



# Report and Recommendation of the President to the Board of Directors

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Project Number: 41657  
January 2008

Proposed Loan and Technical Assistance Grant to  
People's Republic of Bangladesh: Emergency  
Disaster Damage Rehabilitation (Sector) Project

Asian Development Bank

## CURRENCY EQUIVALENTS

(as of 6 January 2008)

Currency Unit – taka (Tk)

Tk1.00 = \$0.01458

\$1.00 = Tk68.58

## ABBREVIATIONS

ACE	–	additional chief engineer
ADB	–	Asian Development Bank
ADF	–	Asian Development Fund
BWDB	–	Bangladesh Water Development Board
CIDA	–	Canadian International Development Agency
DER	–	Disaster and Emergency Response Subgroup of the Local Consultative Group of Bangladesh
DFID	–	Department for International Development
DMB	–	Disaster Management Bureau
DMC	–	disaster management committee
EA	–	executing agency
FY	–	fiscal year
GDP	–	gross domestic product
GRC	–	grievance redress committee
IMED	–	Implementation Monitoring and Evaluation Division of the Ministry of Planning
IEE	–	initial environmental examination
JBIC	–	Japan Bank for International Cooperation
km	–	kilometer
LGED	–	Local Government Engineering Department
MFDM	–	Ministry for Food and Disaster Management
NGO	–	nongovernment organization
PKSF	–	Palli Karma-Sahayak Foundation
PMU	–	project management unit
PPR	–	Public Procurement Regulations 2003
PSC	–	project steering committee
RHD	–	Roads and Highways Department
SOE	–	statement of expenditures
TA	–	technical assistance
UN	–	United Nations

## NOTES

- (i) The fiscal year (FY) of the Government and its agencies ends on 30 June. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2008 ends on 30 June 2008.
- (ii) In this report, "\$" refers to US dollars.

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## LOAN AND PROJECT SUMMARY

<b>Borrower</b>	People's Republic of Bangladesh
<b>Classification</b>	Targeting classification: General intervention Sector: Multisector Subsectors: Agriculture sector development, irrigation and drainage, roads and highways, and water resources management Theme: Sustainable economic growth Subthemes: Rural development and urban development
<b>Environment Assessment</b>	Category B
<b>Project Description</b>	<p>The Project will rehabilitate and restore damage caused by the 2007 floods and cyclone. It will enable people to resume their normal lives by restoring access to livelihoods and basic infrastructure. The project design is based on (i) the joint damage and needs assessment after the floods led by the Government of Bangladesh in October–November 2007 with participation of the Asian Development Bank (ADB), Japan Bank for International Cooperation (JBIC), and the World Bank; and (ii) the Government's preliminary estimate of cyclone damage. The assessment of flood damage and needs was prepared in close coordination and consultation with development partners active in Bangladesh including the United Nations and its agencies. The assessment utilized work done by the Disaster and Emergency Response Subgroup of the Local Consultative Group in Bangladesh. The project design also considered the preliminary damage assessment of the cyclone by various United Nations and government agencies. The Project supports increased disaster preparedness and mitigation of damage from future recurrent floods and cyclones by enhancing construction specifications for rehabilitated infrastructure, and improving early warning systems in cooperation with neighboring upstream countries. It includes support for capacity building.</p>
<b>Rationale</b>	<p>The devastating 2007 floods and cyclone, affecting 25 million people in 51 districts, caused severe damage to livelihood, infrastructure, and other assets; and disrupted economic activities, inflicting heavy losses to crops and slowing expansion in industries and services. The combined losses of the floods and cyclone are estimated at over \$3 billion. The losses to assets and output because of flooding amount to more than \$1 billion. Preliminary assessment indicates that the cyclone caused extensive damage of over \$2 billion. The floods and cyclone slowed progress in poverty reduction, with the poor and the vulnerable suffering most in terms of losses to crops, livestock, property, and housing; and reduced income opportunities. The flood and cyclone impact is likely to put pressure on external and domestic balances. The pressure on the current account will amplify, requiring additional assistance to reduce the external financing gap. Pressure on the fiscal balance will increase because of the rise in expenditures for relief efforts; expansion of food-assisted safety nets; and imports of food grains and agricultural inputs, particularly seeds and fertilizer.</p>

## Impact and Outcome

The objective of the Project is to contribute to sustainable economic growth by minimizing the devastating impact of the severe floods and cyclone, and reducing future risk from similar hazard events. The Project will focus on priority areas identified through consultation with the Government, private sector, nongovernment organizations, and other civil society organizations; and involve community participation. The Project includes capacity building and training to strengthen the Government's disaster preparedness by adopting cost-effective flood and cyclone-resistant infrastructure design standards and improved early warning systems through increased subregional cooperation. It has five parts.

**Part A: Quick-Disbursing Component:** Provide import financing for essential commodities and inputs, particularly for agriculture, needed to mitigate the adverse impact of the floods and cyclone, and facilitate quick recovery particularly of crop losses. In accordance with ADB's *Disaster and Emergency Assistance Policy* (2004), the Project will only finance essential imports identified for an effective disaster recovery program.

**Part B: Rural Infrastructure Component:** Rehabilitate and restore rural infrastructure in 23 districts, including 3,000 kilometers (km) of rural roads and 9,000 meters of bridges and culverts; and build or repair 300 flood and cyclone shelters (including livestock shelters) with sanitary facilities to help communities, especially the poor, during future floods and cyclones.

**Part C: Municipal Infrastructure Component:** Rehabilitate urban infrastructure, including 700 km of roads, 65 km of drains, 850 meters of bridges and culverts, as well as footpaths located in 30 *pouroshavas* (municipalities).

**Part D: Roads Component:** Rehabilitate 800 km of damaged national, regional and district roads, and 64 bridges and culverts within the country's seven road zones.

**Part E: Water Resources Component:** Rehabilitate flood control, drainage, and irrigation facilities; repair embankment breaches; and repair or replace flood control structures, protective works, and canals under 331 subprojects in 47 districts.

## Project Investment Plan

The investment cost of the Project is estimated at \$220 million, including taxes and duties of \$20.5 million. Since the Project follows a sector approach, the cost estimates are on a sector basis.



**Financing Plan**

A loan of Special Drawing Rights 75,899,000 (equivalent to \$120 million) from ADB's Special Funds resources will be provided to help finance the Project. The loan will have a maturity of 40 years including a grace period of 10 years, an interest rate of 1.0% per annum, repayment of principal at 2% per year for the first 10 years after the grace period and 4% thereafter, and such other terms and conditions set forth in the draft loan agreement. A technical assistance (TA) grant estimated at \$200,000 will be attached to the loan project to support financial management and monitoring and third party scrutiny of subproject selection and implementation.

Japan Bank for International Cooperation proposes to provide a loan of \$60 million equivalent and the Canadian International Development Agency proposes a grant of \$10 million equivalent; however, formal commitment to provide such financing is expected after ADB Board consideration of this Project. As it is envisaged that cofinancing will be provided from these donors, which ADB will be requested to administer, the scope of the Project reflects this likely additional funding. In the event such financing does not materialize, the Project scope will be adjusted to accommodate available financing. In view of the need for expediency and efficiency in ADB's response to the disaster and emergency, Management requests Board approval of the administration of these and any other cofinanced funds obtained from development partners subsequent to the date of Board approval. Approval of such cofinanced funds will be confirmed and approved by Management, and reported to the Board in accordance with the standard reporting procedures. This procedure will be adopted only to the extent that the additional funds provided by cofinanciers will not materially alter or fundamentally affect the objectives, purposes, and scope of the existing Project. Any proposed cofinancing that would materially affect the objectives, purpose, or scope of the Project will be processed as a major change of scope and circulated to the Board in accordance with ADB's Project Administration Instructions 5.04 and the usual practice.

