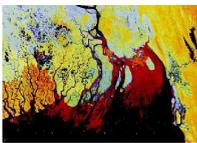
# Ministry of Water Resources

Contribution of  
Integrated Coastal Zone Management Plan Project  
towards formulation of the  
Poverty Reduction Strategy Paper (PRSP)  
**for**  
**BANGLADESH**



*(the zone where the strategy will achieve the most)*

February 2004



PDO-ICZMP

**WARPO**  
পানি সম্পদ পরিকল্পনা সংস্থা



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## 1 INTRODUCTION

The Government of Bangladesh (GoB) has adopted an interim Poverty Reduction Strategy Paper (i-PRSP) in March 2003. This paper “will form the core of the Three-Year Rolling Plan (TYRP) providing the basis for the annual budget which will help maintain consistency between the development strategy and the Plan, on the one hand, and between the Plan and the Annual Development Programme (ADP) on the other hand. The Three-Year Rolling Plan would be formulated within the framework of a long-term Perspective Plan” (ERD, 2003)<sup>1</sup>.

The iPRSP was formulated based on “past achievements and failures in specific areas of both income poverty and human poverty” (ERD, 2003) and “future imperatives like achieving the Millennium Development Goals (MDGs) and the targets set in the Partnership Agreement on Poverty Reduction (PAPR) with the Asian Development Bank” (ERD, 2003).

GoB is now in the process of developing the Comprehensive Poverty Reduction Strategy Paper (PRSP) co-ordinated by a National Steering Committee with General Economic Division of the Planning Commission as the National Poverty Focal Point (NPFP). A National Steering Committee has been constituted to guide (advise the concerned persons (engaged in preparation of PRSP) under the chairmanship of the Principal Secretary, office of the Prime Minister, GoB. Responsibility of developing the PRSP lies with 12 (twelve) Thematic Groups as listed below:

- Thematic Group 1:* Macroeconomic Stability and Pro-poor growth
- Thematic Group 2:* Financial Sector Reforms (including banking, trade and globalization)
- Thematic Group 3:* Infrastructure Development and Reforms including Power, Energy and Communications
- Thematic Group 4:* Domestic Resource Mobilization
- Thematic Group 5:* Reforms in Governance including civil service reforms, judicial reforms and law and order
- Thematic Group 6:* Health including Population Planning, Nutrition and Sanitation
- Thematic Group 7:* Education including primary and mass education, female education, vocational and technical education
- Thematic Group 8:* Women and Children Advancement and Rights
- Thematic Group 9:* Rural development including Food Security, Disaster management, Safety-net Programs, Micro-credit and Rural Non-farm Activities
- Thematic Group 10:* Agriculture (Crops, Fisheries, Livestock) and environment including Forestry, Land Reforms, Land Use, Safe water Supply and Water resources Management
- Thematic Group 11:* Private Sector Development
- Thematic Group 12:* Information and Communication Technology and Technology Policy.

Working Paper, of the meeting held on 6 December, 2003 of the National Steering Committee of NPFP, contains the “PRSP Road Map” which among other activities has identified “Selection of projects/programmes by the Planning Commission for the Three-Year Rolling Investment Programme” by March-April, 2004. Obviously, each Thematic group would also develop projects/

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<sup>1</sup> ERD (2003), A National Strategy for Economic Growth, Poverty Reduction and Social Development, (Bangladesh). Economic Relations Division, Ministry of Finance, GoB, March, 2003.

programmes of their own field/fields to be included in PRSP which ultimately would be part of Three-Year Rolling Plan.

All the Thematic Groups are working according to their Terms of References (ToRs).

This briefing paper has been prepared to facilitate incorporation of coastal issues during the formulation of comprehensive and full-blown PRSP and annual development plans through thematic groups.

This document has four different sections.

1. **Introduction**
2. **The Integrated Coastal Zone Management Plan Project** gives a brief description of the project, goal, objective and general approaches. In three boxes, relevant information of 'Coastal Zone & Poverty', 'Coastal Zone & Social Development' and 'Coastal Zone & Economic Growth' are highlighted.
3. **iPRSP & ICZMP linkage** shows the relevant statements and importance given to coastal zone issues in the IPRSP document prepared in March 2003. Following the national PRSP targets for 2015 from a benchmark in 2000 on selected indicators, attempts have been made to establish benchmarks for coastal zone. The coastal zone has different benchmarks for some indicators. Linkage between PRSP goals and ICZMP objectives have been shown
4. **Projects & Programs for Comprehensive PRSP** has followed the same broad headings given in the IPRSP document and a list of >40 project concepts has been presented

Separately, brief description of projects has been given for consideration by 9 of the 12 thematic groups. Brief description of each project has a brief, components, location, estimated cost, benefits and probable agencies.

## 2 INTEGRATED COASTAL ZONE MANAGEMENT PLAN (ICZMP) PROJECT

### a. The Project

The Government of Bangladesh (GoB), in collaboration with the United Kingdom and The Netherlands, initiated the Program Development Office (PDO) for Integrated Coastal Zone Management Plan (ICZMP) Project for a period of three years commencing from February 2002. A small but highly professional team is responsible for carrying out the project. It is an Inter-Ministerial arrangement with the Ministry of Water Resources as the lead Ministry and the Water Resources Planning Organization (WARPO) as the lead agency.

### b. The Goal

*To create conditions in which the reduction of poverty, development of sustainable livelihoods and the integration of the coastal zone<sup>2</sup> into national processes. can take place.*

#### Coastal Zone and Poverty

- Poverty (both absolute and extreme in terms of caloric intake) is high; 52 percent of the people are absolute poor and 24 percent are extreme poor. Fourteen out of 19 coastal districts have higher extent of extreme poverty than the country average (1998, BBS).
- Per capita GDP is low. In the coastal zone, average GDP per capita in 1999-00 was estimated at Tk. 18,198 compared to Tk. 18,269 for Bangladesh. Fifteen out of 19 coastal districts have lower GDP per capita than the country average (BBS).
- 54 percent of rural households in the coastal zone is functionally landless.
- Poverty is aggravated as people are more vulnerable to disasters like land erosion (particularly in the Meghna estuary) and cyclone and storm surge (all over the coast).
- Proportion of small farm households is high with too many farmers crowding on limited cultivable area. Small farmers account for 58 percent of coastal rural households, compared to 53 percent in Bangladesh (1996, BBS).
- Housing conditions are poor, as many as 50 percent households use straw/bamboo/polythene as roof materials in the coastal zone.

### c. Objectives

Economic growth; meeting basic needs & creating options for livelihood opportunities for coastal communities; reduction of vulnerabilities and enhancement of coping capacities; sustainable management of coastal resources; equitable distribution of resources and economic benefits across social strata; empowerment of coastal communities; women's advancement and promotion of gender equality; and preservation and enhancement of critical ecosystems.

### d. The Approach

The Project aims to build a coastal development process combining the creation of a knowledge and institutional environment with a poverty/livelihoods focused orientation. Six carefully selected outputs have been defined of which three relate to key stages in coastal development: a Coastal Zone Policy (CZPo); a Coastal Development Strategy (CDS); and a Priority Investment Program (PIP). Three additional cross-cutting themes aim to generate the required knowledge and capacities to implement the first three outputs. These are: to improve community capacities to enhance their livelihoods; to create an enabling institutional environment; and to establish a knowledge base. The PDO-ICZMP Project tries to establish a process approach -- rather than a one-shot master plan -- in

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<sup>2</sup> the coastal zone of Bangladesh encompasses a land area of 19 districts and the exclusive economic zone (EEZ). The 19 coastal districts (147 upazilas) cover a land area of 47, 212 km<sup>2</sup>, which is 32 % of the total land area of Bangladesh.

which actions are continuously identified, prepared, implemented and their performance is monitored against agreed common objectives and targets. This approach will be realized through harmonization and coordination of all players in the coastal zone and not through the creation of new agencies or institutions. Key words in preparing for actions are: targeting (on issues, regions or groups); participation and consultation; piloting (innovative approaches); and networking (with all relevant agencies).

### **Coastal Zone and Social Development**

- Average size of household is high with consequent high demographic dependency ratio. Average size of household is 5.12 in the coastal zone, compared to the country average of 4.89.
- Higher literacy rate for both men and women, compared to rest of the country, is a positive strength for further progress on social development.
- Severe child malnutrition is high, 5 percent for all children and 8 percent for girl children in the coastal zone, compared to 5 and 6 percent in Bangladesh respectively
- Access to service providing institutions is limited. The density of Union Parishad is low, 35 km<sup>2</sup> per UP in the coastal zone, compared to 32 km<sup>2</sup> in Bangladesh.
- Female wage rate is low, about half of the male wage rate.
- Proportion of households with access to potable water (tap and tube well) is low. Only 28 percent households use tube well/tap/ring well exclusively for domestic purpose in the coastal zone, compared to 64 percent in Bangladesh.
- In the coastal zone, only 72 percent households have access to safe drinking water compared to 86 percent in Bangladesh (2001, BBS). People in the coastal districts are more vulnerable to arsenic poison.
- Health infrastructure is poor in terms of low ratio of hospital bed to population. Average population per hospital bed is 3,782 in the coastal zone, compared to 2,981 in Bangladesh (1996, BBS).
- Household coverage by major micro-credit NGOs is low that restricts investment capacity of the poor households. In the coastal zone, 19 percent households are covered by four major micro-credit NGOs
- Women's mobility is restricted due to negative social attitude and poor law and order (2002, PDO-ICZMP).

The draft Coastal Zone Policy has already been formulated through an extensive consultation process with multitude of stakeholders both at national and district levels. The Coastal Zone Policy accommodates relevant coastal issues addressed in all major policy documents approved by the Government of Bangladesh. The document is under active consideration for approval.

### **Coastal Zone and Economic Growth**

- Current annual economic growth is around 5 percent, which is much lower than the required rate of 7 percent needed for achieving the MDGs.
- Share of industrial sector in GDP is low, which has more opportunities for growth. Industrial sector accounted for 22 percent of total coastal GDP during 1995-96 to 1999-00, compared to 25-26 percent in Bangladesh during this period (BBS).
- Density of growth centers is low, which limits market access to local products. Average density per growth center in the coastal zone is 80 km<sup>2</sup> compared to 70 km<sup>2</sup> in Bangladesh (1996, World Bank).
- Economic infrastructure with respect to electricity connection is poor, which is a concern for economic growth. In the coastal zone, as well as in Bangladesh, only 31 percent households have electricity connection. However, the situation of the urban areas is poor in the coastal zone with 63 percent households having electricity connection, compared to 67 percent in Bangladesh (2001, BBS).
- Chars and offshore islands are difficult to access that impedes investments (2003, PDO-ICZMP).
- Coastal zone offers immense potential for economic growth but has so far not been fully explored. Renewable and non-renewable energy, marine resources, tourism are some of the less explored areas.

### 3 I-PRSP AND ICZMP LINKAGE

The iPRSP document (ERD, March 2003) makes general mention of attention needed for the coastal zone. The focus on economic growth, poverty reduction and social development creates a framework, which is similar to the ICZM objectives. The following statements, from the IPRSP document, merit mention as having bearing on the objectives and scope of the ICZM process under development.

- The document has explicit focus on *poverty*. The document gives an analysis of the poverty status of the nation, sets poverty reduction targets and formulates poverty reduction strategies.
- The report recognizes that in addition to sectoral variation, considerable *regional variation* in poverty is noticeable. There is also considerable district-level variation in poverty. Regional variation in poverty is influenced by the incidence of natural hazards and tends to be higher in disaster-prone areas. There is a considerable interface between the persistence of chronic poverty and unfavorable agricultural environments (e.g., salinity prone, flood-prone, river-erosion prone, drought-prone areas). The level of poverty is typically higher for the landless. The incidence of extreme poverty is generally higher for the female-headed, female-managed and female supported households.
- The consensus view was that public action could have maximum impact on poverty only with the support of a *strong* (with adequate financial and administrative power) *and popular* (elected with people's mandate) *local government*. Without having effective structures of local governance at union and upazila levels, the issues of improving quality and enhancing accountability of public services at local level cannot be effectively addressed.
- The grass-roots consultations in preparation of this strategy document demanded additional attention to the problems of *environmentally fragile settings* such as char areas, river-erosion areas, salinity and flood-prone areas.
- Concerns were raised over the *lack of adequate participation* of diverse categories of socially vulnerable groups such as those residing in ecologically vulnerable areas such as cyclone-prone coastal areas, char and riverbank erosion areas.

The Strategy follows an approach of “*all routes matter*” and proposes that the strategic elements of anti-poverty policies and institutions will cover five broad avenues. The first set of policies would accelerate and expand the scope for *pro-poor economic growth* for increasing income and employment of the poor. The second set would foster *human development* of the poor for raising their capability through education, health, nutrition, employment oriented skill training, and social interventions. The third set of policies would support *women's advancement and closing of gender gaps* in development. The fourth set of policies would *strengthen social protection* to the poor against anticipated and unanticipated income or consumption shocks through targeted and other efforts. The fifth set would favorably influence *participatory governance*, enhance the *voice* of the poor, and improve *non-material dimensions* of well-being, including security, power and social inclusion by improving the performance of anti-poverty, disaster preparedness and mitigation institutions and removing institutional hurdles to social mobility (ERD, 2003).

Relevant to the ICZM approach is the emphasis on targeting. The IPRSP states: “The above interventions will have maximum impact on poverty, especially in minimizing the severity of poverty, when these are targeted to the poor regions and with special focus on the needs of the most disadvantaged population and ethnic groups. Policies and institutional actions delineated under the proposed poverty reduction strategy will be designed to reach out to the poorest and the remote rural areas, which are vulnerable to adverse ecological processes (including the cyclone-prone coastal

regions, chars and river erosion affected areas) and those with high concentrations of socially disadvantaged and marginal ethnic groups.”

For accelerating rural development, an integrated approach ‘covering the deprived population of char areas, coastal and hard-to reach areas under special rural development programmes through both government and NGO/CBO efforts’ would be taken.

The third of four sets of policies under ‘strengthening social protection’ is ‘strengthening disaster preventing and mitigating mechanisms to enhance the coping capability of the poor in times of natural disaster’. This is important from the prospect of averting large-scale entitlement failure, which may result as a consequence of severe natural disasters (including river erosion). Reduction of vulnerability to natural disasters would be an integral aspect of the national strategies for poverty reduction.

A special section is dedicated to caring for environment, emphasizing the link between poverty and environment and the importance of access to the natural resources. As 80% of the population depend to some extent on the country’s natural resources, “the policies will strike a realistic balance between the existing livelihood requirements of the people and sound environmental resources management that can ensure sustainability. A special emphasis will be given to addressing the problems of river erosion affected areas.

Through adopting of a comprehensive approach, the iPRSP document visualizes that, by the year 2015, Bangladesh would achieve the following goals or targets (ERD, 2003):

- ◇ removal of the ‘ugly faces’ of poverty by eradicating hunger, chronic food-insecurity, and extreme destitution;
- ◇ reduction of the number of people living below the poverty line by 50%;
- ◇ attainment of universal primary education for all girls and boys of primary school age;
- ◇ elimination of gender disparity in primary and secondary education;
- ◇ reduction of infant and under-five mortality rates by 65%, and elimination of gender disparity in child mortality;
- ◇ reduction of the proportion of malnourished children under five by 50%, and elimination of gender disparity in child malnutrition;
- ◇ reduction of the maternal mortality rate by 75%;
- ◇ ensuring availability of reproductive health services to all;
- ◇ reduction of social violence against the poor and the disadvantaged groups substantially, if not total elimination, especially violence against women and children; and
- ◇ ensuring comprehensive disaster risk management, environmental sustainability and mainstreaming of these concerns into the national development process.

In order to achieve similar national targets, as set under PRSP, the project attempted to establish bench marks for coastal zone developments (Table 1). For some indicators, separate bench marks could not be established because of lack of segregated data.

As can be seen from Table 1, coastal zone has different benchmarks, indicative of regional variation, as already mentioned in the iPRSP document. This calls for increased attention to reduction of extreme poverty, population growth. Higher literacy rate, reduced gender disparity are some of the strength that can make investments in coastal zone more rewarding.

**Table 1: Major goal posts in poverty and social indicators**

Indicators	Bench mark data (2000)	Bangladesh (IPRSP)				Coastal Zone Bench mark
		Target				
		2004	2006	2010	2015	
Income – poverty	50	45	43	35	25	
Extreme - poverty	19	15	13	9	5	24 (1998)
Adult literacy	56	64	69	79	90	54 (2001)
Primary enrollment	75	81	84	92	100	95 (2001)
Secondary enrollment	65	71	80	85	95	
Infant Mortality Rate	66	56	48	37	22	51-68 (2001)
Under – Five mortality rate	94	80	70	52	31	80-103 (2000)
Maternal Mortality Rate	320	295	275	240	147	
Life Expectancy	56	64	66	69	73	
Population growth	1.6	1.5	1.5	1.4	1.3	2.1 (1961-2001)
% Children underweight	67	48	42	34	26	
Reduction in gender disparity						
Female (7+) literacy (% of male)	80				Eradicate	70 (2001)
Female enrollment at tertiary level (% of male)	33				Eradicate	
Female underweight moderate or severe, <5 years (% of male)	8				Eradicate	
Female underweight severe, <5 years (% of male)	26				Eradicate	
Female mortality, 1-4 years (% of male)	133				Eradicate	

Links between PRSP goals and ICZMP objectives are shown in Table 2.