**Allocation****Project Investment Plan**  
(\$ million)

<b>Item</b>	<b>Amount<sup>a</sup></b>
<b>A. Base Cost<sup>b</sup></b>	
Part A: Quick-Disbursing Component	75.56
Part B: Rural Infrastructure Component	33.57
Part C: Municipal Infrastructure Component	20.89
Part D: Roads Component	46.43
Part E: Water Resources Component	31.70
Project Implementation Support	9.85
<b>Subtotal (A)</b>	<b>218.00</b>
<b>B. Financing Charges during Implementation<sup>c</sup></b>	<b>2.00</b>
<b>Total (A+B)</b>	<b>220.00</b>

<sup>a</sup> Includes taxes and duties of \$20.5 million financed by the Government.<sup>b</sup> In mid-2007 prices. Includes contingencies.<sup>c</sup> Includes interest during construction.

Source: Asian Development Bank estimates.

**Financing Plan**

<b>Source</b>	<b>Total<sup>a</sup></b> (\$ million)	<b>%</b>
Asian Development Bank	120.00	54.55
Government of Japan	60.00	27.27
Government of Canada	10.00	4.54
Government of Bangladesh <sup>b</sup>	30.00	13.64
<b>Total</b>	<b>220.00</b>	<b>100.00</b>

<sup>a</sup> In mid-2007 prices.<sup>b</sup> Includes taxes and duties of \$20.5 million.

Source: Asian Development Bank estimates.

**Period of  
Utilization**

Until 31 December 2010

**Estimated Project  
Completion Date**

30 June 2010

**Executing  
Agencies**

Part A, quick-disbursing component: Finance Division, Ministry of Finance; part B, rural infrastructure component: Local Government Engineering Department; part C, municipal infrastructure component: Local Government Engineering Department; part D, roads component: Roads and Highways Department; and part E, water resources component: Bangladesh Water Development Board.

**Implementation  
Arrangements**

Each executing agency (EA) will be responsible for implementing its respective part(s) of the Project, which comprises various subprojects, through existing project management units established for the ADB-financed Emergency Flood Damage Rehabilitation Project, completed in July 2007. The Emergency Disaster Damage Rehabilitation Project Steering Committee (PSC) chaired by the member, Programming Division, Planning Commission will provide overall project coordination.

The PSC will monitor overall implementation, resolve interagency issues and procedural matters, and ensure timely counterpart funding. The Project will have strengthened anticorruption measures, including strict financial management and monitoring, performance auditing, and random spot checks. ADB's project administration functions will be delegated to ADB's Bangladesh Resident Mission (BRM) for close supervision and monitoring.

## **Procurement**

Since the value of individual civil works contracts will be relatively small and those will be widely scattered in the disaster-affected areas, they are not likely to attract international contractors. National procurement of civil works will follow the Government's Public Procurement Regulations (2003) and Public Procurement Act 2006, both generally acceptable to ADB, and ADB's *Guidelines for Procurement* (2007, as amended from time to time). The flexibility provided in ADB's *Disaster and Emergency Assistance Policy* will be used where applicable.

## **Consulting Services**

Given the tight implementation schedule, the EAs' uneven institutional capacity, and the need for accelerated project implementation, the Project will require 178 person-months of international and 1,905 person-months of national consulting services, determined on a needs basis, to assist the EAs with overall implementation and ensure quality of civil works, governance, risk management and assessment, and other related areas. Consulting firms and individual consultants will be recruited in accordance with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time) and other arrangements satisfactory to ADB for engaging consultants. At the request of the Borrower, ADB has agreed to engage the consultants on behalf of the Borrower. Considering the urgency and need to expedite project implementation, the consultants will be engaged through single-source selection procedures as provided for under the guidelines.

## **Project Benefits and Beneficiaries**

The objective of the Project is to contribute to sustainable economic growth by minimizing the devastating impact of the severe floods and cyclone, and reducing future risk from similar disasters. It will contribute to quick restoration of economic and social activity in the 51 districts for 25 million people seriously affected by the floods and cyclone. The Project will focus on rehabilitating infrastructure, improving access to health and education facilities and markets, and augmenting incomes and self-reliance.

Considering the severity of damage and asset losses, the cost of rehabilitating public infrastructure and facilities is high for the Government and local communities. Support in terms of financial assistance, adoption of appropriate flood- and cyclone-resistant design standards, and strengthening of disaster preparedness and mitigation will be of considerable benefit in protecting the poor and affected people from falling further into poverty. It will help rehabilitate families, provide a safer and healthier living environment, and stabilize livelihoods.

Disasters, including severe floods and cyclones, disproportionately affect the poor in terms of health, housing, employment, livelihood, and food security. The damaged public infrastructure prevents access to health and education facilities and markets. Damaged municipal and community

infrastructure, including waste and sewerage facilities, increase health risks especially for the vulnerable and poor. By rehabilitating public and community infrastructure, the Project will help restore critical social and economic activities disrupted by the 2007 floods and cyclone.

The Project is expected to provide about 14 million person-days of employment to local skilled and unskilled laborers. The Project will encourage and provide for the engagement of women in rehabilitation works of rural and municipal infrastructure.

The project benefits will be evident through restored access to basic services resulting from speedy rehabilitation of infrastructure and facilities, supporting restoration of livelihoods, especially for the poor.

## **Risks and Assumptions**

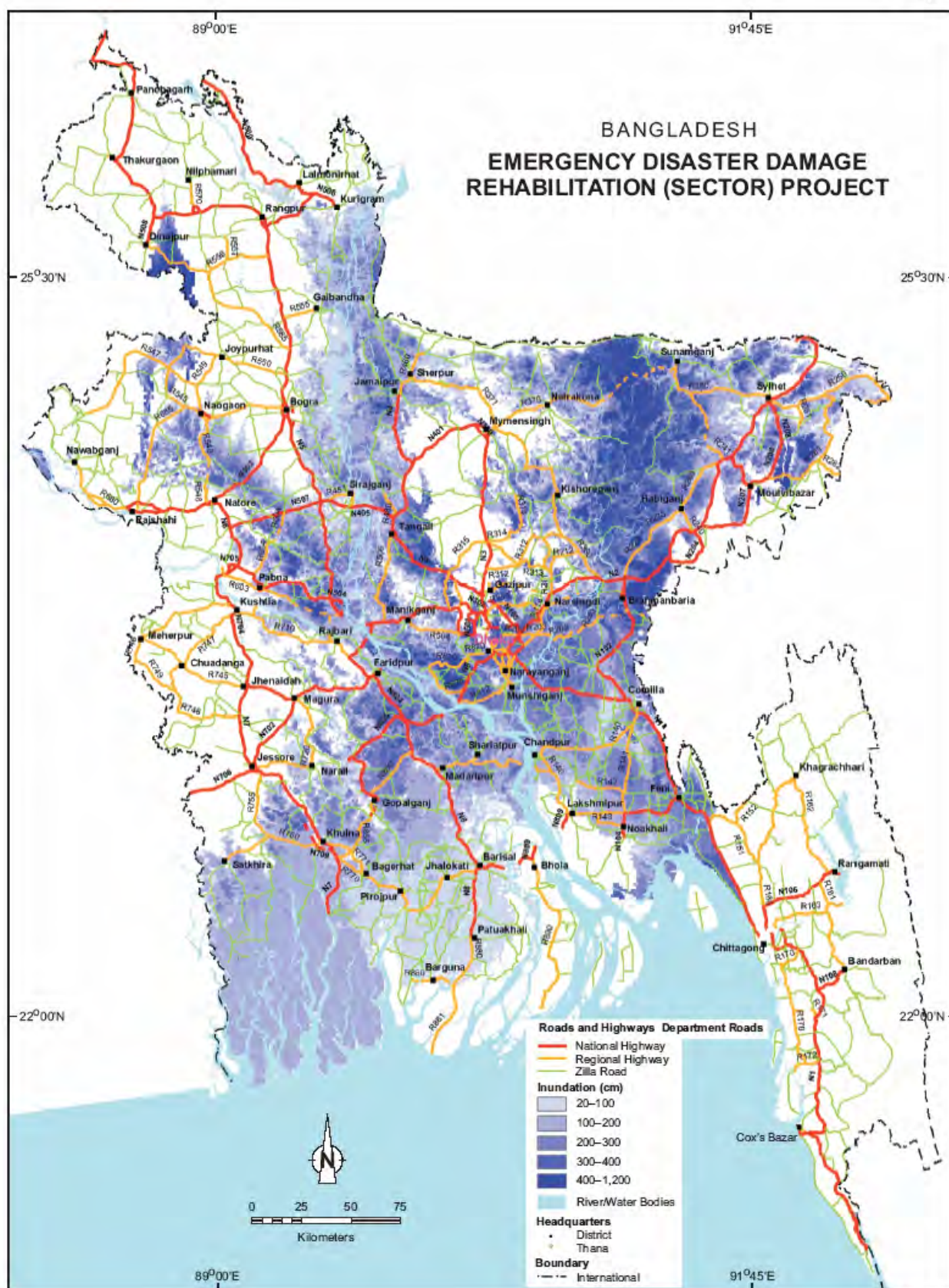
A potential risk is that procedural delays in obtaining various government approvals may slow implementation. Demonstrating its strong commitment to the Project, the Government has adopted simplified procedures that were successfully followed in past ADB-financed flood damage rehabilitation projects. The selection of EAs with extensive experience in implementing ADB-financed projects, and sufficient capacity and familiarity with ADB procedures, the project implementation arrangements with already established project management units, and the use of consultants directly selected from already engaged consulting firms under ongoing ADB-supported projects under the same EAs, will minimize delays at the EA level. Sound macroeconomic management is expected to ensure adequate and timely counterpart funding.

The risk of governance-related issues, including potential irregularities in procurement, is addressed by providing (i) detailed selection criteria, including third party scrutiny of subprojects; (ii) transparent implementation and monitoring mechanisms; and (iii) specific financial controls, including regular and random audits using external auditors. Measures also include enhanced construction supervision and consultant support, strict application of the Government's Public Procurement Regulations 2003 and Public Procurement Act 2006, close monitoring by ADB, and random procurement and performance auditing at the EA level. The PSC will be supported by monitoring and evaluation specialists from the Implementation, Monitoring, and Evaluation Division of the Ministry of Planning. In addition, two national consultants will be engaged under the TA to provide support for financial management and monitoring, with specific tasks of helping monitor all project activities and conducting specific random and spot checks of subproject implementation.

Since the risk for future disasters, including floods and cyclones, is high in Bangladesh, the Project supports and complements the Government's ongoing efforts and the externally financed disaster management program and application of risk reduction strategies, particularly for infrastructure development and rehabilitation.

## **Technical Assistance**

ADB will provide a TA grant of \$200,000 to support financial management, procurement audit, third party scrutiny of subproject selection and contract execution, and monitoring.







## I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan to the People's Republic of Bangladesh for the Emergency Disaster Damage Rehabilitation (Sector) Project. The report also describes proposed technical assistance (TA) for Financial Management and Monitoring, and if the Board approves the proposed loan, I, acting under the authority delegated to me by the Board, will approve the TA. The design and monitoring framework for the Project is in Appendix 1.

## II. RATIONALE: SECTOR PERFORMANCE, PROBLEMS, AND OPPORTUNITIES

### A. Natural Disasters in Bangladesh

#### 1. Disasters and Impact of Climate Change

2. Bangladesh's geographic conditions make it vulnerable to natural disasters, including cyclones, storms, floods, droughts, and earthquakes. Severe floods and cyclones often cause damage and losses on a massive scale, as Bangladesh is one of the 10 most densely populated countries in the world. Since 1904, floods have affected millions of people and caused more than \$10 billion in damage.<sup>1</sup> Riverbank erosion, which often accompanies flooding, contributes to impoverishment and landlessness. Although the country experiences normal flooding almost every year, the incidence of extreme floods has increased over time. During the last two decades, Bangladesh experienced four major floods in 1988, 1998, 2004, and 2007 (Table 1). The damage during normal monsoon floods is also sizable. A comparison of natural calamities illustrates that cyclones have the most devastating consequences in terms of casualties and losses. Over the years, several cyclones hit Bangladesh, including the major cyclones of 1970, 1991 and 2007.

**Table 1: Major Floods in Bangladesh**

Item	1988	1998	2004	2007
Inundated Area of Bangladesh (%)	60	68	38	42
Duration of Flood (days)	23	72	55	24
People Affected (million)	45	31	36	16
Total Deaths (people)	2,300	1,100	750	1,071
Livestock Killed (number)	172,000	26,564	8,318	40,700
Rice Production Losses (million tons)	1.65	2.06	1.00	1.30
Roads Damaged (kilometers)	13,000	15,927	27,970	31,533 <sup>a</sup>
Number of Homes Fully/Partly Damaged (million)	7.20	0.98	4.00	1.10
Total Losses (Tk billion)	83	118	134	72

<sup>a</sup> All categories of roads, including unpaved, and 10,311 kilometers of paved roads.

Sources: Ministries of fisheries and livestock, and food and disaster management; Asian Development Bank; and World Bank estimates.

3. Evidence of the impact of global climate change on the occurrence and magnitude of extreme natural disasters is increasing. According to the United Nations (UN) *Human Development Report 2007/2008*, Bangladesh is among the countries most affected by climate change, which may cause a large-scale reversal in human development. Climate change will affect these countries the most by breaking down agricultural systems, worsening water supply

<sup>1</sup> According to the Center for Research on the Epidemiology of Disasters, Belgium (<http://www.cred.be/>).

scarcity, increasing risk of disease, and triggering mass displacement because of recurring floods and cyclones. The UN report notes that climate change could affect more than 70 million people in Bangladesh. These impacts are envisaged to increase human vulnerability to natural disasters, thus emphasizing the need for improved preparedness and risk mitigation. The details on floods and other natural disasters in Bangladesh, and damage following the 2007 floods and cyclone are given in Appendix 2.