**Table 2: Links between i-PRSP goals and ICZMP development objectives**

<b>i-PRSP goals</b>	<b>ICZMP development objectives</b>
<p><b>Poverty and Hunger:</b> remove the 'ugly faces' of poverty by eradicating hunger, chronic food insecurity and extreme destitution</p>	<p><b>Economic growth:</b> sustained growth, priorities to non-farm employment, gas and renewable energy based power, manufacturing and processing industries, priorities to islands and chars, private sector involvement</p> <p><b>Basic needs and options for livelihoods:</b> poverty reduction through job creation; increased coverage in safe drinking water, health care, sanitation under private sector; continued food self-sufficiency; emphasis on diversified high value crops; effective khas land distribution; facilitating coastal navigation; free flow of information &amp; knowledge; improved law &amp; order</p> <p><b>Equitable distribution:</b> actions to reach poorest and remote rural areas; thrust on human development; increased access to resources, priority to exposed upazilas and islands</p>
<p><b>Poverty:</b> to halve the proportion of the population living below the poverty line</p>	<p><b>Reduction of vulnerabilities:</b> strengthening disaster prevention and mitigation measures for river erosion, cyclones, storm surges, salinity and earth quake; regular maintenance of sea-dykes; adequate cyclone shelters &amp; killas; improved coping capacity</p> <p><b>Equitable distribution:</b> actions to reach poorest and remote rural areas; thrust on human development; increased access to resources, priority to exposed upazilas and islands</p>
<p><b>Universal Primary Education:</b> attain universal primary education for all girls and boys of primary school age</p>	<p><b>Basic needs and options for livelihoods:</b> poverty reduction through job creation; increased coverage in safe drinking water, education, health care, sanitation under private sector; continued food self-sufficiency with emphasis on diversified high value export goods; effective khas land distribution; facilitating coastal navigation; free flow of information &amp; knowledge; improved law &amp; order</p>
<p><b>Gender Equality:</b> eliminate gender disparity in primary and secondary education</p>	<p><b>Women's development and promotion of gender equality:</b> closing of gender gaps specially through employment, training and education; attention to child mortality, child nutrition, reproductive health; special activities for disadvantaged women; awareness to stop social violence; promotion of women entrepreneurs;</p> <p><b>Empowerment of communities:</b> decentralization, good governance; planning and implementation at local level; participation of all stakeholder, men and women; co-management; information sharing</p>
<p><b>Child Mortality:</b> reduce infant and under 5 mortality rates by 65 percent and eliminate gender disparity in child mortality</p> <p><b>Child Nutrition:</b> reduce the proportion of malnourished children and eliminate gender disparity in child malnutrition</p> <p><b>Maternal Mortality:</b> reduce the maternal mortality rate by 75 percent</p> <p><b>Reproductive Health:</b> ensure access to reproductive health services for all</p> <p><b>Social Violence:</b> reduce substantially, if not eliminate totally, social violence against the poor and disadvantaged groups, especially violence against women and children</p>	<p><b>Basic needs and options for livelihoods:</b> poverty reduction through job creation; increased coverage in safe drinking water, health care, sanitation under private sector; continued food self-sufficiency with emphasis on diversified high value export goods; effective khas land distribution; facilitating coastal navigation; free flow of information &amp; knowledge; improved law &amp; order</p> <p><b>Women's development and promotion of gender equality:</b> closing of gender gaps specially through employment, training and education; attention to child mortality, child nutrition, reproductive health; special activities for disadvantaged women; awareness to stop social violence; promotion of women entrepreneurs;</p>
<p><b>Environmental Sustainability:</b> ensure disaster management and prevent environmental degradation for overcoming the persistence of deprivation</p>	<p><b>Preservation and enhancement of critical ecosystems:</b> emphasis on conservation, pollution control and climate change; Meaningful preservation of ECAs, heritage sites and marine reserve; institutional capacity building; strengthening of coast guards; respecting international protocols; biodiversity conservation; pollution control measures at all industrial units, ports and ship-breaking yards; implementation of adaptive measures for climate change</p> <p><b>Sustainable management of resources:</b> Best utilization of resources like land, water, fisheries, agriculture, forestry, livestock, energy and others; land zoning; reclamation of land; rain water harvesting, integrated water resources management, emphasis on marine fisheries, environmentally sound shrimp farming, afforestation on accreted lands, livestock rearing and energy generation for offshore islands</p>

#### 4 PROJECTS/PROGRAMMES FOR COMPREHENSIVE PRSP

The IPRSP states: “The interventions will have maximum impact on poverty, especially in minimizing the severity of poverty, when these are targeted to the poor regions and with special focus on the needs of the most disadvantaged population and ethnic groups. Policies and institutional actions delineated under the proposed poverty reduction strategy will be designed to reach out to the poorest and the remote rural areas, which are vulnerable to adverse ecological processes (including the cyclone-prone coastal regions, chars and river erosion affected areas) and those with high concentrations of socially disadvantaged and marginal ethnic groups.”

One of the outputs of ICZMP Project is a Priority Investment Program (PIP). Its objective is to develop and improve social, institutional and physical infrastructures. Here, proposal for possible investment in the coastal zone will be prepared. These proposals will come from two sources.

- a) Direct proposal from government/semi-government/corporation/NGO/others working in coastal zone and
- b) Concept proposals and concept notes to be prepared by the project (ICZMP Project) in interaction with a number of government agencies. Where possible, proposal may also be drawn from previous studies and project proposals.

These proposals will be screened and brought into comparable formats, specifying their contribution to the ICZM objectives of reducing vulnerabilities for different social groups and realizing development opportunities.

Different Ministries of the Government and development partners will be able to pick up projects from this PIPs to suit their sectoral objectives.

Pending development of the Priority Investment Programs (PIP), the project has, at this stage, identified >40 project concepts. As different Thematic Groups are working for developing the comprehensive PRSP, these concepts have been proposed for their consideration and for inclusion in their list of projects/programmes.

These concepts have been elaborated in project briefs and annexed separately for each of 9 of the 12 Thematic groups.



## ANNEX-A: PROJECT BRIEFS

- Thematic Group 3:* **Infrastructure Development and Reforms including Power, Energy and Communications**
- Thematic Group 5:* **Reforms in Governance including civil service reforms, judicial reforms and law and order**
- Thematic Group 6:* **Health including Population Planning, Nutrition and Sanitation**
- Thematic Group 7:* **Education including primary and mass education, female education, vocational and technical education**
- Thematic Group 8:* **Women and Children Advancement and Rights**
- Thematic Group 9:* **Rural development including Food Security, Disaster management, Safety-net Programs, Micro-credit and Rural Non-farm Activities**
- Thematic Group 10:* **Agriculture (Crops, Fisheries, Livestock) and environment including Forestry, Land Reforms, Land Use, Safe water Supply and Water resources Management**
- Thematic Group 11:* **Private Sector Development**
- Thematic Group 12:* **Information and Communication Technology and Technology Policy**



*Thematic Group 3*

## **Infrastructure Development and Reforms including Power, Energy and Communications**

### **(Roads, Railways and Inland Water Transports)**

#### **List of probable projects**

<b>Title</b>	<b>Location</b>	<b>Time Frame years</b>	<b>Estimated cost (million US\$)</b>
Supporting gas based industrial development in Bhola	Bhola	12	200
Introduction and expansion of solar energy in the remote coastal areas	Selected islands	5	30
Piloting Participatory Electricity Generation and Distribution Program Using Wind Energy at Suitable Locations	Selected 6 districts	5	4
Piloting Electricity Generation Using Tidal Fluctuations at Suitable Locations in the CZ	Swandip Channel	4	4
Development of Island Tourism targeting local development & employment generation	Selected islands	6	5
Development of tourism in Kuakata Through Capacity Building of the Rakhaine Community	Kalapara of Patuakhali district	5	2



### **Title: Supporting gas based industrial development in Bhola**

**Brief:** Natural gas reserve in Shahbazpur gas field in Bhola is available for commercial extraction. It provides a unique opportunity to use this valuable resource for development of this industrially backward region. A 160 MW power plant seems feasible. In order to harness the full potential of this resource, bulk of the power (gas-based electricity) will be used for industrial development of the district. Besides, LPG plant will be developed, which would reduce dependence on traditional biomass fuel. The southern part of Bhola would be brought under a planned industrial zone. This would necessitate development of necessary infrastructures like industrial land use planning, power grid, transport network, telecommunications, banking and insurance service, waste management, etc.

**Component:** Land development for industrial zoning; establishment of an EPZ, establishment of a gas-based power plant, setting up of gas-based industries including LPG plant; excess electricity to national grid, development of physical infrastructures (transport, communication, storage, banking and finance; development of growth centers; establishment of a technical training institute

**Location:** Char Feshon and Lalmohon upazilas of Bhola

**Benefit:** Wage employment of 50,000 people and self-employment of about 200,000 people in backward and forward linkage activities; will reduce dependence of the vulnerable communities on the critical natural resource base (fishing, fry collection, etc) and thereby ensure environmental sustainability; will accelerate integration of the local economy with the mainstream national process; will arrest unwanted rural-urban migration (Section B5-5.45, 5.46, 5.47; B6-5.48).

**Time frame:** 12 years

**Cost:** US\$ 200 million

**Agencies:** MoE&MR, BEPZA, MoL and private sector.

### **Title – Introduction and expansion of solar energy in the remote coastal areas**

**Brief:** Bangladesh, with a population of about 130 million, has one of the lowest levels of per capita consumption of electricity. Less than 20% of the total populations have access to power. In rural Bangladesh, the figure is about 10%, and in coastal and remote areas, it could be as low as 3%. Given the current rates of growth of electrification, and population, the rate of electricity penetration in rural areas (about 200,000 new connections a year) could be less than 1% per year. At this rate, access to power supply through the national grid for all Bangladeshis may take between 50 to 100 years, In remote areas, specially the coastal areas, the inhabitants are likely to receive power well after fifty years. Loss of economic opportunities due to lack of power in these remote areas would thus be enormous.

Project has to be taken to provide faster access to power in the remote islands and coastal areas of Bangladesh (integrated rural power generation and distribution facilities). The project will ensure electricity generation and distribution systems in selected islands and chars by utilizing solar energy (Section 5.47 and 5.48). By adopting appropriate modes encompassing public-private partnerships the project will establish some Photo Voltaic Installations, form and maintain user groups and develop a sustainable O&M mechanism.

**Location:** Selected remote islands and chars within the coastal zone

**Components:** Solar Panel/plant and distribution networks with other equipments and appliances; credit support, entrepreneurship development, training

**Benefits:** Opportunities for exploiting the vast potential of rural growth through rural-based processing industries such as dehydrated fish industry, small power loom units increased; non-farm

employment opportunities increased; providing services that helps to alleviate poverty and protect environment through applied research and development of renewable energy based technologies

**Cost:** US \$ 30 million

**Agencies:** PDB, REB, Private Sector

### **Title – Piloting Participatory Electricity Generation and Distribution Program Using Wind Energy at Suitable Locations**

**Brief:** Bangladesh, with a population of about 130 million, has one of the lowest levels of per capita consumption of electricity. Less than 20% of the total populations have access to power. In rural Bangladesh, the figure is about 10%, and in coastal and remote areas, it could be as low as 3%. Given the current rates of growth of electrification, and population, the rate of electricity penetration in rural areas (about 200,000 new connections a year) could be less than 1% per year. At this rate, access to power supply through the national grid for all Bangladeshis may take between 50 to 100 years, In remote areas, specially the coastal areas, the inhabitants are likely to receive power well after fifty years. Loss of economic opportunities due to lack of power in these remote areas would thus be enormous.

The project will test the possibility of participatory electricity generation and distribution program using wind energy at suitable locations in the coastal zone (Section 5.47 and 5.48). The project will install wind turbine, develop distribution mechanism, form and maintain user groups and develop sustainable O&M mechanism.

**Location:** Selected 6 districts in the CZ

**Components:** Wind turbine installation, data gathering, storing facilities; distribution mechanism and others

**Benefits:** Methods of electricity generation by using wind energy established; electricity coverage increased; non-farm employment opportunities increased; socio-economic condition improved. Providing services that helps to alleviate poverty and protect environment through applied research and development of renewable energy based technologies

**Cost:** US \$ 4 million

**Agencies:** PDB, REB, BUET, CBO, Private Sector

### **Title – Piloting Electricity Generation Using Tidal Fluctuations at Suitable Locations in the CZ**

**Brief:** The history of use of tide for power generation dates back in the 11th century in England. In 1966 world's first major tidal power plant in France was commissioned. In India power generation from tide is being explored since 1979. In Bangladesh the harnessing of tidal power has not yet been done.

The prospect of producing electricity from tidal power around Bangladesh coast especially around Sandwip channel has already been investigated. Available knowledge shows that electricity can be produced even for a tidal range (head difference between low water and high water) as low as 2.5 m., whereas preliminary data reveals that the average tidal range around Sandwip channel is about 3.0 m. There is no cost of raw material in the production process. The source is natural and hence the supply is permanent. The cost of maintenance is also less.

The project will test the possibility of electricity generation using tidal fluctuations at suitable locations in the coastal zone (Section 5.47 and 5.48).

**Location:** Sandwip channel in the coast

**Benefits:** - Open a new source for electricity production which is being desperately sought in Bangladesh and if it becomes sustainable it can be extended for remote coastal areas of Bangladesh;  
- Bring changes in the quality of life of the poor village people of the coastal belt of Bangladesh where normal electric supply under normal grid transmission system is difficult because of cyclone, storm surges and presence of innumerable tidal creeks; non-farm employment opportunity.

**Components:** detail design study, procurement and installation of test apparatus (bulb turbine); field instrumentation and investigation;

**Cost:** US \$ 4 million

**Agencies:** PDB, BUET, Private Sector

**Title: Development of Island Tourism targeting local development & employment generation**

**Brief:** There are a number of islands in Noakhali, Bhola and Patuakhali districts exposed to the sea. Among these are Damar Char, Nijhum Dwip, Manpura, Bashon Bhanga, Puber Char, Dhal Char, Sonar Char, Rugar Char, Char Patalia, Char Kukri Mukri, Totar Char, Char Kabir, Char Tufania and so forth. People already settle some of these and some are still virgin with mangrove plantations. The project (Section 5.8) will develop infrastructure necessary for the expansion of tourism in the islands of Bhola and Noakhali districts aiming at accelerating the pro-poor economic growth. Through multi-stakeholder participation, the project (by following the National Tourism Policy 1992) will develop the infrastructures (e.g., tourist resort, roads, launch and ferry ghats, drinking water supply, boating and angling facilities, bird and wildlife watching facilities, etc.) necessary for the tourism development. The project will involve the community in the tourism-based activity and build a system of income distribution to the local community through benefit sharing mechanism to foster non-farm employment opportunities and income to the local people.

**Component:** Infrastructure development (road and water transport, telecommunications, power, accommodation for tourists, water supply and sanitation, wildlife sanctuary, watch tower) tourism training for local youth; credit for linkage activities (hotel/restaurant, transport, souvenir shop, etc.).

**Location:** In selected islands of Bhola and Noakhali districts

**Benefit:** Employment opportunity for 2000 (self and wage employment); better physical infrastructure for local people (Section 5.48); exposure of the country to international tourists (Section 5.44); shall achieve PRSP goal of poverty reduction (through employment generation; Section 5.39) and environmental sustainability (through nature conservation; Section 5.85).

**Time frame:** 6 years

**Cost:** US\$ 5 million

**Agencies:** BPC, FD, LGED and private sector

**Title: Development of tourism in Kuakata Through Capacity Building of the Rakhaine Community**

**Brief:** There are about three hundred Rakhaine households (Population Census 1991) living in and around Kuakata in Patuakhali district. The Rakhaines are a distinct ethnic community with rich cultural heritage. They add more beauty to the area that attracts an increasing number of tourists to this beach resort. Along with increasing pauperization and pressing needs for economic development, the Rakhaine community is being dispersed and is losing its identity. The proposed project (Section 5.8) will develop and promote eco tourism (following the guidelines of the National Tourism Policy 1992) through protecting and promoting culture and traditions of the Rakhaine community and enhancing their capacity through training on tourism and related trades.

**Component:** Protection and promotion Rakhaine culture and traditions through establishing a Cultural Academy; tourism training for Rakhaine youth; economic support to producers of traditional art and craft items through credit; providing basic services, e.g. housing, water and sanitation, primary health care and education to members of the community and law and order to maintain communal harmony

**Location:** Rakhaine community of Kalapara Upazila of Patuakhali district

**Benefit:** Employment opportunities for the Rakhaine communities increased about 200 Rakhaine women and men; off-farm employment of the local people to the tune of another 1000 through backward and forward linkage activities in connection with tourism (hotel/restaurant, transport, beach sports, etc.) (Section 5.38); quality of life of the local community improved through income opportunities from tourism; development of physical infrastructure, e.g., road, electricity, telecommunications, etc. in the locality (Section 5.46, 5.48). The project will achieve PRSP goals of poverty reduction of a backward community by directly contributing to employment generation and contribute to economic growth and promote a positive image of the country through exposure to international tourists (Section 5.42, 5.43).

**Time frame:** 5 years

**Cost:** US\$ 2 million

**Agencies:** BPC, Ministry of Cultural Affairs, private sector.

*Thematic Group 5*

**Reforms in Governance including  
civil service reforms, judicial reforms and law &  
order**

**List of probable projects**

<b>Title</b>	<b>Location</b>	<b>Time Frame years</b>	<b>Estimated cost (million US\$)</b>
Formulation of Coastal Zone Regulation for the Bangladesh Coastal Zone	-	2	3
Strengthening of Coast Guard program for the improvement of peoples security in the coastal zone	9 districts	6	20



### **Title: Formulation of Coastal Zone Regulation for the Bangladesh Coastal Zone**

**Brief:** Coastal zone of Bangladesh is an area of divergent livelihoods and economic activities. So far the regulatory regime of the coastal zone is 'sectoralised' under various Ministries, and this has sometimes resulted in the development of uncoordinated, competing and often adversarial approaches unfriendly to sustainable management of resources and ecological governance. To overcome this the on-going PDO-IZMP office has initiated an effort to compile all the laws and regulations related to the coastal zone and a preliminary draft is under preparation.