## **2. Disaster Management**

4. Although Bangladesh has made huge strides in reducing fatalities from natural disasters, improvements are needed in all phases of the hazard risk management cycle. Recognizing this, the Government adopted a holistic and comprehensive risk management approach and strategy (Appendix 3). The Ministry for Food and Disaster Management (MFDM) has shifted its disaster management strategy from disaster response to disaster risk management. The disaster management strategy has three distinct features to (i) substantially reduce disaster losses in lives and social, economic, and environmental assets of communities and the nation; (ii) emphasize the integration of disaster risk considerations into national development planning and programs to improve sustainable development outcomes; and (iii) include specific actions to develop stronger institutions, mechanisms, and community capacity to systematically build resilience to natural hazards and disasters.

5. Several institutions are involved in disaster risk management, including flood risk monitoring and mapping, such as the Geological Survey of Bangladesh, Centre for Environmental and Geological Information System, Water Resources Planning Organization, and Institute of Water Modeling. A series of interrelated national and local institutions have been created to ensure effective planning and coordination of disaster management and emergency response. Detailed roles and responsibilities of all national and local disaster management committees, relevant ministries, divisions, departments, and agencies for risk reduction during normal and emergency response periods are well defined. MFDM acts as the national focal point and is responsible for coordinating national disaster management efforts across all institutions<sup>2</sup> through its three agencies: Disaster Management Bureau, Directorate of Relief and Rehabilitation, and Directorate General of Food. MFDM has a corporate plan setting out priorities and broad strategies, and ensuring strong linkages with Government priorities for achievement of goals in the national poverty reduction strategy and international commitments, such as the UN Millennium Development Goals. MFDM recently prepared the National Plan for Disaster Management 2007–2015, which is in the final stage of approval by the National Disaster Management Council. The district offices of the deputy commissioner, the subdistrict offices of the upazila nirbahi officer, and the union parishads (the lowest level of administration) have crucial roles in local disaster management. Details on the Bangladesh disaster management system are in Appendix 3. DFID is supporting Bangladesh to develop a national climate change strategy and action plan.

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<sup>2</sup> Agencies and institutions involved in disaster management apart from government line ministries and departments include (i) Fire Services and Civil Defense Department, (ii) Disaster Emergency Centre of Armed Forces Division, (iii) Bangladesh Meteorological Department, (iv) Flood Forecasting and Warning Center, (v) Bangladesh Police, (vi) Rapid Action Battalion, (vii) Cyclone Preparedness Programme, (viii) Space Research and Remote Sensing Organization, (ix) Geological Survey of Bangladesh, (x) Centre for Environmental and Geological Information System, (xi) Water Resources Planning Organization, (xii) Institute of Water Modeling, and (xiii) Bangladesh University of Engineering and Technology.



## B. Analysis of Key Problems and Opportunities

### 1. Impact of the 2007 Floods and Cyclone

6. Floods occurred during two short periods over 3 months during July–September 2007. The first from the end of July until mid-August inundated about 30% of the country's land mass. The second occurred following prolonged and heavy rainfall from the end of August to mid-September, flooding about 42% of the country's land mass. With slow discharge at the Chandpur confluence of the Meghna and Jamuna rivers, the second flooding resulted in floodwater stagnation in the upper Meghna River basin and the lower Brahmaputra and Ganges river basins. The floods covered 46 districts (40 districts in July to mid-August and an additional 6 from the end of August to mid-September). The total death toll reached 1,071. The lack of access to potable water and sanitation facilities, including contamination of thousands of tubewells and damage to latrines resulted in widespread outbreaks of diarrhea and other waterborne disease and contributed to the high death toll.

7. Floods caused heavy damage to household dwellings, agriculture, and major infrastructure: rural and municipal infrastructure, roads and bridges, and water resources. These include damage to (i) 8,891 kilometers (km) of paved rural infrastructure, including structures in 46 districts; (ii) municipal infrastructure in 83 *pourashavas* (municipalities) covering urban roads, bridges, culverts, water supply, and drainage and sanitation systems; (iii) 1,420 km of national, regional, and district roads, including 115 bridges and culverts; and (iv) water resource structures such as large and medium-scale flood control and irrigation schemes, including 143 km of fully damaged embankments and 1,381 km partly damaged (Appendixes 5–8). The flooding also damaged education and health services.

8. Cyclone Sidr occurred during 15–16 November 2007 and was accompanied by a tidal wave. The cyclone was one of the top five worst windstorms in the world, for example it was more severe than the 2005 Hurricane Katrina in New Orleans, United States. The cyclone hit the southern coastal districts with winds of more than 250 km/hour, severely damaging household dwellings, crops, livestock, shrimp farms, and infrastructure. It extensively damaged the environment by uprooting trees including in the Sundarbans Reserve Forest. The cyclone damage has not yet been fully assessed. The death toll from the cyclone exceeded 3,300 with about 55,000 injured. The Government's advance disaster preparations limited the casualties compared with the devastating cyclone of 1991 when some 143,000 were killed. Based on preliminary assessment, the cyclone affected about 9 million people, and destroyed or damaged 1.2 million household dwellings in 30 districts (25 districts were affected by both floods and cyclone). The cyclone also damaged 2,770 km roads, 614 km of embankments, and 1,654 bridges and culverts, and 9,248 educational institutions (Appendix 2).

9. **Economic Impacts.** The 2007 floods and cyclone affected 25 million people and resulted in more than \$3 billion of damage. Based on the Government's damage and needs assessment and a joint ADB, Japan Bank for International Cooperation (JBIC), and World Bank review in November 2007, the losses to assets and output of the 2007 flooding are estimated at more than \$1 billion. Although not yet fully assessed, losses resulting from the cyclone are estimated at over \$2 billion. The floods and cyclone added pressure to the economy by aggravating high inflation and slowing growth prospects. The disasters prompted downward revision of the key macroeconomic forecast for fiscal year (FY) 2008. Gross domestic product (GDP) growth in FY2008 is expected to be 5.5% compared with 6.5% in FY2007. Substantial external assistance is needed to offset disaster-induced effects on economic growth, inflation, and external and domestic balances. As in the past, the country is likely to prove its resilience in

recovering from the disasters. It is likely to overcome the temporary macroeconomic effects given its sound macroeconomic management, and well-coordinated fiscal, monetary, and exchange rate policies.

10. The disasters caused a setback in the agriculture sector by affecting crops, livestock, poultry, and fish farms. Farmers in many areas planted summer crops and vegetables after the first spell of flooding. However, in most areas, transplanted *aman*<sup>3</sup> and replanted vegetables were again affected by the second flooding and the cyclone. Production loss of rice is estimated at 1.8 million tons. Jute, sugarcane, and vegetable production suffered considerable damage. The flooding and cyclone also caused damage to small-scale manufacturing, and disrupted transportation and trading in affected areas.