So by drawing from the existing experiences on the neighboring countries (e.g., India) the project will formulate coastal zone regulations for better harmonization and integration of activities.

**Component:** revision of the existing laws and regulations; identifying areas of conflict and contradiction among and within the laws; identifying interventions, necessary changes, i.e., legislative proposals to harmonize them; formulating an umbrella coastal zone legislation to deal with coastal situations

**Location:** Coastal zone of Bangladesh

**Benefit:** effective integration of single – sectoral development approaches; harmonization and coordination of the coastal zone management activities enhanced; conflicts and disparities among the laws and regulations related to the coastal zone removed; promotion of good governance in the coastal zone; participation of local people enhanced (B2-5.22, 5.25, 5.28, F5.76, G5.78, 5.80, 5.81).

**Time Frame:** 2 years

**Cost:** 3 million US\$

**Agencies:** Ministry of Law, BELA, BIDS, other relevant organizations

### **Title: Strengthening of Coast Guard program for the improvement of peoples security in the coastal zone**

**Brief:** Presently about 400,000 marine fishers operate with high risks of natural calamities, piracy and degradation of the marine habitat. On the other hand, forestry resources are dwindling fast because of lack of enforcement of conservation laws. To address the increasing concerns regarding law and order situation (Section 5.25) in the peripheral and remote coastal areas and to enforce conservation laws and regulations (Section B2-5.25, E-5.74), capacity building and strengthening of the Coast Guard is needed. Under this project, critical areas be identified for enforcement of conservation laws and regulations on harvesting of marine resources and forestry, action against pollution and piracy, emergency assistance and evacuation service to marine fishers during storms and cyclones, etc.

**Component:** Setting up district unit of Coast Guard with necessary law enforcing and evacuation infrastructures, vessels, equipments and logistics; recruitment and training of sufficient number of personnel

**Location:** 9 sea-facing coastal districts (Chittagong, Cox's Bazar, Noakhali, Bhola, Patuakhali, Barguna, Bagerhat, Khulna and Satkhira)

**Benefits:** Conservation of marine and forest resources ensured for sustainable livelihoods; law and order situation in the newly accreted chars and islands improved; safety of fishers improved; piracy and smuggling in the Bay of Bengal reduced

**Time frame:** 6 years

**Cost:** US\$ 20 million

**Agencies:** Coast Guard, Bangladesh Navy, FD.



*Thematic Group 6*

## **Health including Population Planning, Nutrition and Sanitation**

### **List of probable projects**

<b>Title</b>	<b>Location</b>	<b>Time Frame years</b>	<b>Estimated cost (million US\$)</b>
Mobile health units for remote chars and islands in the exposed coast	48 upazilas	6	20
Health and nutrition program for the slum dwellers in costal metropolitan areas	SMAs in Divisional towns	6	10



### **Title: Mobile health units for remote chars and islands in the exposed coast**

**Brief:** About 12 million people live in the exposed coast (upazilas exposed to the sea including chars and offshore islands). These areas are characterized by poor physical and social infrastructures (transport, telecommunication, health service, etc). Under this project one mobile health unit (established on boats and vans) will be developed for each upazila so that they can provide services to doorsteps of the people. This would be a prototype of the *Jibontori*, which is currently in operation. These units will visit remote areas and will operate through field clinics with support from the local government (Union Parishad) and NGOs. These will be equipped with health professionals and para-professionals, equipments and medicines. The project will promote stakeholder participation in health risk areas (in terms of absence of health infrastructure and disease prevalence) and a system of regular visit of the health units to those areas will be developed (Section C-5.62, 5.63, 5.64). Through consultation and campaign consciousness of the local people to the health issues will be increased.

**Component:** Recruitment and training of local paraprofessionals; procurement of well-equipped mobile clinics (boat/van); awareness on community participation

**Location:** 48 upazilas in the exposed coast

**Benefits:** Basic health services provided to the people living in remote coastal chars and islands; reproductive health service to women in vulnerable areas; higher productivity and higher economic growth by ensuring health services (Section C-5.62, 5.63, 5.64).

**Time frame:** 6 years

**Cost:** US\$ 20 million

**Agencies:** MoH&FW, LGIs and NGOs

### **Title: Health and nutrition program for the slum dwellers in costal metropolitan areas**

**Brief:** There are about 400 slums in Chittagong, Khulna and Barisal SMAS with about 80,000 households. Besides there are many floating people living without basic amenities of life. Slums are integral part of urban development and therefore these should be brought under mainstream of development services. A package of essential services like health interventions (establishment of community health clinic in each Ward, Delivery mechanism of Essential Service Packages, etc.) with enhanced programs for family planning will be developed targeting the slum dwellers (Section C-5.62, 5.63, 5.64) and training will be given to the beneficiaries on health issues. Besides, drinking water and sanitation services will be improved.

**Component:** Community clinic; water supply and sanitation; awareness development

**Location:** Khulna, Barisal and Chittagong SMAs

**Benefits:** Improvement of health and hygiene condition of about half a million slum dwellers and floating people in metropolitan areas of the coastal zone, pro-poor economic growth through higher productivity by improving health conditions

**Time frame:** 6 years

**Cost:** US\$ 10 million

**Agencies:** LGIs, MoH&FW and NGOs



*Thematic Group 7*

**Education including primary and mass education, female education, vocational and technical education**

**List of probable projects**

<b>Title</b>	<b>Location</b>	<b>Time Frame years</b>	<b>Estimated cost (million US\$)</b>
Primary education for the urban slum dwellers and floating children	SMAs in Divisional cities	6	10
Establishment of IT supported model Unions in sea facing upazilas	48 Unions	5	10



### **Title: Primary education for the urban slum dwellers and floating children**

**Brief:** There are about 400 slums in Chittagong, Khulna and Barisal SMAs with about 80,000 households. Besides there are many floating people living without basic amenities of life. Slums are integral part of urban development and therefore these should be brought under mainstream of development services. The project will establish satellite primary schools at locations suitable to the slum dwellers; run five-years basic education courses (Section C- 5.65, 5.66). Students will be provided with environmental education and vocational skills. The local government will manage these schools.

Awareness and consciousness rising of the guardians through repetitive consultation and financial incentives in the form of scholarships and grants will be envisaged.

**Component:** 50 satellite primary schools with necessary physical infrastructures and fixtures; financial grant for students; community awareness program for primary education; arrangement for vocational training for enrolled students.

**Location:** Khulna, Barisal and Chittagong SMAs

**Benefits:** About 10,000 vulnerable children will get basic education and skill training annually and will be transformed into human resource. Will realize the PRSP target of universal primary education (Section C- 5.65, 5.66).

**Time frame:** 6 years

**Cost:** US\$ 10 million

**Agencies:** Directorate of Primary Education, LGD and NGOs

### **Title: Establishment of IT supported model Unions in sea facing upazilas**

**Brief:** IT centers will be established at selected unions of 48 upazilas located along the coast on a pilot basis. These centers will cater farmers, fishers and artisans. These centers shall be equipped with computers; internet connections and other facilities to provide textual and visual information on issues related to rural livelihoods, especially market prices, weather, product demand, services available in and around the locality and for routine mailing services. Training will be provided to at least two people on the information technology. A central information generation and dissemination center will be established to generate information catering to the need of the rural communities.

**Components:** Detail design study, 48 union-level IT centers, one central info generation & dissemination center (ISP provider), training

**Location:** 48 Unions in 48 upazilas

**Benefit:** Demonstration of IT use for the benefit of rural development, coastal management and human resource development and employment

**Cost:** US\$10 million

**Agencies:** BRDB, LGD, NGOs, private sector (ISP provider).



*Thematic Group 8*

## **Women and Children Advancement and Rights**

### **List of probable projects**

<b>Title</b>	<b>Location</b>	<b>Time Frame years</b>	<b>Estimated cost (million US\$)</b>
Empowerment through training of women members of UPs and Pourashavas	All coastal districts	3	2
Capacity building and skill development of female fish processors in Cox's Bazar district	Cox's Bazar	5	10
Safe drinking water for arsenic prone coastal areas	Patharghata	6	8
Veterinary services by private women practitioners in selected districts	3 districts	3	10



### **Title: Empowerment through training of women members of UPs and Pourashavas**

**Brief:** Half of the population is women. For gender mainstreaming, one-third of the UP/Pourashava membership has been kept reserved for women to be elected under universal adult franchise. This would eventually promote women leadership in the society and would help in reducing gender gap by enabling women to participate directly in planning and management of community affairs through local government institutions. In order to accelerate the process of women's empowerment, the proposed project will arrange leadership and management training for all women members of 1,351 UPs and 70 Pourashavas in the coastal zone. Special emphasis will be given in planning and management of coastal resources for sustainable livelihoods.

**Component:** Module and material development; training of trainers (ToT); training of women members of UPs and Pourashavas

**Location:** 19 coastal districts

**Benefits:** Local level women leaders will play more pro-active role in governance; this will reduce gender gap in performing roles and responsibilities in governance. This will realize PRSP goals of good governance (Section B2-5.22); reduction of gender-gap and gender mainstreaming (Section 5.68, 5.69, 5.70, 5.71, 5.72).

**Time frame:** 3 years

**Cost:** US\$ 2 million

**Agencies:** DWA, LGIs and NGOs

### **Title: Capacity building and skill development of female fish processors in Cox's Bazar district**

**Brief:** A large number of women in the coastal districts are involved in fish processing activities, particularly fish drying. These activities largely involve traditional technology, which lacks quality control and thus becoming less remunerative. The proposed project would embark on group establishment, training, demonstration of extended knowledge, skill development (B1 5.16) in fish processing, development of small trade/ cooperative business (B1 5.16) to empower (D 5.69) the coastal female fish processors.

**Component:** Group development; module and material development for training; trainers training; establishment of training center; training of fish processors; demonstration and extension; credit; marketing support

**Location:** All upazilas of Cox's Bazar district

**Benefit:** More efficient and hygienic fish processing; enhanced income for fisher women, women's involvement in marketing of dry fish; sustainable livelihoods for 6000 women in processing and other related activities (self-employment for 3000 and wage employment for 3000). Will achieve PRSP goals of poverty reduction; women's empowerment.

**Time frame:** 5 years

**Cost:** US\$ 10 million (including revolving fund for credit).

**Agencies:** DWA, DoF, BRDB, NGOs and private sector.

### **Title: Safe drinking water for arsenic prone coastal areas**

**Brief:** Access to safe drinking water in the coastal zone is considerably below the national average. There are two reasons for this. First of all the coverage by tube wells in the coastal zone is lower than in the rest of Bangladesh. Secondly, in some coastal districts, many of the tube wells are heavily contaminated by arsenic. In some places, there are problems of accessing the deep aquifer

through deep tube wells. Patharghata upazila of Barguna district is one such example. The proposed project will enhance accessibility of safe drinking water to about 20,000 rural households by adopting local and innovative technology of rainwater harvesting and pond sand filtering (PSF). This has already been demonstrated with success. It would be endeavored to excavate and use community ponds with PSF technology and would install promote rainwater harvesting technology at the household level by women in entire Patharghata upazila. These technologies will be promoted through social mobilization and people's participation.

**Component:** Arranging khas land for community pond in each village; social mobilization for using community ponds through women's groups; training for technology development and promotion; production and distribution outlets for low-cost pots/containers for rainwater harvesting

**Location:** Patharghata upazila of Barguna district

**Benefit:** Access to safe water for 20,000 households (Section B6-5.51), reduced vulnerability of women in particular who are to fetch water for respective families, improved health and hygiene status (Section C-5.61, 5.62)

**Time frame:** 6 years

**Cost:** US\$ 8 million

**Agencies:** DWA, DPHE, Ministry of Land, private sector and NGOs

#### **Title: Veterinary services by private women practitioners in selected districts**

**Brief:** The coastal belt is well suited for rearing livestock and poultry. Most households, even the poorer ones own chickens and ducks, and 44% own cattle and/or buffaloes. The relatively low cropping intensity in the coastal zone means cattle can graze freely for a good part of the year. Local breeds are well adapted to the saline conditions and generally survive well. However, veterinary services are underdeveloped in the coastal zone, particularly in the more remote areas, exposing the households involved to major risks.

Improved access to veterinary services would reduce the risk that households face in rearing livestock and poultry. This would not only benefit those who already rear livestock, but would also encourage others to develop the remaining potential. With the growing urbanization the market for livestock and poultry products is likely to grow for decades to come. Livestock and poultry are generally owned and reared by women and this would be more logical that women practitioners (para-professionals) take care of these important household assets. This would enable a large number of women to earn by providing veterinary services to rural households.

**Component:** Module and material development for training; training of trainers (ToT); training of women practitioners; supply of vaccines and medicines; credit for practitioners to stock vaccines and medicines

**Location:** Feni, Noakhali and Bhola district

**Benefit:** Poverty reduction by ensuring livestock and poultry care, reducing mortality and attracting more investments in the sector (Section B3-5.34); gainful employment for women (self-employment of about 3000 women practitioners and income security to about 500,000 livestock keepers) (Section 5.69) ensure steady supply of dairy products in the market (meat, milk, cheese, yogurt, butter, etc.) with positive impact on nutrition (Section 5.64, 5.66).

**Time frame:** 3 years

**Cost:** US\$ 10 million

**Agencies:** DWA, DLS and NGOs.

*Thematic Group 9*

## Rural development including Food Security, Disaster management, Safety-net Programs, Micro-credit and Rural Non-farm Activities

### List of probable projects

Title	Location	Time Frame years	Estimated cost (million US\$)
Capacity & awareness building for ICZM among local administrative tiers for improving governance of coastal resources	All coastal districts	2	3
Establishment & Operationalization of a Program Coordination Office for ICZM	Dhaka	3	7-10
Implementation and institutionalization of ICZM approaches at two selected coastal districts – Phase 2 of ICZMP in Bangladesh	Patuakhali & Noakhali	6	50-80
Multipurpose <i>Killa</i> in Char Areas	4 districts	3	2
Enhancement of livelihoods in chars and islands	Coastal chars & islands	9	50
Capacity building and skill development of female fish processors in Cox's Bazar district	Cox's Bazar	5	10
Veterinary services by private women practitioners in selected districts	3 districts	3	10
Integrated development of Manpura- a remotely located upazila	Bhola district	10	15
Development of tourism in Kuakata Through Capacity Building of the Rakhaine Community	Patuakhali	5	2
Development of Island Tourism	Bhola & Noakhali	6	5
Safe drinking water for arsenic prone coastal areas	Barguna	6	8
Coastal fisher community development program	Selected coastal districts	6	60
Coping mechanism development for the cyclone: reducing loss of household property	6 upazilas	2	3
Strengthening of Coast Guard program for the improvement of peoples security in the coastal zone	9 districts	6	20
Reduction of severe vulnerability in the CZ through multi-purpose cyclone shelters	All over	5	30
Strategy and action plan to respond to impacts of climate change and sea level rise (CC&SLR) in the coastal zone of Bangladesh	Study	3	15
Completing and maintaining sea dykes as first level of defense against sea level rise	All over	5	20
Comprehensive rehabilitation for erosion victims	All over	3	15
Estuary Development Program	Meghna estuary	5	10
Capacity building of the people's representatives in UPs and Pourashavas for coastal resource management	All over	3	5
Development Strategy for Newly Accreted Land	Selected area	3	2
Development of low cost erosion protection technology	Selected area	3	4
Land use zoning for efficient use of land resources	All over	5	2
Promoting floating agriculture- a traditional agriculture in the coast	5 districts	5	5



**Title: Capacity & awareness building for ICZM among local administrative tiers for improving governance of coastal resources**

**Brief:** The application of ICZM approach (Integrated coastal zone management) is a new management responsibility of administrative tiers located in 19 coastal districts. Different means of awareness, motivation, capacity building will be employed for the professional employees at district, upazila and union, levels (B2, 5.29). The objective is to train them for ICZM approaches, participatory resource planning, implementation and management. This will be carried out at regular intervals. A team of trainers will be established in each district through comprehensive and intensive ToT. Gender sensitive motivation, awareness and publicity materials will be developed. Knowledgeable persons from problem areas in the coast will be used as resource persons.

**Components:** Motivation, awareness and publicity materials development; ToT; awareness campaign; training.

**Location:** 19 coastal districts

**Benefit:** Understanding and awareness regarding wise and sustainable use of coastal resources and livelihoods of coastal communities will be increased resulting in qualitative and quantitative change in coastal management. This will facilitate and support most of the Poverty Reduction Strategy including 'supporting local government and broadening participation' and 'caring for environment'.

**Cost: US\$3 million**

**Agencies:** Proposed Program Co-ordination Office for ICZM, specialized NGOs and other relevant agencies

**Title: Establishment & Operationalization of a Program Coordination Office for ICZM**

**Brief:** The setting up of a Program Co-ordination Office (PCO) for ICZM has been identified in the draft Coastal Zone Policy. The experience of an existing Program Development Office (PDO) to steer the harmonization in coastal development is worth linking. An office shall be set up to support and coordinate programs and projects in the coastal zone. The office shall be responsible for facilitating coordination and integration of programs in the coastal zone and promote ICZM process to be embedded in the line agencies. Experts deputed from different Ministries, working at the PDO, are expected to continue at the PCO.