11. The flooding and cyclone are likely to put pressure on external and domestic balances. Disaster-induced imports, including food grains, fertilizers, and other agriculture inputs will contribute to a rising trade deficit. This will increase pressure on the current account, which is already under stress because of a slowdown in export growth. The fiscal deficit in FY2008 is expected to rise to 5.5% of GDP compared with 3.2% in the preceding year because of the surge in disaster-induced expenditures for the relief effort, expansion of food-assisted safety nets, and imports of food grains and fertilizer. The increase in the fiscal deficit will be sustainable if it is accompanied by a rise in external financing. The shortfall in domestic food-grain production heightened inflation, which on a point-to-point basis was at 10.1% in October 2007, with food inflation at 11.7% and nonfood inflation at 7.4%.

12. **Social and Poverty Impacts.** Despite progress, poverty remains pervasive. In 2005, based on the upper poverty line, poverty incidence was 43.8% in rural areas and 28.4% in urban areas. A high incidence of poverty is evident in the disaster-affected districts, ranging from 26.5% to 41.9%, according to poverty mapping.<sup>4</sup> Of the 46 districts affected by the floods, 10 were severely affected of which 5 had chronic poverty above the national level (35.5%), as measured by the human poverty index. Chronicity of poverty, as measured by the index, in these 5 districts ranged between 35.5% and 41.9%. The 2007 floods affected both poor and non-poor households in urban and rural areas. However, poor households were hit harder and had difficulty withstanding the negative impacts of the disasters on employment, household income, health, and personal security. River erosion caused damage or loss of houses, arable lands, and flood protection infrastructure, which was a major reason for the inundation or increasing severity of floods in many areas mainly affecting households living near major rivers like the Brahmaputra and Ganges. Disaster-induced price hikes increased the household budget deficit causing higher expenditure on food items and reducing spending on health and other nonfood items. Urban slum dwellers who typically live in poorly drained areas suffered from long periods of water logging, leading to increased incidence of diarrhea and other waterborne disease.

13. The cyclone affected 30 districts, 12 severely. Bangladesh Bureau of Statistics 2005 data indicate that Barisal Division had the highest incidence of poverty measured by both higher and lower poverty lines, and all the districts of this division were severely affected by the cyclone. The cyclone eroded income and purchasing power of the poor, aggravating their economic and social deprivations. The cyclone-affected areas mostly depend on a single crop, *aman* rice, which is usually harvested in November-January. This year's crop was substantially

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<sup>3</sup> *Aman*, the summer rice crop, generally planted before or during monsoon season and harvested in November-January.

<sup>4</sup> Based on 2004 poverty mapping carried out by Bangladesh Bureau of Statistics, Dhaka, Bangladesh.

destroyed. The impact on household food security will therefore be severe, as almost a full year will be required to recover deficit rice production. The asset bases, mainly comprising cattle, were also largely destroyed. These pose threats to the income generation capability of affected households.

14. **Environmental Impacts.** The 2007 floods and cyclone had five main environmental impacts: riverbank erosion, soil erosion, water logging, water contamination, and loss of trees. Riverbank and soil erosion was exacerbated, especially along embankments on major rivers. Water logging caused health risks in urbanized low-lying and flood-prone areas. Persistent drainage congestion, poor solid waste management, and inadequate water and wastewater treatment facilities contributed to unhygienic conditions. Uprooting of trees caused widespread damage to the Sundarban Reserve Forest and other affected areas with serious environmental impacts.

## 2. Immediate Relief and Recovery

15. **The Government Response.** The Government, in coordination with nongovernment organizations (NGOs) and international organizations, successfully responded to the immediate disaster emergency needs and assisted those who were affected. MFDM activated district, *upazila* (subdistrict), and union emergency response committees and established an operations center in Dhaka to closely coordinate relief activities. The Government deployed military personnel to help with rescue operations and the distribution of food and relief services. To assist the flood-affected people, the Government started a vulnerable group feeding program in August 2007 targeting 2,981,500 families. By the end of November, 133,720 tons of rice had been allocated for this program. The Government also distributed clothing and corrugated iron sheets, along with cash grants and house-building grants totaling about \$11 million.

16. The Government and the national and international agencies started relief operations in the cyclone-devastated areas as soon as the high winds and driving rain stopped. By the end of November 2007, Tk15.4 million had been distributed as cash, 9,790 tons of rice as relief, and Tk215 million as grants for house repairs. The Government decided to extend the food support to vulnerable people of the cyclone-affected districts from December 2007 through the special vulnerable group feeding program. About 150,233 tons of rice will be required to operate this program for 4 months to help restore livelihoods.

17. **Relief Response by the International Community.** The consolidated response so far totals \$19.5 million for flood relief, sourced from UN core funds, UN's Central Emergency Response Fund, and contributions from the development partners. The UN and the Government conducted a joint assessment of the cyclone damage and needs, and the UN solicited an additional \$40 million for October 2007 to March 2008 for immediate relief and early recovery activities. The Disaster and Emergency Response Subgroup (DER) of the Local Consultative Group in Bangladesh has worked closely with UN agencies and meets regularly to coordinate the emergency response of all development partners including multilateral development agencies. DER, in coordination with several of its partner organizations, supported the damage and needs assessment. For flood relief and rehabilitation, the development partners have committed about \$150 million, including \$75 million of budgetary support from the World Bank.

18. The development partners have expanded their support to residents of cyclone-affected areas; they committed about \$223 million for immediate relief and rehabilitation by mid-December 2007. In addition, the World Bank provided \$247 million to recover from floods and cyclone shocks. Meanwhile, the Government appealed to the development partners for support

for a long-term rehabilitation and development plan for rebuilding damaged infrastructure including roads, bridges, embankments, schools, and cyclone shelters; and a reforestation program for the Sundarbans. The Government emphasizes the need for a large-scale, long-term, and sustainable preventive solution to contain damage from natural disasters.

19. **ADB Response.** ADB responded promptly to the 2007 floods. In late July, the Bangladesh Resident Mission established a flood monitoring unit to collect key information and liaise with other development partners, particularly UN agencies and DER. In response to a Government request, ADB, JBIC, and World Bank jointly fielded a damage and needs assessment mission during 27 September–9 October 2007. In close collaboration with the UN and other development partners, the mission was to prepare a postflood recovery program. On 19 November 2007, the Government asked the international community to help mitigate effects of the cyclone, resulting in ADB including cyclone mitigation measures in the project design.

### 3. Disaster Damage Rehabilitation Financing Needs

20. The assessments estimate the need for (i) \$400 million to finance early recovery from the floods by rehabilitating damaged roads and bridges, railway, rural infrastructure, municipal infrastructure, water infrastructure, energy, education, and health sectors; (ii) \$450 million to finance urgent restoration of the cyclone damage; and (iii) \$1.4 billion for long-term costs of sustainable protection against cyclones. Speedy revival of livelihoods is also crucial to the recovery process of those affected by the floods and the cyclone. Impacts on the poor and vulnerable, as well as on housing, crops, livestock, and fisheries must be mitigated. In agriculture, the Government's focus is now on the *boro* rice crop<sup>5</sup> following widespread damage to the aman crop. For a good boro crop, adequate agriculture inputs, namely imported fertilizer, are needed. In anticipation of a shortfall in food-grain production, the Government needs to import at least 1.4 million tons of food grains in FY2008 compared with only 0.2 million tons in FY2007. Otherwise, the shortfall in food-grain availability will increase, adding to domestic price pressures and vulnerability of the distressed people.

21. The relief and rehabilitation efforts because of the flooding and the cyclone increased pressure on the FY2008 budget with additional financing requirements estimated at 0.7% of GDP. External assistance is needed for (i) immediate relief and rehabilitation; (ii) import of food grains and fertilizer; and (iii) support for speedy restoration of damaged physical infrastructure, including adoption of appropriate flood- and cyclone-resistant design standards. The financing needs for rehabilitating livelihoods, facilities, and infrastructure substantially exceed the Government's budgetary resources.

### 4. Rehabilitation Assistance Program

22. On the basis of the Government's postflood recovery program, the UN damage and needs assessment following the cyclone, and complementing other development partners' efforts; the joint ADB, JBIC, and World Bank mission planned for a three-phased program. Phase one provides immediate recovery assistance (up to 2 years) to address urgent rehabilitation activities; phase two: medium-term recovery assistance (up to 5 years) for other works and major mitigation efforts; and phase three: long-term disaster risk management program. Recognizing the extensive damage to public infrastructure, ADB's timely recovery assistance will be critical to help the Government address the large recovery needs through the emergency assistance Project, covering phase 1 (up to 2 years).

<sup>5</sup> *Boro*, the winter dry season crop, generally planted in December-January and harvested in April-May.

23. The Government has a full understanding of possible interventions for other phases under the medium- and long-term programs, especially for water resource management. For example, riverbank stabilization through cost-effective means is a precursor to other interventions. This calls for the Government's own initiatives, which the development partners may support. For education, health, and railways, recovery needs can be effectively addressed under ongoing programs. These include the Railway Sector Investment Program (jointly supported by ADB, JBIC, and World Bank), and the two large sectorwide program approaches supported by several development partners led by ADB in primary education (Second Primary Education Development Program) and the World Bank in health (Health, Nutrition, and Population Support Program). Similarly, ongoing microcredit programs operated by NGOs, such as PKSf, could effectively channel credit to vulnerable groups, including the poor.<sup>6</sup> The Government also emphasizes the need to revamp the national cyclone coping strategy. The development partners will assist the Government's large-scale and long-term rehabilitation and development plan for disaster management. The Government stresses that the external assistance for long-term disaster management can be modeled in line with the partnership framework for the urban water supply and sanitation sector for Dhaka and Chittagong, jointly supported by ADB, Danish International Development Agency (Danida), the Government of Japan, the Government of the Republic of Korea, and the World Bank.<sup>7</sup>

24. **ADB Strategy.** ADB's current country strategy and program<sup>8</sup> for Bangladesh prepared jointly with the Department for International Development (United Kingdom), Government of Japan, and the World Bank noted the country's vulnerability to natural disasters. It emphasizes (i) mitigating and managing future floods rather than attempting to prevent them completely; (ii) fostering a culture of disaster prevention and resilience at all levels; and (iii) promoting a combination of international, regional, and national interventions to reduce disaster risks and improve mitigation capacity. ADB, in close cooperation with other development partners, is supporting public policies aimed at better preparedness, and adjusting and adapting to regular flooding, rather than intervening to alter the natural hydrology, with the exception of selective support for flood control structures in major urban centers. Recently approved ADB assisted projects have mainstreamed disaster-risk considerations by ensuring that disaster risks are assessed during project preparation, designing projects that can withstand anticipated flooding and cyclone, and including site-specific disaster control measures.

25. One critical issue is to enhance early warning capability by improving flood forecasting and increasing accuracy of predictions, adapted to the various needs at different levels, sectors, and organizations; and providing stakeholders including the poor and vulnerable groups with early and easily understandable information (see para. 31). Increased regional cooperation and sharing of meteorological and hydrological data among countries in the Ganges-Brahmaputra-Meghna river basins is essential to reduce the risk and increase preparedness for disasters including floods. ADB will base its medium- to long-term postflood assistance on the country strategy and program, which identifies disaster preparedness and mitigation as a key priority to assist the Government in operationalizing a comprehensive flood forecasting strategy.

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<sup>6</sup> The World Bank proposes to extend \$50 million through PKSf for livelihood restoration of the extremely poor under its postcyclone rehabilitation assistance.

<sup>7</sup> ADB. 2007. *Report and Recommendation of the President to the Board of Directors on Proposed Loans and a Technical Assistance Grant to the People's Republic of Bangladesh for the Dhaka Water Supply Sector Development Program*. Manila.

<sup>8</sup> ADB. 2005. *Country Strategy and Program (2006–2010): Bangladesh*. Manila.

26. **Portfolio Management and Restructuring.** In formulating ADB's disaster recovery assistance program, Government capacity, possibility for loan portfolio restructuring, and potential use of loan savings under ongoing projects were carefully assessed in line with ADB's *Policy on Disaster and Emergency Assistance* (2004).<sup>9</sup> The portfolio assessment was made in light of the intensified country portfolio review<sup>10</sup> and regular project review, particularly during the last 4 years, and in close coordination with concerned Government agencies. Since 2001, ADB has placed particular emphasis on regularly identifying and canceling Asian Development Fund (ADF) loan savings by examining physical and financial progress of ongoing projects and adjusting their scope and design. Thus, the scope for identifying additional loan savings by restructuring the existing ADF loan portfolio is limited. Nonetheless, savings identified under nine projects, amounting to \$50 million, were canceled for utilization under the Project.<sup>11</sup>

27. **Governance and Corruption.** Despite efforts by successive governments, weak governance continues to be a challenge. Efforts in poverty reduction and broad-based economic growth are constrained by lack of accountability, transparency, predictability, and opportunities for citizens to participate in public decision-making. Despite a consensus view on key governance constraints and steps to be taken to address them, until the installation of the current caretaker Government in January 2007, only modest progress was made in addressing corruption, restoring law and order, and reducing public administrative malaise. The caretaker Government has demonstrated its strong commitment to pursuing critical governance reforms, with a focus on ensuring free and fair elections, combating corruption, ensuring the separation and independence of the judiciary, and improving efficiency and neutrality of the civil service. Fighting corruption is high on its agenda. It reconstituted the Anti-Corruption Commission with competent commissioners; framed new laws to tackle corruption; and has taken tough legal and prosecutorial actions against a number of politicians, public officials, and businesspeople. The caretaker Government has also acceded to the United Nations Convention against Corruption. In a landmark development, effective 1 November 2007, it separated the judiciary from the executive in accordance with provisions of the Constitution. The caretaker Government has reconstituted the Public Service Commission with a new chairperson and members to remove corruption and political patronage, and ensure neutrality in civil service recruitment and promotions.

<sup>9</sup> ADB. 2004. *Operations Manual*, Section D7/BP and D7/OP: Disaster and Emergency Assistance. Available: Lotus Notes database LNADBG1.

<sup>10</sup> Including a joint country portfolio review mission undertaken in May–June 2007 by ADB, JBIC, and World Bank.

<sup>11</sup> ADB. 1999. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Dhaka Power Systems Upgrade Project*. Manila (\$3 million); ADB. 2000. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the West Zone Power System Development Project*. Manila (\$4 million); ADB. 2001. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Post Literacy and Continuing Education Project*. Manila (\$5 million); ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Dhaka Clean Fuel Project*. Manila (\$3 million); ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Road Network Improvement and Maintenance Project*. Manila (\$1.5 million); ADB. 2003. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Road Network Improvement and Maintenance II Project*. Manila (\$17.5 million); ADB. 2004. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Secondary Towns Integrated Flood Protection Project II*. Manila (\$5 million); ADB. 2006. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Secondary Towns Water Supply and Sanitation Project*. Manila (\$5 million); and ADB. 2006. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Secondary Education Sector Development Project*. Manila (\$6 million).