Under this setup, different activities will be taken: formulation of guidelines/manuals to support CDS, coastal zone regulations, establishing monitoring mechanism, policy advocacy and implementation, training and facilitating inter-Ministerial institutional set-ups.

**Component:** Office with all required logistics and manpower;

**Locations:** Dhaka

**Benefit:** institutionalization of ICZM process

**Cost: US\$ 7 – 10 million (for 3 years)**

**Agency:** Lead Ministry

**Title: Implementation and institutionalization of ICZM approaches at two selected coastal districts – Phase 2 of ICZMP in Bangladesh**

**Brief:** In 2004, the Government of Bangladesh is expected to adopt coastal Zone Policy (CZPo). Based on this CZPo, Coastal Development Strategy (CDS) will be formulated and adopted in 2005. Implementation of CZPo and CDS will be attempted at two selected districts through formulation of comprehensive district development plan in a participatory manner, establishing co-management mechanisms suggested in the CDS, implementation of multi-sectoral projects through establishing

partnership among stakeholders. All these will be done targeting poverty reduction, economic growth and social development with adopting key indicators. Emphasis will be given to establish institutional mechanisms. Horizontal and vertical coordination across the GoB agencies, NGOs, CBOs and civil societies and affirmative actions to reduce the gender inequality shall be key approaches to pursue the development and equitable distribution (B2). The components of all other coastal projects shall be in force in this district to able to pursue a holistic development.

**Components:** Comprehensive district development plans, institutional development (establishing governance), pilot multi-sectoral projects, community participation

**Locations:** Patuakhali & Noakhali (indicative)

**Benefit:** ICZM approach operationalized in field; proposed institutional ‘best practices’ further replicated; partnership for achieving PRSP targets; foster pro poor economic growth, human development of the poor, Reducing inequality and gender gaps.

**Cost:** US\$50-80 million (6 years)

**Agency:** BRDB, Proposed Program Co-ordination Office for ICZMP, BWDB, DoF, District administration, DAE, LGED, Zila Parishads, relevant agencies, NGOs.

### **Title: Multipurpose *Killa* in Char Areas**

**Brief:** The livestock within the CZ constantly facing serious threats due to tidal flooding and cyclonic storm. The loss is very high and not yet minimized. The grazing opportunity is also reducing and adds to the problem.

Construct multipurpose community cattle shelter or *killa* in coastal char areas as coping measure for not only protection but also improved growth of livestock within the community (B3, 5.35). This project will require khas land, NGO intervention, people’s mobilization, maintenance group formation, construction of twin venture: *killa for grazing* and community pond for water supply, training on awareness building, integration and financial management.

**Components:** Ponds and Killas, additional grazing spaces, training, livestock services and others

**Location:** Coastal chars in Noakhali, Lakshmipur, Chittagong Cox’s Bazar and Bhola districts

**Benefit:** Protect loss of animal husbandry and accelerate growth of livestock, optimize need of grazing land, growth of culture fishery, employment opportunity and improve people’s livelihood condition.

**Cost:** US \$ 2 million

**Agencies:** DoL, DoF, LGD, NGOs

### **Title: Enhancement of livelihoods in chars and islands**

**Brief:** About 12 million people live in the exposed coast (upazilas exposed to the sea including chars and offshore islands). These areas are characterized by poor physical and infrastructures (transport, telecommunication, marketing, etc). The poverty is aggravated by lack of access to essential services, e.g., water and sanitation, health, housing, education and disaster management. The situation is precarious for five million char and island dwellers. The proposed project envisages enhancing livelihoods of the char and island dwellers by providing basic social and economic infrastructures. Community participation through CBOs and the Local Government (UPs) with meaningful and effective women’s participation will be an integral component for local level planning for resource mobilization, budgeting, resource management and monitoring. This would be a prototype of the Char Livelihoods Program being implemented in the chars of the Jamuna River.

**Component:** Targeted provision of infrastructure (transport, communication, disaster preparedness, protective infrastructure) and services (health, water and sanitation, education); business development and financial services (skill training, credit and marketing promotion); community participation in planning and management involving local government and CBOs

**Location:** Chars and islands of Cox's Bazar, Chittagong, Noakhali, Bhola and Patuakhali districts

**Benefit:** Char and island dwellers will be able to withstand the shocks and stresses caused by natural disasters and physical isolation (Section 5.74); they will have better access to basic services (Section 5.79); will find more gainful employment (Section 5.39) because of better infrastructures and services (Section 5.48); will be integrated with the mainstream of national development (Section 5.42, 5.43, 5.78); poor people will own and control the process of development through a participatory and bottom-up approach of local level planning (Section 5.76, 5.77). This will realize the PRSP goals of pro-poor development (B); gender mainstreaming (D); good governance and mainstreaming in the national process (B2).

**Time frame:** 9 years

**Cost:** US\$ 50 million

**Agencies:** MoLGRD&C, DWA, private sector and the NGOs

#### **Title: Capacity building and skill development of female fish processors in Cox's Bazar district**

**Brief:** A large number of women in the coastal districts are involved in fish processing activities, particularly fish drying. These activities largely involve traditional technology, which lacks quality control and thus becoming less remunerative. The proposed project would embark on group establishment, training, demonstration of extended knowledge, skill development (B1 5.16) in fish processing, development of small trade/ cooperative business (B1 5.16) to empower (D 5.69) the coastal female fish processors.

**Component:** Group development; module and material development for training; trainers training; establishment of training center; training of fish processors; demonstration and extension; credit; marketing support

**Location:** All upazilas of Cox's Bazar district

**Benefit:** More efficient and hygienic fish processing; enhanced income for fisher women, women's involvement in marketing of dry fish; sustainable livelihoods for 6000 women in processing and other related activities (self-employment for 3000 and wage employment for 3000. Will achieve PRSP goals of poverty reduction; women's empowerment

**Time frame:** 5 years

**Cost:** US\$ 10 million (including revolving fund for credit)

**Agencies:** DWA, DoF, BRDB, NGOs and private sector

#### **Title: Veterinary services by private women practitioners in selected districts**

**Brief:** The coastal belt is well suited for rearing livestock and poultry. Most households, even the poorer ones own chickens and ducks, and 44% own cattle and/or buffaloes. The relatively low cropping intensity in the coastal zone means cattle can graze freely for a good part of the year. Local breeds are well adapted to the saline conditions and generally survive well. However, veterinary services are underdeveloped in the coastal zone, particularly in the more remote areas, exposing the households involved to major risks.

Improved access to veterinary services would reduce the risk that households face in rearing livestock and poultry. This would not only benefit those who already rear livestock, but would also encourage others to develop the remaining potential. With the growing urbanization the market for livestock and poultry products is likely to grow for decades to come. Livestock and poultry are generally owned and reared by women and this would be more logical that women practitioners (para-professionals) take care of these important household assets. This would enable a large number of women to earn by providing veterinary services to rural households.

**Component:** Module and material development for training; training of trainers (ToT); training of women practitioners; supply of vaccines and medicines; credit for practitioners to stock vaccines and medicines

**Location:** Feni, Noakhali and Bhola district

**Benefit:** Poverty reduction by ensuring livestock and poultry care, reducing mortality and attracting more investments in the sector (Section B3-5.34); gainful employment for women (self-employment of about 3000 women practitioners and income security to about 500,000 livestock keepers) (Section 5.69) ensure steady supply of dairy products in the market (meat, milk, cheese, yogurt, butter, etc.) with positive impact on nutrition (Section 5.64, 5.66).

**Time frame:** 3 years

**Cost:** US\$ 10 million

**Agencies:** DWA, DLS and NGOs

#### **Title: Integrated development of Manpura- a remotely located upazila**

**Brief:** Manpura is an island upazila in Bhola district, which is difficult to access and lacks basic amenities of life for a large population of about 100 thousand. Initiatives in all fronts (A 5.1) are needed to ensure sustainable livelihood, poverty reduction (A 5.1, 5.2, 5.3, 5.4; B1 5.11, 5.13; B2 5.29; B3 5.31; B8 5.55, 5.59) and integration into national process. This project will address the dynamics of the natural systems with the livelihood conditions; consider available sources and uses; involve local stakeholders intensively and decisively in planning and resource management.

**Component:** Economic infrastructures, e.g., road, telecommunications, power (solar); human development infrastructure (school, health/family welfare centers and mobile clinics, water and sanitation, tourist resort); protective infrastructure (cyclone shelter and killa, coastal embankment; skill training, credit for income generating activities); nature conservation (wildlife sanctuary)

**Location:** Manpura upazila in Bhola district

**Benefit:** Improve socio-economic condition of the poor (Section C 5.61, 5.62); reduce vulnerability by increasing coping capacity against disasters (Section E 5.74, 5.75); increase agricultural production and create job opportunity (Section 5.32); develop physical and human development infrastructures to improve quality of life (Section 5.48, 5.49, 5.51); and foster community empowerment. This will achieve broad PRSP goals of poverty reduction, universal primary education, ensure good governance through people's participation in planning and management, reduced infant and child mortality, ensure reproductive health, ensure safety against disasters (Section 5.42, 5.43).

**Time frame:** 10 years

**Cost:** US\$ 15 million

**Agencies:** MoLGRD&C, BWDB, MoHFW, Directorate of Primary Education, private sector and NGOs.

### **Title: Development of tourism in Kuakata Through Capacity Building of the Rakhaine Community**

**Brief:** There are about three hundred Rakhaine households (Population Census 1991) living in and around Kuakata in Patuakhali district. The Rakhaines are a distinct ethnic community with rich cultural heritage. They add more beauty to the area that attracts an increasing number of tourists to this beach resort. Along with increasing pauperization and pressing needs for economic development, the Rakhaine community is being dispersed and is losing its identity. The proposed project (Section 5.8) will develop and promote eco tourism (following the guidelines of the National Tourism Policy 1992) through protecting and promoting culture and traditions of the Rakhaine community and enhancing their capacity through training on tourism and related trades.

**Component:** Protection and promotion Rakhaine culture and traditions through establishing a Cultural Academy; tourism training for Rakhaine youth; economic support to producers of traditional art and craft items through credit; providing basic services, e.g. housing, water and sanitation, primary health care and education to members of the community and law and order to maintain communal harmony

**Location:** Rakhaine community of Kalapara Upazila of Patuakhali district

**Benefit:** Employment opportunities for the Rakhaine communities increased about 200 Rakhaine women and men; off-farm employment of the local people to the tune of another 1000 through backward and forward linkage activities in connection with tourism (hotel/restaurant, transport, beach sports, etc.) (Section 5.38); quality of life of the local community improved through income opportunities from tourism; development of physical infrastructure, e.g., road, electricity, telecommunications, etc. in the locality (Section 5.46, 5.48). The project will achieve PRSP goals of poverty reduction of a backward community by directly contributing to employment generation and contribute to economic growth and promote a positive image of the country through exposure to international tourists (Section 5.42, 5.43).

**Time frame:** 5 years

**Cost:** US\$ 2 million

**Agencies:** BPC, Ministry of Cultural Affairs, private sector

### **Title: Development of Island Tourism**

**Brief:** There are a number of islands in Noakhali, Bhola and Patuakhali districts exposed to the sea. Among these are Damar Char, Nijhum Dwip, Manpura, Bashon Bhanga, Puber Char, Dhal Char, Sonar Char, Rugar Char, Char Patalia, Char Kukri Mukri, Totar Char, Char Kabir, Char Tufania and so forth. People already settle some of these and some are still virgin with mangrove plantations. The project (Section 5.8) will develop infrastructure necessary for the expansion of tourism in the islands of Bhola and Noakhali districts aiming at accelerating the pro-poor economic growth. Through multi-stakeholder participation, the project (by following the National Tourism Policy 1992) will develop the infrastructures (e.g., tourist resort, roads, launch and ferry ghats, drinking water supply, boating and angling facilities, bird and wildlife watching facilities, etc.) necessary for the tourism development. The project will involve the community in the tourism-based activity and build a system of income distribution to the local community through benefit sharing mechanism to foster non-farm employment opportunities and income to the local people.

**Component:** Infrastructure development (road and water transport, telecommunications, power, accommodation for tourists, water supply and sanitation, wildlife sanctuary, watch tower) tourism training for local youth; credit for linkage activities (hotel/restaurant, transport, souvenir shop, etc.).

**Location:** In selected islands of Bhola and Noakhali districts

**Benefit:** Employment opportunity for 2000 (self and wage employment); better physical infrastructure for local people (Section 5.48); exposure of the country to international tourists (Section 5.44); shall achieve PRSP goal of poverty reduction (through employment generation; Section 5.39) and environmental sustainability (through nature conservation; Section 5.85).

**Time frame:** 6 years

**Cost:** US\$ 5 million

**Agencies:** BPC, FD, LGED and private sector

#### **Title: Safe drinking water for arsenic prone coastal areas**

**Brief:** Access to safe drinking water in the coastal zone is considerably below the national average. There are two reasons for this. First of all the coverage by tube wells in the coastal zone is lower than in the rest of Bangladesh. Secondly, in some coastal districts, many of the tube wells are heavily contaminated by arsenic. In some places, there are problems of accessing the deep aquifer through deep tube wells. Patharghata upazila of Barguna district is one such example. The proposed project will enhance accessibility of safe drinking water to about 20,000 rural households by adopting local and innovative technology of rainwater harvesting and pond sand filtering (PSF). This has already been demonstrated with success. It would be endeavored to excavate and use community ponds with PSF technology and would install promote rainwater harvesting technology at the household level by women in entire Patharghata upazila. These technologies will be promoted through social mobilization and people's participation.

**Component:** Arranging khas land for community pond in each village; social mobilization for using community ponds through women's groups; training for technology development and promotion; production and distribution outlets for low-cost pots/containers for rainwater harvesting

**Location:** Patharghata upazila of Barguna district

**Benefit:** Access to safe water for 20,000 households (Section B6-5.51), reduced vulnerability of women in particular who are to fetch water for respective families, improved health and hygiene status (Section C-5.61, 5.62)

**Time frame:** 6 years

**Cost:** US\$ 8 million

**Agencies:** DWA, DPHE, Ministry of Land, private sector and NGOs.

#### **Title: Coastal fisher community development program**

**Brief:** About half a million fisher families live in the coast. There are about 1,350 fisher villages in the coastal zone. Fishers are becoming more and more vulnerable due to dwindling marine resources and degradation of fish habitat. The UNDP-funded DoF-FAO project on Empowerment of Coastal Fisherfolk Community (ECFC) is currently addressing community development of the fishers in fishing villages of Cox's Bazar district, where "Village Organizations" (VO) are being developed as vehicle of human, economic and institutional development of fisher communities. The proposed project will facilitate and assist building coastal fisherfolk village organizations (G 5.79, G 5.81). Awareness raising and generating institutional capability will enable the fishers to harness services out of the agencies. Providing primary health care, reproductive health measures, combating malnutrition, basic education for all and higher level of skill training (C) for fisher women and fisher kids in particular shall diversify the livelihood options in the backdrop of scarcity of resources, empower women and reduce pressure from the artisanal fisheries essential for the sustainability of the sector (H).

**Component:** Social mobilization; skill training for alternative livelihoods and capacity building; enhanced access to basic services, like, education, health care, water and sanitation, credit, etc.

**Location:** Chittagong, Cox's Bazaar, Noakhali, Bhola, Patuakhali, Barguna, Satkhira, Bagerhat and Khulna districts.

**Benefit:** Shall develop quality of life of men, women and children of around 300,000 coastal fisher families; enhance occupational diversity through promotion of skills in alternative; and shall achieve PRSP goals of poverty reduction, universal primary education, universal sanitation coverage, reduced infant and child mortality, reproductive health and environmental sustainability. Shall enable 20,000 skill-based wage and self-employment in the secondary and tertiary sectors each year (Section 5.60, 5.61, 5.62, 5.63, 5.64, 5.65, 5.66).

**Time frame:** 6 years

**Cost:** US\$ 60 million (including revolving fund for credit)

**Agencies:** DoF, LGIs and NGOs

**Title: Coping mechanism development for the cyclone: reducing loss of household property**

**Brief:** The coastal poor that have access to a cyclone shelter are now able to survive such a disaster. However, in many cases their livelihoods are shattered and recovery may take years if not over a decade. At present the protection to houses and homestead is basically limited to embankments, protecting polders and homestead trees, protecting houses. Some research has been done by NGOs and the Housing Research Department (Kalyanpur, Dhaka) on cyclone proof housing. "Killas" are used with varying levels of success to protect livestock. People also bury valuables under the floor of their homes. While these activities provide some level of protection, losses remain high.

**Location:** 6 Selected upazilas facing severe risks from cyclones

**Components:** cyclone resistant houses, demonstration, training and credit, awareness raising materials on local/international 'best practices'.

**Benefit:** enhancing people's skills to protect their property from damage due to cyclones; reduced economic loss; increase in the number of low-cost cyclone resistant houses in the coastal zone; reduced vulnerability of the livelihoods of coastal people (Section E- 5.74, 5.75)

**Cost:** \$ 3 million

**Agencies:** DMB, NGOs, HBRI, LGED etc

**Title: Strengthening of Coast Guard program for the improvement of peoples security in the coastal zone**

**Brief:** Presently about 400,000 marine fishers operate with high risks of natural calamities, piracy and degradation of the marine habitat. On the other hand, forestry resources are dwindling fast because of lack of enforcement of conservation laws. To address the increasing concerns regarding law and order situation (Section 5.25) in the peripheral and remote coastal areas and to enforce conservation laws and regulations (Section B2-5.25, E-5.74), capacity building and strengthening of the Coast Guard is needed. Under this project, critical areas be identified for enforcement of conservation laws and regulations on harvesting of marine resources and forestry, action against pollution and piracy, emergency assistance and evacuation service to marine fishers during storms and cyclones, etc.