28. ADB is currently providing TA to the Government to build the capacity of the Anti-Corruption Commission<sup>12</sup> and provide support for preparing a national integrity strategy.<sup>13</sup> The recently approved Good Governance Program<sup>14</sup> will support implementation of comprehensive policy reforms in the Anti-Corruption Commission, judiciary, and other institutions to strengthen the Government's core and sector anticorruption measures. Public procurement, which is an area generally associated with high corruption, is undergoing a major reform program supported by ADB, World Bank, and other development partners following the new public procurement regulations that became effective in October 2003. At the sector level, ADB has assisted in preparing anticorruption strategies and vulnerability to corruption assessments, starting with Chittagong Port Authority and Bangladesh Railway. The training provided under a TA to the Foreign-Aided Projects Audit Directorate of the Comptroller and Auditor General of Bangladesh supported strengthening of financial management and auditing.<sup>15</sup> The TA was also providing capacity building and support to strengthen the Implementation Monitoring and Evaluation Division (IMED) of the Ministry of Planning.

29. The proposed Project incorporates several specific anticorruption measures, including (i) strict financial management with strengthened Government monitoring and independent monitoring by a TA consultant, (ii) use of detailed subproject selection criteria, (iii) third party scrutiny of all subprojects, (iv) strong project supervision with appropriate consultancy input, (v) regular independent performance and financial auditing to monitor project implementation, (vi) delegation of ADB's project administration responsibility to the Bangladesh Resident Mission for close monitoring and supervision, and (vii) random and independent spot checks of implementation by ADB and consultants. Experience with portfolio management in Bangladesh, including the successful implementation of the Emergency Flood Damage Rehabilitation Project<sup>16</sup> completed on schedule in mid-2007, shows that anticorruption measures need to be addressed under emergency projects.

30. **Lessons in Disaster Management and Flood Rehabilitation.** ADB has provided disaster emergency assistance to Bangladesh through nine loans;<sup>17</sup> two have been

<sup>12</sup> ADB. 2005. *Technical Assistance to the People's Republic of Bangladesh for Supporting Good Governance Initiatives II*. Manila.

<sup>13</sup> ADB. 2005. *Technical Assistance to the People's Republic of Bangladesh for Preparing the Good Governance Project*. Manila.

<sup>14</sup> ADB. 2007. *Report and Recommendation of the President to the Board of Directors on a Proposed Program Loan and Technical Assistance Grant to the People's Republic of Bangladesh for the Good Governance Program*. Manila.

<sup>15</sup> ADB. 1999. *Technical Assistance to the People's Republic of Bangladesh for Strengthening Project Portfolio Performance*. Manila.

<sup>16</sup> ADB. 2005. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Emergency Flood Damage Rehabilitation Project*. Manila.

<sup>17</sup> ADB. 1988. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Flood Rehabilitation (Flood Control and Irrigation) Project*. Manila; ADB. 1988. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Flood Damage Restoration (Roads and Railways) Project*. Manila; ADB. 1988. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Flood Rehabilitation Project (Rural Infrastructure) Project*. Manila; ADB. 1989. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Second Flood Damage (Roads and Railways) Project*. Manila; ADB. 1991. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Cyclone-Damaged Road Reconstruction Project*. Manila; ADB. 1992. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Rehabilitation of Damaged School Facilities*. Manila; ADB. 1998. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Flood Damage Rehabilitation Project*. Manila; ADB. 2000. *Report and Recommendation of the President to the*

postevaluated.<sup>18</sup> ADB-wide experience and lessons in disaster assistance<sup>19</sup> suggest that (i) disaster assistance should be prepared quickly; (ii) disaster assistance should focus on restoring infrastructure facilities; (iii) rehabilitation work, to the extent possible, should be completed within 2 years; (iv) strong consulting support and ADB supervision are needed during subproject design and implementation; (v) rapid response and action are needed by the government; (vi) beneficiary participation is important and should be included in project preparation and implementation; (vii) environment and social aspects should be incorporated in project design, and monitored during implementation; (viii) retroactive financing and imprest accounts should be used to facilitate Government access to funds; (ix) criteria for subproject selection should permit simple prioritization of subprojects and rapid implementation; and (x) infrastructure should be upgraded to increase flood resistance rather than just be restored.

31. To support risk reduction, ADB has provided assistance to mitigate the impact of future disasters including floods.<sup>20</sup> Encouragingly, the Government shows full ownership of the envisaged 22 high-priority interventions recommended under the Early Warning Systems Studies TA (footnote 20) for improved water resources and flood management. International experience in disaster management and new global initiatives, such as the 2005 Hyogo Framework of Action<sup>21</sup> and review of implementation of the Hyogo Framework of Action at the 1st and 2nd Asian ministerial conferences on disaster risk reduction (September 2005 in Beijing, People's Republic of China, and November 2007 in New Delhi, India, respectively) emphasize the need to develop disaster risk reduction measures. These include incorporating resilience in reconstruction projects, and developing preventive measures and include them in planning and development processes. These lessons were considered and incorporated in the design of the proposed Project.

*Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Southwest Flood Damage Rehabilitation Project.* Manila; and ADB. 2005. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Emergency Flood Damage Rehabilitation Project.* Manila.

<sup>18</sup> ADB. 1996. *Project Performance Audit Report on the Flood Rehabilitation Project in Bangladesh.* Manila. (Loan 882:BAN[SF]); and ADB. 1995. *Project Performance Audit Report on the Flood Damage Restoration Project (Roads and Railways) in Bangladesh.* Manila. (Loan 892:BAN[SF]).

<sup>19</sup> ADB. 2007. *ADB's Disaster and Emergency Assistance Policy*, and *Positioning ADB's Disaster and Emergency Assistance: Policy in a Changing Regional Environment.* Manila (drafts); Benson, C. and W.T. Linklaen-Ariens. 1999. *Rehabilitation after Disasters: A Review of Lessons Learned and Emerging Issues.* Manila: ADB (third draft).

<sup>20</sup> Examples of ADB assistance that incorporates risk reduction strategies and flood mitigation measures include ADB. 2005. *Technical Assistance to the People's Republic of Bangladesh for Early Warning Systems Study.* Manila; ADB. 2004. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Secondary Towns Integrated Flood Protection - Phase 2.* Manila; ADB. 2005. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Emergency Flood Damage Rehabilitation Project.* Manila; ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Jamuna-Meghna River Erosion Mitigation.* Manila; ADB. 1994. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Jamuna Bridge.* Manila; ADB. 1996. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Jamuna Bridge Access Roads.* Manila; ADB. 1997. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Jamuna Bridge Railway Link.* Manila; ADB. 1995. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Coastal Greenbelt.* Manila; and ADB. 1991. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Dhaka Integrated Flood Protection.* Manila.