**Component:** Setting up district unit of Coast Guard with necessary law enforcing and evacuation infrastructures, vessels, equipments and logistics; recruitment and training of sufficient number of personnel

**Location:** 9 sea-facing coastal districts (Chittagong, Cox’s Bazar, Noakhali, Bhola, Patuakhali, Barguna, Bagerhat, Khulna and Satkhira)

**Benefits:** Conservation of marine and forest resources ensured for sustainable livelihoods; law and order situation in the newly accreted chars and islands improved; safety of fishers improved; piracy and smuggling in the Bay of Bengal reduced

**Time frame:** 6 years

**Cost:** US\$ 20 million

**Agencies:** Coast Guard, Bangladesh Navy, FD

#### **Title: Reduction of severe vulnerability in the CZ through multi-purpose cyclone shelters**

**Brief:** Cyclone and associated tidal surges are an important vulnerability encountered by the people of the CZ. The need to provide “safe havens” for the inhabitants of the area has long been recognized. The GoB’s medium term goals are based on protection against a 1 in 30 years cyclone surge event; the long-term events goals at a 1 in 100 years level protection. Population served would be typically 2,000 per shelter, which is found quite inadequate considering the growing population increase and cyclonic events.

In the high cyclone risk areas of the coastal zone, the project will build some cyclone shelters which will be used for multi-purposes, like- shelter during cyclone, educational centers, training center, use as offices, recreation center for the communities, etc. (Section 5.75). Linkage roads to the cyclone shelters will be developed. Cyclone shelter management committee will be formed from the community for sustainable management of the shelters. A system of collecting maintenance cost from the community will be developed.

**Location:** High cyclone risk selected areas of the coastal zone

**Components:** construction of cyclone shelter (50 annually), training and awareness building etc

**Benefit:** Vulnerability of the disadvantaged and marginalized communities reduced; asset loss due to cyclone reduced; poverty level lowered; safe human life.

**Cost:** US \$ 6 million per annum

**Agencies:** DMB, LGED and others

#### **Title: Strategy and action plan to respond to impacts of climate change and sea level rise (CC&SLR) in the coastal zone of Bangladesh**

**Brief:** The information exists that shows detail and accuracy to start addressing questions on adaptation, e.g., how to mitigate impacts, or at least to prevent that the country becomes more vulnerable to impacts of CC&SLR. In Bangladesh critical impacts of climate change and sea level rise (CC&SLR) are: increased drainage congestion; reduced fresh water availability; disturbance of morphological processes; and increased intensity of extreme events and disasters.

This project aims to improve coastal people’s coping capacity to the impacts of climate change and sea level rise and thus reduce the vulnerabilities to these changes (Section 5.74, 5.75). This project would also identify concrete actions to be taken by the government, propose mechanisms to follow up and monitor their implementation and therefore would reflect the needed time frame, resources and probable institutional arrangements.

**Components:** Data gathering and analysis, strategy formulation, guideline preparations, implementation of selected adaptation measures etc.

**Location:** The total CZ of Bangladesh.

**Benefit:** coordination of climate change activities through this committee; awareness building; training on adaptive measures; development of approaches to incorporate CC&SLR in integrated water resources management and planning; development of a climate change knowledge base; development of a national capacity and procedure to assess CC&SLR changes and impacts; structure support for adaptive measures; reduce vulnerabilities (Section E- 5.74, 5.75).

**Cost:** \$ 15 million

**Agencies:** MOE, CDMP; IWM, BUET, NGOs

#### **Title: Completing and maintaining sea dykes as first level of defense against sea level rise**

**Brief:** Over the last four decades a cluster of 123 polders, covering an area of about 13,000 km<sup>2</sup>. Polders, has been constructed, primarily to support agriculture and provide protection to life and properties of the inhabitants during cyclone. The polders, consisting of about 5,000 km embankment, 6000 km drainage channel, 2500 water control structures, in association with about 2000 multi-purpose cyclone shelters and cyclone warning system, provide protection against daily tidal inundation to farms of crops, fish and salt. During cyclone and tidal surges, the polder system, where in good shape, minimizes the damaging impact on the life and property over the embanked area. Sea dykes (1000 km) are used at locations where waves may be expected i.e. at locations facing the Bay of Bengal and along the banks of major rivers or channel. The polders are constructed at different time so the whole coastal belt is not embanked fully by sea dykes. The maintenance cost of sea dykes is very high and presently the embankments condition is very bad. The threat of possible sea level rise due to global climate change the importance of sea dyke is re-emphasized and needs redesign.

Because of very low elevation and exposure to several hazards- Bangladesh is at great risk from global climate change. It is apprehended that by 2030 the sea level will rise by 30 cm. Even a cautious projection of 10 cm sea level rise will inundate 2500 sq km land of the country. Against this backdrop these coastal embankments are considered as the first line of defense. So this project will embanked the coast (after study) and maintain the sea dykes as the precautionary measure against the possible sea level rise.

**Component:** Vulnerability analysis of the coastal embankments (sea dykes) against the projected climate change scenario; prioritize the intervention measures and locations; new sea dykes if necessary, regular maintenance program, etc.

**Location:** Coastal zone of Bangladesh

**Benefit:** Life and livelihood of the coastal people better secured from natural hazards; vulnerability to the sea level rise reduced; household income loss due to natural calamities reduced; employment and income opportunities of the coastal people increased; poverty level reduced (Section E-5.74, 5.75), create more potential for agricultural development.

**Time frame:** Continuous

**Cost:** US\$ 4 million each year

**Agencies:** BWDB, IWM, FD and others

#### **Title: Comprehensive rehabilitation for erosion victims**

**Brief:** The riverbanks in the Meghna Estuary are prone to erosion. Between 1973 and 2000 the yearly average area lost to erosion was over 3,200 ha. As a result around the lives and livelihoods of around 15,000 people a year are completely turned upside down. Erosion victims not only suffer the loss of their physical assets such as homes and household property, but also their social capital through displacement and loss of social networks and livelihood opportunities. At the same time

siltation also results in newly accreted land, to the tune on average of just over 5,000 ha per year. This new land is often in a totally different part of the coastal zone, and theoretically erosion victims have the first right to such land. In practice life is more complicated with absentee landlords occupying and claiming new land as soon as they can. Over the years CDSP has piloted a comprehensive soft and hardware package that guaranteed that the poor are the major beneficiaries from land accretion and its development. There is scope to expand and further develop this approach to provide land erosion victims with a comprehensive package to rebuild their lives by optimizing the use of newly accreted land for development and poverty alleviation.

**Component:** Acceleration of land acceleration process through technical interventions; land development; rehabilitation of erosion victims to new land through land allocation; protective infrastructure for new land and settlers, support for human and social development; economic support for livelihoods

**Location:** Meghna estuary

**Benefits:** The development potential of newly accreted land utilized to the full contributing to economic growth; will arrest unwanted rural-urban migration; employment for the most vulnerable population (Section E-5.74, 5.75).

**Time frame:** Continuous

**Cost:** US\$ 5 million annually

**Agencies:** BWDB; LGED; FD; DAE and NGOs

#### **Title: Estuary Development Program (EDP) (E)**

**Brief:** Morphological situation in the Bangladesh coastal zone is ever changing. Since 1978 Bangladesh has tried through several initiatives to better understand and manage the coastal estuary. LRP, CDSP, MES are mentionable among those initiatives. Important and critical information on the dynamic coastal estuary have been revealed through these initiatives. But still more information is needed for covering the full scope of “Master Plan” and “Development Plan” on feasibility of interventions, specially with regards to erosion control and land accretion. The present National Water Management Plan (NWMP) also recognizes the importance of managing the coastal ecosystem in an integral way. So updating of the existing data and information inclusive of the bathymetric survey works on long-term basis is mandatory for future land accretion, erosion control and char development projects. Without the help of a well-established knowledge management process, future planning for estuary development would become haphazard which might result in wasting of scarce resources as well as disappointments for the stakeholders.

A TAPP has been approved by the GoB and forwarded to the RNE for grant.

**Component:** The Survey & Study Support; Investigation & design of potential cross dams; Investigation and implementation of potential erosion control & accelerated land accretion schemes; Technology transfer; Institutional support & arrangements

**Location:** The whole coastal estuary of Bangladesh

**Benefit:** Updating of bathymetric survey data and micro-level survey for viable investment oriented project and database; hydro-survey of entire coastal area for understanding of dynamics & morphological process; possible potential cross dams throughout the coastal zone (detailed design, drawings and technology development) identified and investigated; pilot schemes in respect of erosion control & accretion of land implemented; transfer of technology; enrich knowledge of coastal orientated multi-disciplinary working force aiming at long-term management and follow-up in relation to ICZMP process. Life and livelihood of the coastal people better secured from natural

hazards; household income loss due to natural calamities reduced; employment and income opportunities of the coastal people increased; poverty level reduced (Section E-5.74, 5.75).

**Time frame:** 5 years

**Cost:** US\$ 10 million

**Agencies:** BWDB, WARPO, IWM, & other relevant organizations

**Title: Capacity building of the people's representatives in UPs and Pourashavas for coastal resource management**

**Brief:** Local governments comprising 1,351 Union Parishads and 70 Pourashavas in the coastal zone are instrumental in management of critical coastal resources. They are expected to play a catalytic role to mobilize and motivate the people for judicious use and conservation of natural resources to ensure sustainability of coastal livelihoods. Awareness, motivation, capacity building of the elected representatives in UPs and Pourashavas including all women representatives will enable them for participatory planning, assist in harnessing natural resources in a sustainable manner for the poor and work with CBOs, NGOs, GOs, LGs, civil societies in line with the PRSP from their respective locations and fields (Section F-5.76, B2-5.29).

**Component:** Module for training; material development; training of trainers (ToT); training of UP and Pourashava Chairs and Members

**Location:** 19 coastal districts

**Benefit:** Local governments becoming more pro-active in planning and accountable for resource management for the community at large. The project will achieve the PRSP goal of good governance and environmental sustainability.

**Time frame:** 3 years

**Cost:** US\$ 5 million

**Agencies:** LGIs, DoE and NGOs

**Title: Development Strategy for Newly Accreted Land**

**Brief:** Significant amount of lands were reclaimed from the sea. Which are not suitable for the human settlement immediately after reclamation. It needs quite some time to become fit for the living and for the agricultural development (salinity problem). Drainage routes are not well developed and create problems for the older polder's water management. Initially this newly accreted land is suitable for mangrove forestation. When the mangrove forest is matured only then the land could be brought under agriculture. At the beginning the ownership of the land given to the forestry department for a 20 -25 years. After that the inner portion of the land could be transferred to the land department for distribution to the settlers. So far, a total of 98, 097 ha of newly accrete lands were handed to the Noakhali coastal afforestation division, some 14148 ha have since been eroded, 34, 000 ha forested and around 40% of the rest being ear marked for plantation.

The project (Section 5.78) will develop an integrated strategy for the new land development as a mean for reducing poverty to the poor people living in the less desirable high-risk newly accreted (peripheral) land, which are vulnerable to adverse ecological processes. The project components will include development of a strategy in a participatory manner, piloting of the developed strategy in selected chars for refinement of the strategy.

**Components:** strategy formation and testing; integration mechanism etc.

**Location:** Piloting in some selected chars / newly accreted areas of the coastal zone.

**Benefit:** New accreted land development strategy; improve socio-economic condition of the area and creates conditions for further development opportunity; new employments.

**Cost:** US \$ 2 million

**Agencies:** MoL, BWDB, FD, DoF, DPHE, LGED, DAE, etc.

#### **Title: Development of low cost erosion protection technology**

**Brief:** Land erosion and accretion are common natural phenomena in the coastal zone. Recently, quantities of erosion in the Meghna Estuary were calculated by comparing the positions of bank lines digitized from several Landsat satellite images of the period 1973-2000 (MES, 2001b). Which is 3,199 ha/yr.

Although the long-term trend of gain of new land appeared to be dominant, it should be mentioned that a huge amount of fertile land in particular old land, is exposed to erosion due to migration and widening of the river system. Besides the erosion of the estuary in the riverbanks, erosions of the foreshore and the embankment system are posing a continuous problem in the coastal area. Erosion is also a problem in inland coastal rivers in Barisal, Patuakhali, Bhola, Barguna, Jhalkati and Pirojpur districts of the Barisal Division, resulting in hundreds of families homeless and shelterless. Some 30,000 houses, many commercial establishments, hundreds of educational and religious institutions, and over half a million hectares of croplands have been devoured by different rivers in the southern districts during the last 10 years.

Erosion protection measures are very expensive and results are uncertain too. This project will look for innovative environment friendly technology, which will fit with the Bangladesh condition.

**Components:** further analysis, modeling, piloting, cheap and friendly technologies etc

**Location:** erosion active areas in the CZ

**Benefit:** New technology for valuable old land protection, reduce uncertainty of the concern people, save land and infrastructures etc (Section E- 5.74, 5.75, H-5.84).

**Cost:** \$ 4 million

**Agencies:** BUET, IWM, RRI, BWDB

#### **Title: Land use zoning for efficient use of land resources**

**Brief:** Land as a scarce resource of the country is under different kind of utilization, which are often competing. But per capita availability of land is gradually decreasing due to increasing population aggravating the existing land use conflicts. In the coastal zone the situation is even worse as the demand and utilization of land is more diverse. Per capita available gross cropped, net cultivated and homestead area is 0.093, 0.062 and 0.004 ha respectively in the coastal zone (whereas the country statistics are 0.109, 0.068 and 0.005 ha respectively; 1996 BBS). This warrants the need of efficient use of scarce land resources through judicious planning. The government has already started an initiative of coastal land use zoning under the SEMP. This process should be strengthened and mainstreamed. So the project will develop a land-use-zoning map for the coastal zone (by following the guidelines of National Land Use Policy, 2001).

**Component:** satellite image analysis, land use survey, projection under different scenario, land use zoning map development

**Location:** Coastal zone of Bangladesh

**Benefit:** Land use zoning map prepared for the coastal zone; help to identify appropriate areas for broad-based economic activities; policy and strategy tool developed for directing investment in the coastal zone; rational and efficient use of land (Section H-5.83, 5.84, 5.85).

**Time frame:** 5 years

**Cost:** US\$ 2 million.

**Agencies:** MoL, SPARRSO, GSB, SoB, BARC, other relevant agencies

#### **Title: Promoting floating agriculture - a traditional agriculture in the coast**

**Brief:** The soil-less cultivation system (hydroponics system) has been traditionally practiced in the south-west region of the coastal zone of Bangladesh for more than two centuries. More than 20 different vegetables and five different types of spices are cultivated in this hydroponics system. In the existing practice about 60 tons of vegetables per year are produced from one acre of wetland. The production of sapling per sq ft. is 2.7 numbers and saplings are grown for 3 times in a season of three months. This traditional practice is in one hand utilizing the relatively unused wetlands and on the other hand showing a possible adaptation measure to farming water logged areas to ensure food production.

Conventionally wetlands in the coastal zone are converted into terrestrial systems. But after decadal efforts, coastal zone in one hand experiencing new areas as waterlogged and on the other hand is facing threat of the possible climate change. It is apprehended that by 2030 the sea level will rise by 30 cm. Even a cautious projection of 10 cm sea level rise will inundate 2500 sq km land. In this grave situation, soil-less cultivation offers a possibility of ensuring the food-security of the coastal people. So the project will promote the traditional soil-less cultivation system in the wetlands of some selected coastal districts.

**Component:** Standardization of the traditional soil-less cultivation system; demonstration of farming plots; training and awareness rising of the beneficiary farmers; provision of micro-credits and agriculture inputs; development of marketing channels.

**Location:** Gopalganj, Pirojpur, Bagerhat, Barisal, Jhalkati and Barguna districts.

**Benefit:** Presently unutilized or less utilized wetlands are extensively used; agriculture production increased; people's resilience to disasters increased; poverty level reduced (Section B3-5.32, 5.34, 5.35,5.36)

**Time frame:** 5 years

**Cost:** US\$ 5 million

**Agencies:** DAE, NGOs, Private Sector



*Thematic Group 10*

## Agriculture (Crops, Fisheries, Livestock) and environment including Forestry, Land Reforms, Land Use, Safe water Supply and Water resources Management

### List of probable projects

Title	Location	Time Frame years	Estimated cost (million US\$)
Implementation and institutionalization of ICZM approaches at two selected coastal districts – Phase 2 of ICZMP in Bangladesh	Patuakhali & Noakhali	6	50-80
Establishment & Operationalization of a Program Coordination Office for ICZM	Dhaka	3	7-10
Integrated Management of Coastal Water Infrastructures	Selected districts	4	5
Water management and rural development in the Greater Noakhali (GN) Area	Noakhali region	5	20
Estuary Development Program	Meghna estuary	5	10
Multipurpose <i>Killa</i> in Char Areas	Selected chars	3	2
Promoting floating agriculture- a traditional agriculture in the coast	5 districts	5	5
Modernization of non- mechanized fishing boats to mechanized fishing boats and providing licensing	3 districts	5	10
Development of infrastructure for pelagic fisheries	4 selected districts	3	10
Development of communication infrastructure for marine fishers	Cox's Bazar	3	4
Safe drinking water for arsenic prone coastal areas	Pathaghata	6	8
Management and assessment of deep groundwater aquifer for the CZ	study	3	5
Coastal fisher community development program	Selected districts	6	60
Capacity building and skill development of female fish processors in Cox's Bazar district	Cox's Bazar	5	10
Veterinary services by private women practitioners in selected districts	3 districts	3	10
Strategy and action plan to respond to impacts of climate change and sea level rise (CC&SLR) in the coastal zone of Bangladesh	study	3	15
Completing and maintaining sea dykes as first level of defense against sea level rise	All over	5	20
Comprehensive rehabilitation for erosion victims	Meghna estuary	4	20
Management of Pollution hot spots located in the coastal zone	All over	3	5
Waste management in the metropolitan cities in the coastal zone	SMAA	6	10
Development of low cost erosion protection technology	Selected areas	3	4
Land use zoning for efficient use of land resources	study	5	2
Capacity & awareness building for ICZM among local administrative tiers for improving governance of coastal resources	All over	2	3
Supporting 'Coast Watch' – a citizens group to monitor and advocacy for coastal development	Dhaka	2	1
Establishment of IT supported model Unions in sea facing upazilas	48 Unions	4	10



**Title: Implementation and institutionalization of ICZM approaches at two selected coastal districts – Phase 2 of ICZMP in Bangladesh**

**Brief:** In 2004, the Government of Bangladesh is expected to adopt coastal Zone Policy (CZPo). Based on this CZPo, Coastal Development Strategy (CDS) will be formulated and adopted in 2005. Implementation of CZPo and CDS will be attempted at two selected districts through formulation of comprehensive district development plan in a participatory manner, establishing co-management mechanisms suggested in the CDS, implementation of multi-sectoral projects through establishing partnership among stakeholders. All these will be done targeting poverty reduction, economic growth and social development with adopting key indicators. Emphasis will be given to establish institutional mechanisms. Horizontal and vertical coordination across the GoB agencies, NGOs, CBOs and civil societies and affirmative actions to reduce the gender inequality shall be key approaches to pursue the development and equitable distribution (B2). The components of all other coastal projects shall be in force in this district to able to pursue a holistic development.

**Components:** Comprehensive district development plans, institutional development (establishing governance), pilot multi-sectoral projects, community participation

**Locations:** Patuakhali & Noakhali (indicative)

**Benefit:** ICZM approach operationalized in field; proposed institutional ‘best practices’ further replicated; partnership for achieving PRSP targets; foster pro poor economic growth, human development of the poor, Reducing inequality and gender gaps.

**Cost:** US\$50-80 million (6 years)

**Agency:** BRDB, Proposed Program Co-ordination Office for ICZMP, BWDB, DoF, District administration, DAE, LGED, Zila Parishads, relevant agencies, NGOs

**Title: Establishment & Operationalization of a Program Coordination Office for ICZM**

**Brief:** The setting up of a Program Co-ordination Office (PCO) for ICZM has been identified in the draft Coastal Zone Policy. The experience of an existing Program Development Office (PDO) to steer the harmonization in coastal development is worth linking. An office shall be set up to support and coordinate programs and projects in the coastal zone. The office shall be responsible for facilitating coordination and integration of programs in the coastal zone and promote ICZM process to be embedded in the line agencies. Experts deputed from different Ministries, working at the PDO, are expected to continue at the PCO.

Under this setup, different activities will be taken: formulation of guidelines/manuals to support CDS, coastal zone regulations, establishing monitoring mechanism, policy advocacy and implementation, training and facilitating inter-Ministerial institutional set-ups.

**Component:** Office with all required logistics and manpower;

**Locations :** Dhaka

**Benefit:** institutionalization of ICZM process

**Cost:** US\$ 7 – 10 million (for 3 years)

**Agency:** Lead Ministry

**Title: Integrated Management of Coastal Water Infrastructures**

**Brief:** The coastal zone of Bangladesh consists of 19 districts, in which the livelihoods of about 30 million people is affected by tidal water movements, salinity intrusion or storm surges due to

cyclones. During cyclone and tidal surges, the polder system, where in good shape, minimizes the damaging impact on life and property in the embanked area. Awareness is increasingly growing among stakeholders and beneficiaries that, within economic, social, environmental and institutional context, integrated planning and management is needed to meet the coming challenges of the growing demands and increasing use of land and water resources. The sustainability of the polders will be at risk if current developments and initiatives to introduce improved O&M procedures involving neighbor-hood communities are not continued in integration and harmony.

Development of institutional arrangements and partnerships for integrated water management to increase agricultural production (B3, 5.31) and promote rational management and optimal use of existing water infrastructure (B3, 5.35) and thus enhance the capacity to reduce poverty inside the proposed 5 polders. This project will cover an area of 40000 ha.

This project is being developed through an inter agency dialogue.

**Location:** Five polders of unique characteristics, which represent the typical coastal zone problems related to water management, are selected for intervention (Bagerhat; Patuakhali; Noakhali; Chittagong; Cox's Bazar).

**Components:** drainage sluices (repair and new construction); embankment (repair and new construction); re-excavation khals (old & new); plantation; tube well and sanitation program; pond culture; communication measures etc.

**Benefit:** improve agricultural production inside the polder; prevent crop loss from tidal flooding and localized drainage; employment opportunity and women's advancement; reduce the maintenance cost of the embankment and corresponding infrastructure and enhance the safety of people; reduce poverty by creating synergies for diversifying the rural economy; sustainable restoration and improvements of the environment; operational (sustainable) institutional arrangements.

**Cost:** US \$ 5 million

**Agencies:** BWDB, LGED, DF, DoF, DAE, NGOs.

### **Title: Water management and rural development in the Greater Noakhali (GN) Area**

**Brief:** The proposed area covers an area of 400000 ha. 70% of the area suffers from flood due to drainage congestion. Over the years land accretion has taken place South of Noakhali and newly formed lands have elevations above the middle and northern areas in Begumganj-Laksam area. As a result normal overland drainage to the sea is not possible. Many village roads and projects have been implemented in the proposed area. These activities adversely affected the over all drainage systems. The drainage regulators, which were constructed, long ago, at the outfall of some main drainage channels are now overloaded by the extra discharge from newly accreted lands as well as from the overlapping of catchment areas.

This project aims for comprehensive development of the rural area (B4, 5.42) through infrastructure development (including planning, implementation and monitoring) and rationalizing the existing projects. The major activities would include water management; removal of drainage congestion; control monsoon flooding and saline water intrusion; strengthen safe and equitable access to water for production, health and hygiene; facilitate culture fishery, HYV varieties and increasing the yield levels of *boro* and *aman* crops, promote stakeholder participation and multipurpose use of the embankments/*bundh*; develop a long-term inter-district sustainable mechanism (structure and procedures) for WRM of the area (B3, 5.35).

**Components:** different water control structures (old & new), regular maintenance and rehabilitation, plantation, re-excavation works, communication network, supporting agriculture and fisheries development etc.

**Location:** Noakhali, part of Lakshmipur, Feni, Chandpur and Comilla District.

**Benefit:** Improve socio-economic condition, reduce vulnerability, increase agricultural production and employment opportunity, poverty reduction, and removal of drainage congestion.

**Cost:** US \$ 20 million

**Agencies:** BWDB, LGED, MoL, DoF, FD, DAE

### **Title: Estuary Development Program (EDP)**

**Brief:** Morphological situation in the Bangladesh coastal zone is ever changing. Since 1978 Bangladesh has tried through several initiatives to better understand and manage the coastal estuary. LRP, CDSP, MES are mentionable among those initiatives. Important and critical information on the dynamic coastal estuary have been revealed through these initiatives. But still more information is needed for covering the full scope of “Master Plan” and “Development Plan” on feasibility of interventions, specially with regards to erosion control and land accretion. The present National Water Management Plan (NWMP) also recognizes the importance of managing the coastal ecosystem in an integral way. So updating of the existing data and information inclusive of the bathymetric survey works on long-term basis is mandatory for future land accretion, erosion control and char development projects. Without the help of a well-established knowledge management process, future planning for estuary development would become haphazard which might result in wasting of scarce resources as well as disappointments for the stakeholders.

A TAPP has been approved by the GoB and forwarded to the RNE for grant.

**Component:** The Survey & Study Support; Investigation & design of potential cross dams; Investigation and implementation of potential erosion control & accelerated land accretion schemes; Technology transfer; Institutional support & arrangements.

**Location:** The whole coastal estuary of Bangladesh

**Benefit:** Updating of bathymetric survey data and micro-level survey for viable investment oriented project and database; hydro-survey of entire coastal area for understanding of dynamics & morphological process; possible potential cross dams throughout the coastal zone (detailed design, drawings and technology development) identified and investigated; pilot schemes in respect of erosion control & accretion of land implemented; transfer of technology; enrich knowledge of coastal orientated multi-disciplinary working force aiming at long-term management and follow-up in relation to ICZMP process. Life and livelihood of the coastal people better secured from natural hazards; household income loss due to natural calamities reduced; employment and income opportunities of the coastal people increased; poverty level reduced (Section E-5.74, 5.75).

**Time frame:** 5 years

**Cost:** US\$ 10 million

**Agencies:** BWDB, WARPO, IWM, & other relevant organizations.

### **Title: Multipurpose Killa in Char Areas**

**Brief:** The livestock within the CZ constantly facing serious threats due to tidal flooding and cyclonic storm. The loss is very high and not yet minimized. The grazing opportunity is also reducing and adds to the problem.

Construct multipurpose community cattle shelter or *killa* in coastal char areas as coping measure for not only protection but also improved growth of livestock within the community (B3, 5.35). This project will require khas land, NGO intervention, people’s mobilization, maintenance group formation, construction of twin venture: *killa for grazing* and community pond for water supply, training on awareness building, integration and financial management.

**Location:** Coastal chars in Noakhali, Lakshmipur, Chittagong Cox's Bazar and Bhola districts

**Components:** Ponds and Killas, additional grazing spaces, training, livestock services and others

**Benefit:** Protect loss of animal husbandry and accelerate growth of livestock, optimize need of grazing land, growth of culture fishery, employment opportunity and improve people's livelihood condition.

**Cost:** US \$ 2 million

**Agencies:** DoL, DoF, LGD, NGOs

### **Title: Promoting floating agriculture - a traditional agriculture in the coast**

**Brief:** The soil-less cultivation system (hydroponics system) has been traditionally practiced in the south-west region of the coastal zone of Bangladesh for more than two centuries. More than 20 different vegetables and five different types of spices are cultivated in this hydroponics system. In the existing practice about 60 tons of vegetables per year are produced from one acre of wetland. The production of sapling per sq ft. is 2.7 numbers and saplings are grown for 3 times in a season of three months. This traditional practice is in one hand utilizing the relatively unused wetlands and on the other hand showing a possible adaptation measure to farming water logged areas to ensure food production.

Conventionally wetlands in the coastal zone are converted into terrestrial systems. But after decadal efforts, coastal zone in one hand experiencing new areas as waterlogged and on the other hand is facing threat of the possible climate change. It is apprehended that by 2030 the sea level will rise by 30 cm. Even a cautious projection of 10 cm sea level rise will inundate 2500 sq km land. In this grave situation, soil-less cultivation offers a possibility of ensuring the food-security of the coastal people. So the project will promote the traditional soil-less cultivation system in the wetlands of some selected coastal districts.

**Component:** Standardization of the traditional soil-less cultivation system; demonstration of farming plots; training and awareness rising of the beneficiary farmers; provision of micro-credits and agriculture inputs; development of marketing channels.

**Location:** Gopalganj, Pirojpur, Bagerhat, Barisal, Jhalkati and Barguna districts.

**Benefit:** Presently unutilized or less utilized wetlands are extensively used; agriculture production increased; people's resilience to disasters increased; poverty level reduced (Section B3-5.32, 5.34, 5.35,5.36)

**Time frame:** 5 years

**Cost:** US\$ 5 million

**Agencies:** DAE, NGOs, Private Sector

### **Title: Modernization of non- mechanized fishing boats to mechanized fishing boats and providing licensing**

**Brief:** The coastal and marine fisheries historically offer the livelihood to 2.7 millions. In the recent years marine and coastal fisheries catch is thought to be in the order of 0.5 to 0.6 million mt. It is widely believed and out cry from all levels of functional stakeholders of the marine fisheries sector that the sector output is declining and is having a over all crisis. However, Fisheries sector has been reviewed recently (FSFRD) and reported that inshore capture fishery is in decline with estimates that the overall catch has dropped by as much as 50,000 metric tons since 1995. This is the fishing area of most importance to the artisanal fishers, the poorest users of the resource. The primary cause of this decline is unregulated over fishing by the expanding number of fishers, the intrusion of

industrial trawlers into inshore waters and the use of non-selective destructive fishing methods-particularly the ESBN and nets used for shrimp larvae collection. Despite some limited interventions the marine fisheries sector has gone on without any real control and management leading to an uncontrolled expansion of the fishing effort, which has resulted in the crisis the sector is facing today.

Improvement of the country fishing boats and non- mechanized fishing boats to mechanized fishing boats shall push the artisanal fisher towards deeper sea enabling them harvesting more unexploited resources (B 5.7, B3, 5.34). One stop licensing mechanism for the fishing boats (and implementation of the FAO code of conduct for responsible fisheries (H).

**Components:** credit and technology support, training, licensing, insurance etc

**Locations:** Chittagong, Cox's Bazar, Patuakhali, Khulna (selected fishing community)

**Benefit:** foster pro poor economic growth, reduce pressure on juvenile fisheries and over all fish stock and make the marine fisheries sustainable; more employment.

**Cost:** US \$ 10 million

**Agency:** DoF, Banks, insurance, Mercantile marine department, coast guard and private sector

#### **Title: Development of infrastructure for pelagic fisheries**

**Brief:** The conditions of the present sea going fishing boats are not up to the mark. The storing facilities are not good enough. Modern well-equipped fishing boat can be introduced for deep-sea fishing. Which will save the interior seashore from over exploitation. Other logistic facilities within the countryside have also need to be improved.

Facilitate the private sector (B6, 5.50) to establish deep sea going fishing fleets for pelagic fisheries and develop infrastructure support like processing facilities (degutting, filleting, icing etc.), storing facilities. Marketing in the local market as well as export (B6, 5.50).

**Components :** modern boats, storing and transportation facilities etc.

**Locations :** Chittagong, Cox's Bazar, Patuakhali, Khulna

**Benefit:** Economic growth, environment protection, socio-economic conditions of the fishers, more employments

**Cost:** \$ 10 million

**Agency:** DoF, LGD, R&H, Ministry of commerce, coast guard

#### **Title: Development of communication infrastructure for marine fishers**

**Brief:** Presently the fishing community is facing risk from cyclone and other natural calamities. That situation could be improved significantly by providing two way communication technologies to the fishing boats.

Development of communication infrastructure so that the licensing mechanism can incorporate the necessities of a device that shall keep communication with the fisher while fishing in the sea so that they receive warnings for any natural events or get help against pirates etc. (B2, 5.30, B6, 5.49, E, 5.75)

**Components :** Modern communication tools, training, credit etc.

**Location:** Cox's bazaar

**Benefit:** increase security to marine fishers; increase safe fishing, and economic growth, more employment.

**Cost:** US \$ 4 million

**Agency:** DMB, BTRA, Marine Mercantile Department, private sector

### **Title: Safe drinking water for arsenic prone coastal areas**

**Brief:** Access to safe drinking water in the coastal zone is considerably below the national average. There are two reasons for this. First of all the coverage by tube wells in the coastal zone is lower than in the rest of Bangladesh. Secondly, in some coastal districts, many of the tube wells are heavily contaminated by arsenic. In some places, there are problems of accessing the deep aquifer through deep tube wells. Patharghata upazila of Barguna district is one such example. The proposed project will enhance accessibility of safe drinking water to about 20,000 rural households by adopting local and innovative technology of rainwater harvesting and pond sand filtering (PSF). This has already been demonstrated with success. It would be endeavored to excavate and use community ponds with PSF technology and would install promote rainwater harvesting technology at the household level by women in entire Patharghata upazila. These technologies will be promoted through social mobilization and people's participation.

**Component:** Arranging khas land for community pond in each village; social mobilization for using community ponds through women's groups; training for technology development and promotion; production and distribution outlets for low-cost pots/containers for rainwater harvesting

**Location:** Patharghata upazila of Barguna district

**Benefit:** Access to safe water for 20,000 households (Section B6-5.51), reduced vulnerability of women in particular who are to fetch water for respective families, improved health and hygiene status (Section C-5.61, 5.62)

**Time frame:** 6 years

**Cost:** US\$ 8 million

**Agencies:** DWA, DPHE, Ministry of Land, private sector and NGOs

### **Title: Management and assessment of deep groundwater aquifer for the CZ**

**Brief:** The water and sanitation related consequences within the CZ are: i) latrines are damaged or washed away, ii) tube well sites are flooded and the tube wells are contaminated, and iii) some freshwater ponds get filled with saline water, depriving the population from even this source of water. The shallow aquifer water quality of the coastal region is characterized by high contamination with iron, arsenic and salinity, and has lost the potentiality for development as a resource. The deep aquifer water quality although faces sporadic problems with salinity, iron and manganese it is still safe of arsenic and has got some potential for development as a domestic water supply. The present management of the ground water resources has many shortcomings due to non-existence of sufficient knowledge of the hydrogeology and hydro-geochemistry, lack of systematic monitoring of impact parameters and data management, lack of planned and coordinated development activities, lack of rules and regulations for utilization and protection of groundwater resources, lack of appropriate authority (B7, 5.53) for overall management of the groundwater resources.

The project is formulated for appropriate innovation and adoption of technologies (B7, 5.53), sustainable development (B7, 5.54- transform the society from being the receiver of technology to one of producer of technology) and efficient management of groundwater resource in coastal zone of Bangladesh.

This project is being prepared through interagency dialogue.

**Components:** Data collection and generation; Mapping, test well construction and monitoring and all other related activities in this regard.

**Location:** The whole coastal zone of Bangladesh.

**Benefit:** Establishment of baseline information; detail information on hydro geological characteristics of coastal aquifer systems; establishment of GIS database; tools / models to setup a monitoring and regulatory mechanism for an effective management of groundwater resources; safe water supply and groundwater governance in coastal areas.

**Cost:** \$ 5 million

**Agencies:** GSB, BWDB, DPHE, WARPO, CEGIS, IWM, BUET and others.

### **Title: Coastal fisher community development program**

**Brief:** About half a million fisher families live in the coast. There are about 1,350 fisher villages in the coastal zone. Fishers are becoming more and more vulnerable due to dwindling marine resources and degradation of fish habitat. The UNDP-funded DoF-FAO project on Empowerment of Coastal Fisherfolk Community (ECFC) is currently addressing community development of the fishers in fishing villages of Cox's Bazar district, where "Village Organizations" (VO) are being developed as vehicle of human, economic and institutional development of fisher communities. The proposed project will facilitate and assist building coastal fisherfolk village organizations (G 5.79, G 5.81). Awareness raising and generating institutional capability will enable the fishers to harness services out of the agencies. Providing primary health care, reproductive health measures, combating malnutrition, basic education for all and higher level of skill training (C) for fisher women and fisher kids in particular shall diversify the livelihood options in the backdrop of scarcity of resources, empower women and reduce pressure from the artisanal fisheries essential for the sustainability of the sector (H).

**Component:** Social mobilization; skill training for alternative livelihoods and capacity building; enhanced access to basic services, like, education, health care, water and sanitation, credit, etc.

**Location:** Chittagong, Cox's Bazaar, Noakhali, Bhola, Patuakhali, Barguna, Satkhira, Bagerhat and Khulna districts.

**Benefit:** Shall develop quality of life of men, women and children of around 300,000 coastal fisher families; enhance occupational diversity through promotion of skills in alternative; and shall achieve PRSP goals of poverty reduction, universal primary education, universal sanitation coverage, reduced infant and child mortality, reproductive health and environmental sustainability. Shall enable 20,000 skill-based wage and self-employment in the secondary and tertiary sectors each year (Section 5.60, 5.61, 5.62, 5.63, 5.64, 5.65, 5.66).

**Time frame:** 6 years

**Cost:** US\$ 60 million (including revolving fund for credit)

**Agencies:** DoF, LGIs and NGOs

### **Title: Capacity building and skill development of female fish processors in Cox's Bazar district**

**Brief:** A large number of women in the coastal districts are involved in fish processing activities, particularly fish drying. These activities largely involve traditional technology, which lacks quality control and thus becoming less remunerative. The proposed project would embark on group establishment, training, demonstration of extended knowledge, skill development (B1 5.16) in fish processing, development of small trade/ cooperative business (B1 5.16) to empower (D 5.69) the coastal female fish processors.

**Component:** Group development; module and material development for training; trainers training; establishment of training center; training of fish processors; demonstration and extension; credit; marketing support

**Location:** All upazilas of Cox's Bazar district

**Benefit:** More efficient and hygienic fish processing; enhanced income for fisher women, women's involvement in marketing of dry fish; sustainable livelihoods for 6000 women in processing and other related activities (self-employment for 3000 and wage employment for 3000). Will achieve PRSP goals of poverty reduction; women's empowerment

**Time frame:** 5 years

**Cost:** US\$ 10 million (including revolving fund for credit)

**Agencies:** DWA, DoF, BRDB, NGOs and private sector

#### **Title: Veterinary services by private women practitioners in selected districts**

**Brief:** The coastal belt is well suited for rearing livestock and poultry. Most households, even the poorer ones own chickens and ducks, and 44% own cattle and/or buffaloes. The relatively low cropping intensity in the coastal zone means cattle can graze freely for a good part of the year. Local breeds are well adapted to the saline conditions and generally survive well. However, veterinary services are underdeveloped in the coastal zone, particularly in the more remote areas, exposing the households involved to major risks.

Improved access to veterinary services would reduce the risk that households face in rearing livestock and poultry. This would not only benefit those who already rear livestock, but would also encourage others to develop the remaining potential. With the growing urbanization the market for livestock and poultry products is likely to grow for decades to come. Livestock and poultry are generally owned and reared by women and this would be more logical that women practitioners (para-professionals) take care of these important household assets. This would enable a large number of women to earn by providing veterinary services to rural households.

**Component:** Module and material development for training; training of trainers (ToT); training of women practitioners; supply of vaccines and medicines; credit for practitioners to stock vaccines and medicines

**Location:** Feni, Noakhali and Bhola district

**Benefit:** Poverty reduction by ensuring livestock and poultry care, reducing mortality and attracting more investments in the sector (Section B3-5.34); gainful employment for women (self-employment of about 3000 women practitioners and income security to about 500,000 livestock keepers) (Section 5.69) ensure steady supply of dairy products in the market (meat, milk, cheese, yogurt, butter, etc.) with positive impact on nutrition (Section 5.64, 5.66).

**Time frame:** 3 years

**Cost:** US\$ 10 million

**Agencies:** DWA, DLS and NGOs

#### **Title : Strategy and action plan to respond to impacts of climate change and sea level rise (CC&SLR) in the coastal zone of Bangladesh**

**Brief:** The information exists that shows detail and accuracy to start addressing questions on adaptation, e.g., how to mitigate impacts, or at least to prevent that the country becomes more vulnerable to impacts of CC&SLR. In Bangladesh critical impacts of climate change and sea level rise (CC&SLR) are: increased drainage congestion; reduced fresh water availability; disturbance of morphological processes; and increased intensity of extreme events and disasters.

This project aims to improve coastal people's coping capacity to the impacts of climate change and sea level rise and thus reduce the vulnerabilities to these changes (Section 5.74, 5.75). This project would also identify concrete actions to be taken by the government, propose mechanisms to follow

up and monitor their implementation and therefore would reflect the needed time frame, resources and probable institutional arrangements.

**Location:** The total CZ of Bangladesh

**Components:** Data gathering and analysis, strategy formulation, guideline preparations, implementation of selected adaptation measures etc.

**Benefit:** coordination of climate change activities through this committee; awareness building; training on adaptive measures; development of approaches to incorporate CC&SLR in integrated water resources management and planning; development of a climate change knowledge base; development of a national capacity and procedure to assess CC&SLR changes and impacts; structure support for adaptive measures; reduce vulnerabilities (Section E- 5.74, 5.75).

**Cost:** \$ 15 million

**Agencies:** MOE, CDMP; IWM, BUET, NGOs

### **Title: Completing and maintaining sea dykes as first level of defense against sea level rise**

**Brief:** Over the last four decades a cluster of 123 polders, covering an area of about 13,000 km<sup>2</sup>. Polders, has been constructed, primarily to support agriculture and provide protection to life and properties of the inhabitants during cyclone. The polders, consisting of about 5,000 km embankment, 6000 km drainage channel, 2500 water control structures, in association with about 2000 multi-purpose cyclone shelters and cyclone warning system, provide protection against daily tidal inundation to farms of crops, fish and salt. During cyclone and tidal surges, the polder system, where in good shape, minimizes the damaging impact on the life and property over the embanked area. Sea dykes (1000 km) are used at locations where waves may be expected i.e. at locations facing the Bay of Bengal and along the banks of major rivers or channel. The polders are constructed at different time so the whole coastal belt is not embanked fully by sea dykes. The maintenance cost of sea dykes is very high and presently the embankments condition is very bad. The threat of possible sea level rise due to global climate change the importance of sea dyke is re-emphasized and needs redesign.

Because of very low elevation and exposure to several hazards- Bangladesh is at great risk from global climate change. It is apprehended that by 2030 the sea level will rise by 30 cm. Even a cautious projection of 10 cm sea level rise will inundate 2500 sq km land of the country. Against this backdrop these coastal embankments are considered as the first line of defense. So this project will embanked the coast (after study) and maintain the sea dykes as the precautionary measure against the possible sea level rise.

**Component:** Vulnerability analysis of the coastal embankments (sea dykes) against the projected climate change scenario; prioritize the intervention measures and locations; new sea dykes if necessary, regular maintenance program, etc.

**Location:** Coastal zone of Bangladesh

**Benefit:** Life and livelihood of the coastal people better secured from natural hazards; vulnerability to the sea level rise reduced; household income loss due to natural calamities reduced; employment and income opportunities of the coastal people increased; poverty level reduced (Section E-5.74, 5.75), create more potential for agricultural development.

**Time frame:** Continuous

**Cost:** US\$ 4 million each year

**Agencies:** BWDB, IWM, FD and others

### **Title: Comprehensive rehabilitation for erosion victims**

**Brief:** The riverbanks in the Meghna Estuary are prone to erosion. Between 1973 and 2000 the yearly average area lost to erosion was over 3,200 ha. As a result around the lives and livelihoods of around 15,000 people a year are completely turned upside down. Erosion victims not only suffer the loss of their physical assets such as homes and household property, but also their social capital through displacement and loss of social networks and livelihood opportunities. At the same time siltation also results in newly accreted land, to the tune on average of just over 5,000 ha per year. This new land is often in a totally different part of the coastal zone, and theoretically erosion victims have the first right to such land. In practice life is more complicated with absentee landlords occupying and claiming new land as soon as they can. Over the years CDSP has piloted a comprehensive soft and hardware package that guaranteed that the poor are the major beneficiaries from land accretion and its development. There is scope to expand and further develop this approach to provide land erosion victims with a comprehensive package to rebuild their lives by optimizing the use of newly accreted land for development and poverty alleviation.

**Component:** Acceleration of land acceleration process through technical interventions; land development; rehabilitation of erosion victims to new land through land allocation; protective infrastructure for new land and settlers, support for human and social development; economic support for livelihoods

**Location:** Meghna estuary

**Benefits:** The development potential of newly accreted land utilized to the full contributing to economic growth; will arrest unwanted rural-urban migration; employment for the most vulnerable population (Section E-5.74, 5.75).

**Time frame:** Continuous

**Cost:** US\$ 5 million annually

**Agencies:** BWDB; LGED; FD; DAE and NGOs

### **Title: Management of Pollution hot spots located in the coastal zone**

**Brief:** Pollution hotspots located in the coastal zone are fairly identified. Management of ECAs is being implemented under a UNDP funded project. In this effort, attempt will be made to establish industry, GO, NGO and community linkage for undertaking 'wise' and integrated mechanisms for all pollution hotspots including industrial belts around Chittagong and Khulna and ship breaking yards at Bhatiary, Chittagong. This will also include capacity building of DoE, forest department and other relevant agencies to be able to incorporate elements in the routine departmental works to reach the CBD, WSSD and other international obligations and there by ensure sustainable environmental conservation leading to sustainable poverty reduction (H 5.84, 5.85). The job shall be done in participatory approach with the community level organizations, NGOs and civil societies. The respective agencies shall be in a position to motivate and train communities in this regard.

**Component:** Institutional development, dialogue facilitation, training, action support

**Location:** ECAs, reserve forests, NP, GR, WS, PAs in the coastal zone.

**Benefit:** Poverty reduction through stabilize environmental equilibrium and sustainable biodiversity

**Cost:** US\$ 5 million

**Agency:** DoE, DoF, LGIs and NGOs

### **Title: Waste management in the metropolitan cities in the coastal zone**

**Brief:** About 7 million people live in Chittagong, Khulna and Barisal SMAs who experience serious difficulties in waste management. Around 4,000 tonnes of solid waste are generated every day and the bulk of this is left uncontrolled, as the municipal authority does not have the capacity to cope with it. Recently there are initiatives to set up a network of community-based compost plants for converting household garbage into bio-fertilizer. The program has created a self-sustaining service by engaging the community, public bodies and private sector enterprises. The scarcity of land for waste processing is a problem. The proposed project would solve it by setting up plants on khas land/ vacant land to be allocated by the municipal authorities. A program in slum areas will be taken up as part of the project where the residents will compost their kitchen waste in specially designed compost barrels. The municipal authority will help in marketing the compost. Ministry of Agriculture will facilitate marketing of the compost to farmers needing organic manure to enrich their land.

**Component:** Establishment of waste management plants; homestead-based compost production using kitchen waste; marketing of compost; community awareness building

**Location:** Chittagong, Khulna and Barisal SMAs

**Benefits:** Income opportunity for the poor (slum dwellers); income for municipal authorities for financing development; improved urban environmental through waste management; promoting ecological agriculture by producing organic manure (Section H –5.83).

**Time frame:** 6 years

**Cost:** US\$ 10 million

**Agencies:** LGIs, MoA and private sector

### **Title: Development of low cost erosion protection technology**

**Brief:** Land erosion and accretion are common natural phenomena in the coastal zone. Recently, quantities of erosion in the Meghna Estuary were calculated by comparing the positions of bank lines digitized from several Landsat satellite images of the period 1973-2000 (MES, 2001b). Which is 3,199 ha/yr.

Although the long-term trend of gain of new land appeared to be dominant, it should be mentioned that a huge amount of fertile land in particular old land, is exposed to erosion due to migration and widening of the river system. Besides the erosion of the estuary in the riverbanks, erosions of the foreshore and the embankment system are posing a continuous problem in the coastal area. Erosion is also a problem in inland coastal rivers in Barisal, Patuakhali, Bhola, Barguna, Jhalkati and Pirojpur districts of the Barisal Division, resulting in hundreds of families homeless and shelterless. Some 30,000 houses, many commercial establishments, hundreds of educational and religious institutions, and over half a million hectares of croplands have been devoured by different rivers in the southern districts during the last 10 years.

Erosion protection measures are very expensive and results are uncertain too. This project will look for innovative environment friendly technology, which will fit with the Bangladesh condition.

**Components:** further analysis, modeling, piloting, cheap and friendly technologies etc

**Location:** erosion active areas in the CZ

**Benefit:** New technology for valuable old land protection, reduce uncertainty of the concern people, save land and infrastructures etc (Section E- 5.74, 5.75, H-5.84).

**Cost:** \$ 4 million

**Agencies:** BUET, IWM, RRI, BWDB

### **Title: Land use zoning for efficient use of land resources**

**Brief:** Land as a scarce resource of the country is under different kind of utilization, which are often competing. But per capita availability of land is gradually decreasing due to increasing population aggravating the existing land use conflicts. In the coastal zone the situation is even worse as the demand and utilization of land is more diverse. Per capita available gross cropped, net cultivated and homestead area is 0.093, 0.062 and 0.004 ha respectively in the coastal zone (whereas the country statistics are 0.109, 0.068 and 0.005 ha respectively; 1996 BBS). This warrants the need of efficient use of scarce land resources through judicious planning. The government has already started an initiative of coastal land use zoning under the SEMP. This process should be strengthened and mainstreamed. So the project will develop a land-use-zoning map for the coastal zone (by following the guidelines of National Land Use Policy, 2001).

**Component:** satellite image analysis, land use survey, projection under different scenario, land use zoning map development

**Location:** Coastal zone of Bangladesh

**Benefit:** Land use zoning map prepared for the coastal zone; help to identify appropriate areas for broad-based economic activities; policy and strategy tool developed for directing investment in the coastal zone; rational and efficient use of land (Section H-5.83, 5.84, 5.85).

**Time frame:** 5 years

**Cost:** US\$ 2 million

**Agencies:** MoL, SPARRSO, GSB, SoB, BARC, other relevant agencies

### **Title: Capacity & awareness building for ICZM among local administrative tiers for improving governance of coastal resources**

**Brief:** The application of ICZM approach (Integrated coastal zone management) is a new management responsibility of administrative tiers located in 19 coastal districts. Different means of awareness, motivation, capacity building will be employed for the professional employees at district, upazila and union, levels (B2, 5.29). The objective is to train them for ICZM approaches, participatory resource planning, implementation and management. This will be carried out at regular intervals. A team of trainers will be established in each district through comprehensive and intensive ToT. Gender sensitive motivation, awareness and publicity materials will be developed. Knowledgeable persons from problem areas in the coast will be used as resource persons.

**Components:** Motivation, awareness and publicity materials development; ToT; awareness campaign; training.

**Location:** 19 coastal districts

**Benefit:** Understanding and awareness regarding wise and sustainable use of coastal resources and livelihoods of coastal communities will be increased resulting in qualitative and quantitative change in coastal management. This will facilitate and support most of the Poverty Reduction Strategy including 'supporting local government and broadening participation' and 'caring for environment'.

**Cost:** US\$3 million

**Agencies:** Proposed Program Co-ordination Office for ICZM, specialized NGOs and other relevant agencies.

**Title: Supporting ‘Coast Watch’ – a citizens group to monitor and advocacy for coastal development**

**Brief:** Civil society is increasingly being integrated in the national and local development processes as an important stakeholder. Various citizens’ groups have emerged with the advent of an enabling institutional environment where members of various professional groups and the intelligentsia are taking up a pro-active role as ‘watchdog’ and pressure group, which immensely contributes to good governance, transparency and accountability. The proposed project would support an independent citizens’ group for monitoring and advocacy for coastal development through a newsletter type publication to be circulated among a wider audience including GoB officials, local government leaders, CBOs, NGOs, private sector, mass media and the civil society. This would also carry out ‘opinion poll’ on important coastal concerns.

**Component:** Support for institutional development of a citizens’ group at national and district level; support for publication and dissemination of a monthly newsletter ‘Coast Watch’ (in Bangla)

**Location:** For wider dissemination in the coastal zone and to concerned persons and institutions at the national policy level

**Benefits:** Greater awareness about coastal issues; better planning through stakeholder participation in media debate; promoting voice and participation of the civil society (Section B2-5.22).

**Time frame:** 2 years and then it would continue as a self-financed venture

**Cost:** US\$ 1 million

**Agencies:** Planning Commission; Ministry of Information and private sector/NGO/citizens’ group

**Title: Establishment of IT supported model Unions in sea facing upazilas**

**Brief:** IT centers will be established at selected unions of 48 upazilas located along the coast on a pilot basis. These centers will cater farmers, fishers and artisans. These centers shall be equipped with computers; internet connections and other facilities to provide textual and visual information on issues related to rural livelihoods, especially market prices, weather, product demand, services available in and around the locality and for routine mailing services. Training will be provided to at least two people on the information technology. A central information generation and dissemination center will be established to generate information catering to the need of the rural communities.

**Components:** Detail design study, 48 union-level IT centers, one central info generation & dissemination center (ISP provider), training

**Location:** 48 Unions in 48 upazilas

**Benefit:** Demonstration of IT use for the benefit of rural development, coastal management and human resource development and employment

**Cost:** US\$10 million

**Agencies:** BRDB, LGD, NGOs, private sector (ISP provider)



*Thematic Group 11*

## Private Sector Development

### List of probable projects

<b>Title</b>	<b>Location</b>	<b>Time Frame years</b>	<b>Estimated cost (million US\$)</b>
Supporting gas based industrial development in Bhola	Bhola	12	200
Development of tourism in Kuakata Through Capacity Building of the Rakhaine Community	Patuakhali	5	2
Development of Island Tourism	Selected island	6	5
Establishment of IT supported model Unions in sea facing upazilas	48 unions	4	10
Introduction and expansion of solar energy in the remote coastal areas	Selected areas	5	30
Waste management in the metropolitan cities in the coastal zone	SMAs	6	10
Promotion of Coastal Community Radio Services	Patuakhali	5	5
Modernization of non- mechanized fishing boats to mechanized fishing boats and providing licensing	Selected areas	5	10



### **Title: Supporting gas based industrial development in Bhola**

**Brief:** Natural gas reserve in Shahbazpur gas field in Bhola is available for commercial extraction. It provides a unique opportunity to use this valuable resource for development of this industrially backward region. A 160 MW power plant seems feasible. In order to harness the full potential of this resource, bulk of the power (gas-based electricity) will be used for industrial development of the district. Besides, LPG plant will be developed, which would reduce dependence on traditional biomass fuel. The southern part of Bhola would be brought under a planned industrial zone. This would necessitate development of necessary infrastructures like industrial land use planning, power grid, transport network, telecommunications, banking and insurance service, waste management, etc.

**Component:** Land development for industrial zoning; establishment of an EPZ, establishment of a gas-based power plant, setting up of gas-based industries including LPG plant; excess electricity to national grid, development of physical infrastructures (transport, communication, storage, banking and finance; development of growth centers; establishment of a technical training institute

**Location:** Char Feshon and Lalmohon upazilas of Bhola

**Benefit:** Wage employment of 50,000 people and self-employment of about 200,000 people in backward and forward linkage activities; will reduce dependence of the vulnerable communities on the critical natural resource base (fishing, fry collection, etc) and thereby ensure environmental sustainability; will accelerate integration of the local economy with the mainstream national process; will arrest unwanted rural-urban migration (Section B5-5.45, 5.46, 5.47; B6-5.48).

**Time frame:** 12 years

**Cost:** US\$ 200 million

**Agencies:** MoE&MR, BEPZA, MoL and private sector

### **Title: Development of tourism in Kuakata Through Capacity Building of the Rakhaine Community**

**Brief:** There are about three hundred Rakhaine households (Population Census 1991) living in and around Kuakata in Patuakhali district. The Rakhaines are a distinct ethnic community with rich cultural heritage. They add more beauty to the area that attracts an increasing number of tourists to this beach resort. Along with increasing pauperization and pressing needs for economic development, the Rakhaine community is being dispersed and is losing its identity. The proposed project (Section 5.8) will develop and promote eco tourism (following the guidelines of the National Tourism Policy 1992) through protecting and promoting culture and traditions of the Rakhaine community and enhancing their capacity through training on tourism and related trades.

**Component:** Protection and promotion Rakhaine culture and traditions through establishing a Cultural Academy; tourism training for Rakhaine youth; economic support to producers of traditional art and craft items through credit; providing basic services, e.g. housing, water and sanitation, primary health care and education to members of the community and law and order to maintain communal harmony

**Location:** Rakhaine community of Kalapara Upazila of Patuakhali district

**Benefit:** Employment opportunities for the Rakhaine communities increased about 200 Rakhaine women and men; off-farm employment of the local people to the tune of another 1000 through backward and forward linkage activities in connection with tourism (hotel/restaurant, transport, beach sports, etc.) (Section 5.38); quality of life of the local community improved through income opportunities from tourism; development of physical infrastructure, e.g., road, electricity, telecommunications, etc. in the locality (Section 5.46, 5.48). The project will achieve PRSP goals of poverty reduction of a backward community by directly contributing to employment generation and

contribute to economic growth and promote a positive image of the country through exposure to international tourists (Section 5.42, 5.43).

**Time frame:** 5 years

**Cost:** US\$ 2 million

**Agencies:** BPC, Ministry of Cultural Affairs, private sector

### **Title: Development of Island Tourism**

**Brief:** There are a number of islands in Noakhali, Bhola and Patuakhali districts exposed to the sea. Among these are Damar Char, Nijhum Dwip, Manpura, Bashon Bhanga, Puber Char, Dhal Char, Sonar Char, Rupar Char, Char Patalia, Char Kukri Mukri, Totar Char, Char Kabir, Char Tufania and so forth. People already settle some of these and some are still virgin with mangrove plantations. The project (Section 5.8) will develop infrastructure necessary for the expansion of tourism in the islands of Bhola and Noakhali districts aiming at accelerating the pro-poor economic growth. Through multi-stakeholder participation, the project (by following the National Tourism Policy 1992) will develop the infrastructures (e.g., tourist resort, roads, launch and ferry ghats, drinking water supply, boating and angling facilities, bird and wildlife watching facilities, etc.) necessary for the tourism development. The project will involve the community in the tourism-based activity and build a system of income distribution to the local community through benefit sharing mechanism to foster non-farm employment opportunities and income to the local people.

**Component:** Infrastructure development (road and water transport, telecommunications, power, accommodation for tourists, water supply and sanitation, wildlife sanctuary, watch tower) tourism training for local youth; credit for linkage activities (hotel/restaurant, transport, souvenir shop, etc.).

**Location:** In selected islands of Bhola and Noakhali districts

**Benefit:** Employment opportunity for 2000 (self and wage employment); better physical infrastructure for local people (Section 5.48); exposure of the country to international tourists (Section 5.44); shall achieve PRSP goal of poverty reduction (through employment generation; Section 5.39) and environmental sustainability (through nature conservation; Section 5.85).

**Time frame:** 6 years

**Cost:** US\$ 5 million

**Agencies:** BPC, FD, LGED and private sector

### **Title: Establishment of IT supported model Unions in sea facing upazilas**

**Brief:** IT centers will be established at selected unions of 48 upazilas located along the coast on a pilot basis. These centers will cater farmers, fishers and artisans. These centers shall be equipped with computers; internet connections and other facilities to provide textual and visual information on issues related to rural livelihoods, especially market prices, weather, product demand, services available in and around the locality and for routine mailing services. Training will be provided to at least two people on the information technology. A central information generation and dissemination center will be established to generate information catering to the need of the rural communities.

**Components:** Detail design study, 48 union-level IT centers, one central info generation & dissemination center (ISP provider), training

**Location:** 48 Unions in 48 upazilas

**Benefit:** Demonstration of IT use for the benefit of rural development, coastal management and human resource development and employment.

**Cost:** US\$10 million

**Agencies:** BRDB, LGD, NGOs, private sector (ISP provider)

### **Title – Introduction and expansion of solar energy in the remote coastal areas**

**Brief:** Bangladesh, with a population of about 130 million, has one of the lowest levels of per capita consumption of electricity. Less than 20% of the total populations have access to power. In rural Bangladesh, the figure is about 10%, and in coastal and remote areas, it could be as low as 3%. Given the current rates of growth of electrification, and population, the rate of electricity penetration in rural areas (about 200,000 new connections a year) could be less than 1% per year. At this rate, access to power supply through the national grid for all Bangladeshis may take between 50 to 100 years. In remote areas, specially the coastal areas, the inhabitants are likely to receive power well after fifty years. Loss of economic opportunities due to lack of power in these remote areas would thus be enormous.

Project has to be taken to provide faster access to power in the remote islands and coastal areas of Bangladesh (integrated rural power generation and distribution facilities). The project will ensure electricity generation and distribution systems in selected islands and chars by utilizing solar energy (Section 5.47 and 5.48). By adopting appropriate modes encompassing public-private partnerships the project will establish some Photo Voltaic Installations, form and maintain user groups and develop a sustainable O&M mechanism.

**Location:** Selected remote islands and chars within the coastal zone

**Components:** Solar Panel/plant and distribution networks with other equipments and appliances; credit support, entrepreneurship development, training

**Benefits:** Opportunities for exploiting the vast potential of rural growth through rural-based processing industries such as dehydrated fish industry, small power loom units increased; non-farm employment opportunities increased; providing services that helps to alleviate poverty and protect environment through applied research and development of renewable energy based technologies

**Cost:** US \$ 30 million

**Agencies:** PDB, REB, Private Sector

### **Title: Waste management in the metropolitan cities in the coastal zone**

**Brief:** About 7 million people live in Chittagong, Khulna and Barisal SMAs who experience serious difficulties in waste management. Around 4,000 tonnes of solid waste are generated every day and the bulk of this is left uncontrolled, as the municipal authority does not have the capacity to cope with it. Recently there are initiatives to set up a network of community-based compost plants for converting household garbage into bio-fertilizer. The program has created a self-sustaining service by engaging the community, public bodies and private sector enterprises. The scarcity of land for waste processing is a problem. The proposed project would solve it by setting up plants on khas land/ vacant land to be allocated by the municipal authorities. A program in slum areas will be taken up as part of the project where the residents will compost their kitchen waste in specially designed compost barrels. The municipal authority will help in marketing the compost. Ministry of Agriculture will facilitate marketing of the compost to farmers needing organic manure to enrich their land.

**Component:** Establishment of waste management plants; homestead-based compost production using kitchen waste; marketing of compost; community awareness building

**Location:** Chittagong, Khulna and Barisal SMAs

**Benefits:** Income opportunity for the poor (slum dwellers); income for municipal authorities for financing development; improved urban environmental through waste management; promoting ecological agriculture by producing organic manure (Section H –5.83).

**Time frame:** 6 years

**Cost:** US\$ 10 million

**Agencies:** LGIs, MoA and private sector

### **Title: Promotion of Coastal Community Radio Services**

**Brief:** Community radio is increasingly being used as a vehicle for awareness development and stakeholder participation in planning and management. This is envisaged as an important tool to overcome relative isolation of the coastal zone, particularly for the people living in chars and offshore islands and the marine fishers who operate in amidst vulnerable weather conditions. The community radio would be run by the private sector round the clock, which would combine among others, awareness programs on coastal resource management, localized routine weather forecasts, debate on coastal issues, market information, etc.

**Component:** Setting up a transmission and broadcasting center and a network of relay stations; promotion of radio access to relevant stakeholders

**Location:** Patuakhali

**Benefits:** Greater awareness about coastal issues; better flow of information; better planning through stakeholder participation; better disaster management; access to better price and market for poor producers; voice and participation of the coastal people promoted (Section B2-5.22)

**Time frame:** 5 years

**Cost:** US\$ 5 million (pilot phase)

**Agencies:** Ministry of Information, BTRA, BTTB and private sector

### **Title: Modernization of non- mechanized fishing boats to mechanized fishing boats and providing licensing**

**Brief:** The coastal and marine fisheries historically offer the livelihood to 2.7 millions. In the recent years marine and coastal fisheries catch is thought to be in the order of 0.5 to 0.6 million mt. It is widely believed and out cry from all levels of functional stakeholders of the marine fisheries sector that the sector output is declining and is having a over all crisis. However, Fisheries sector has been reviewed recently (FSFRD) and reported that inshore capture fishery is in decline with estimates that the overall catch has dropped by as much as 50,000 metric tons since 1995. This is the fishing area of most importance to the artisanal fishers, the poorest users of the resource. The primary cause of this decline is unregulated over fishing by the expanding number of fishers, the intrusion of industrial trawlers into inshore waters and the use of non-selective destructive fishing methods-particularly the ESNB and nets used for shrimp larvae collection. Despite some limited interventions the marine fisheries sector has gone on without any real control and management leading to an uncontrolled expansion of the fishing effort, which has resulted in the crisis the sector is facing today.

Improvement of the country fishing boats and non- mechanized fishing boats to mechanized fishing boats shall push the artisanal fisher towards deeper sea enabling them harvesting more unexploited resources (B 5.7, B3, 5.34). One stop licensing mechanism for the fishing boats (and implementation of the FAO code of conduct for responsible fisheries (H).

**Locations:** Chittagong, Cox's Bazar, Patuakhali, Khulna (selected fishing community)

**Components:** credit and technology support, training, licensing, insurance etc

**Benefit:** foster pro poor economic growth, reduce pressure on juvenile fisheries and over all fish stock and make the marine fisheries sustainable; more employment.

**Cost:** US \$ 10 million

**Agency:** DoF, Banks, insurance, Mercantile marine department, coast guard and private sector

*Thematic Group 12*

## **Information and Communication Technology and Technology Policy**

### **List of probable projects**

<b>Title</b>	<b>Location</b>	<b>Time Frame years</b>	<b>Estimated cost (million US\$)</b>
Establishment of IT supported model Unions in sea facing upazilas	48 unions	3	10
Development of communication infrastructure for marine fishers	Cox's Bazar	3	4
Promotion of Coastal Community Radio Services	Patuakhali	5	5
Supporting 'Coast Watch' – a citizens group to monitor and advocacy for coastal development	Dhaka	2	1



### **Title: Establishment of IT supported model Unions in sea facing upazilas**

**Brief:** IT centers will be established at selected unions of 48 upazilas located along the coast on a pilot basis. These centers will cater farmers, fishers and artisans. These centers shall be equipped with computers; internet connections and other facilities to provide textual and visual information on issues related to rural livelihoods, especially market prices, weather, product demand, services available in and around the locality and for routine mailing services. Training will be provided to at least two people on the information technology. A central information generation and dissemination center will be established to generate information catering to the need of the rural communities.

**Components:** Detail design study, 48 union-level IT centers, one central info generation & dissemination center (ISP provider), training

**Location:** 48 Unions in 48 upazilas

**Benefit:** Demonstration of IT use for the benefit of rural development, coastal management and human resource development and employment

**Cost: US\$10 million**

**Agencies:** BRDB, LGD, NGOs, private sector (ISP provider)

### **Title: Development of communication infrastructure for marine fishers**

**Brief:** Presently the fishing community is facing risk from cyclone and other natural calamities. That situation could be improved significantly by providing two way communication technologies to the fishing boats.

Development of communication infrastructure so that the licensing mechanism can incorporate the necessities of a device that shall keep communication with the fisher while fishing in the sea so that they receive warnings for any natural events or get help against pirates etc. (B2, 5.30, B6, 5.49, E, 5.75).

**Components:** Modern communication tools, training, credit etc.

**Location:** Cox's bazaar

**Benefit:** increase security to marine fishers; increase safe fishing, and economic growth, more employment.

**Cost:** US \$ 4 million

**Agency:** DMB, BTRA, Marine Mercantile Department, private sector

### **Title: Promotion of Coastal Community Radio Services**

**Brief:** Community radio is increasingly being used as a vehicle for awareness development and stakeholder participation in planning and management. This is envisaged as an important tool to overcome relative isolation of the coastal zone, particularly for the people living in chars and offshore islands and the marine fishers who operate in amidst vulnerable weather conditions. The community radio would be run by the private sector round the clock, which would combine among others, awareness programs on coastal resource management, localized routine weather forecasts, debate on coastal issues, market information, etc.

**Component:** Setting up a transmission and broadcasting center and a network of relay stations; promotion of radio access to relevant stakeholders

**Location:** Patuakhali

**Benefits:** Greater awareness about coastal issues; better flow of information; better planning through stakeholder participation; better disaster management; access to better price and market for poor producers; voice and participation of the coastal people promoted (Section B2-5.22)

**Time frame:** 5 years

**Cost:** US\$ 5 million (pilot phase)

**Agencies:** Ministry of Information, BTRA, BTTB and private sector

**Title: Supporting ‘Coast Watch’ – a citizens group to monitor and advocacy for coastal development**

**Brief:** Civil society is increasingly being integrated in the national and local development processes as an important stakeholder. Various citizens’ groups have emerged with the advent of an enabling institutional environment where members of various professional groups and the intelligentsia are taking up a pro-active role as ‘watchdog’ and pressure group, which immensely contributes to good governance, transparency and accountability. The proposed project would support an independent citizens’ group for monitoring and advocacy for coastal development through a newsletter type publication to be circulated among a wider audience including GoB officials, local government leaders, CBOs, NGOs, private sector, mass media and the civil society. This would also carry out ‘opinion poll’ on important coastal concerns.

**Component:** Support for institutional development of a citizens’ group at national and district level; support for publication and dissemination of a monthly newsletter ‘Coast Watch’ (in Bangla)

**Location:** For wider dissemination in the coastal zone and to concerned persons and institutions at the national policy level

**Benefits:** Greater awareness about coastal issues; better planning through stakeholder participation in media debate; promoting voice and participation of the civil society (Section B2-5.22).

**Time frame:** 2 years and then it would continue as a self-financed venture

**Cost:** US\$ 1 million

**Agencies:** Planning Commission; Ministry of Information and private sector/NGO/citizens’ group