<sup>21</sup> The Hyogo Framework of Action is an outcome of the 2005 World Conference on Disaster Reduction held in Kobe, Japan, and represents a global landmark in commitment to disaster reduction implementation and recognition that the fulfillment of the Millennium Development Goals depends on reducing vulnerability from disaster risk and building community and national resilience. The framework defines strategic goals for reducing disaster losses to be achieved for 2005–2015 and has 168 countries and international agencies (including ADB) as signatories.



### III. THE PROPOSED PROJECT

#### A. Impact and Outcome

32. The objective of the Project is to contribute to sustainable economic growth by minimizing the devastating impact of the severe floods and cyclone, and reducing future risk from similar disasters. It will contribute to quick restoration of economic and social activity in the 51 districts for 25 million people seriously affected by the floods and cyclone. The Project will focus on rehabilitating infrastructure, improving access to health and education facilities and markets, and augmenting incomes and self-reliance. The Project includes mitigation of damage from future recurrent floods and cyclones by enhancing cost-effective construction specifications of rehabilitated infrastructure, and supporting capacity building and the Government's disaster preparedness; and improvement to the early warning systems in cooperation with neighboring countries.

#### B. Outputs

33. The Project comprises five parts: A, quick-disbursing component; B, rural infrastructure component; C, municipal infrastructure component; D, roads component; and E, water resources component. In addition, a TA grant of \$200,000 will provide for a procurement performance audit, financial management and monitoring, and third party scrutiny of subproject selection and implementation. The Project will incorporate disaster risk reduction strategies, and strengthen partnerships and synergies with other development partners.

34. **Part A: Quick-Disbursing Component.** The component will help the Government through import financing of essential commodities and inputs to mitigate the adverse impact of the 2007 floods and cyclone on agriculture and livelihood. It will provide \$75.56 million as quick-disbursing assistance to meet the Government's additional financing requirement for imports. In accordance with ADB's *Disaster and Emergency Assistance Policy*, the financing will only be used for essential imports identified for an effective postflood and postcyclone recovery program. The Government and ADB have agreed on a list of permissible imports for financing (Appendix 4).

35. **Part B: Rural Infrastructure Component.** The component will have an estimated total cost of \$33.57 million. It will rehabilitate and restore rural infrastructure in 23 districts, including 3,000 km of rural roads (damaged paved upazila and union roads) and 9,000 meters of bridges and culverts. Improved slope protection works at vulnerable points and provision of additional drainage facilities will provide preventive measures for future flood damage. 300 flood, cyclone shelters and livestock shelters will be constructed, repaired, and provided with latrines to help communities, especially the poor, during future floods. The design standard is based on improved Local Government Engineering Department (LGED) standards as developed by the Project (Appendix 5).

36. **Part C: Municipal Infrastructure Component.** The component will rehabilitate urban infrastructure, including roads, drains, bridges and culverts, and footpaths, located in 30 pourashavas. The works include approximately 700 km of roads, 65 km of drains, and 850 meters of bridges and culverts, at an estimated total cost of \$20.89 million. The design standard is based on improved LGED standards as developed by the Project (Appendix 6).

37. **Part D: Roads Component.** The component will rehabilitate 800 km of flood-damaged national, regional, and district roads and 64 bridges and culverts, within the country's seven road zones: Barisal, Comilla, Dhaka, Khulna, Rajshahi, Rangpur, and Sylhet at an estimated total cost of \$46.43 million. The design standard is based on improved Roads and Highways Department standards as developed by the Project; and includes, where technically feasible and justified, improvements to mitigate the impact of future floods and cyclones, e.g., improved slope protection, raising road height above highest flooding level, or allowing additional vents where water logging leads to overtopping (Appendix 7).

38. **Part E: Water Resources Component.** The Bangladesh Water Development Board has identified 331 subprojects in 47 districts (including coastal zone) with an estimated total cost of \$31.70 million for this component. It includes urgent rehabilitation and improvement works to large and medium-scale infrastructure of flood control, drainage, and irrigation facilities to restore, improve, and reduce future disaster impacts. These facilities include embankments; flood control, drainage, and irrigation canal and structures; and protective works including groynes,<sup>22</sup> spurs,<sup>23</sup> and hard points.<sup>24</sup> Restoration works include filling embankment breaches, resectioning, constructing protective works, and protecting damaged embankments (Appendix 8).

### C. Special Features

39. **Consultation, Coordination, and Partnerships.** The Project was formulated and prepared in close consultation with the Government and development partners active in Bangladesh. The project design considers feedback from beneficiaries, including vulnerable groups, during the damage and needs assessment; and is based on the joint damage and needs assessment of the Government, ADB, JBIC and the World Bank in close coordination and consultation with other development partners including United Kingdom's Department for International Development (DFID), the UN and its agencies, and bilateral development partners. The damage and needs assessment especially utilized work done by DER. Project implementation will be closely coordinated with the World Bank, UN agencies, and bilateral aid agencies; sharing review mission information and progress reporting; and closely monitoring and coordinating activities, including anticorruption measures. The Project will be closely coordinated with the Comprehensive Disaster Management Program implemented by MFDM and financed by the United Nations Development Programme, DFID, and European Union. Participation of beneficiaries including the poor, local government institutions, and NGOs in subproject identification, implementation, operation, and maintenance of improved infrastructure will be ensured during project implementation. Local poor will be involved in construction, operation, and maintenance activities.

40. **Disaster Risk Reduction and Mitigation.** The Project underpins the Government's efforts to increase its preparedness and ability to mitigate future flood and cyclone damage. It supports efforts to enhance Government capacity to develop and adopt improved and more cost-effective flood and cyclone-resistant infrastructure design standards; and incorporates mainstreaming of design standards, such as improved drainage and slope protection, in four key infrastructure sectors/subsectors: rural and municipal, road infrastructure, water resources,

<sup>22</sup> A rigid hydraulic structure built out from the shore (in coastal engineering) or from the bank (in rivers) and interrupts the flow of water and sediment

<sup>23</sup> River engineering structure that is projected from the bank of a stream at some angle to the main flow direction to divert the flow of the river towards the main stream.

<sup>24</sup> Very short rock wall, constructed as a defense or as a boundary, that is used to stabilize a certain location of a river bank.

and irrigation and drainage. It also integrates rationalization of flood control and drainage, and utilizes new technologies, such as cost-effective embankment protection using geotextile sandbags and including erosion prediction. International cooperation is needed to address environmental catastrophes that largely emerge from the global phenomenon of climate change. ADB will work closely with other development partners to support long-term solutions.

#### D. Project Investment Plan

41. The project investment cost is estimated at \$220 million, including taxes and duties of \$20.5 million financed by the Government (Table 2). Detailed cost estimates are in Appendix 9.

**Table 2: Project Investment Plan**  
(\$ million)

Item	Amount <sup>a</sup>
<b>A. Base Cost<sup>b</sup></b>	
1. Part A: Quick-Disbursing Component	75.56
2. Part B: Rural Infrastructure Component	33.57
3. Part C: Municipal Infrastructure Component	20.89
4. Part D: Roads Component	46.43
5. Part E: Water Resources Component	31.70
6. Project Implementation Support	9.85
<b>Subtotal (A)</b>	<b>218.00</b>
<b>B. Financing Charges during Implementation<sup>c</sup></b>	<b>2.00</b>
<b>Total (A+B)</b>	<b>220.00</b>

<sup>a</sup> Includes taxes and duties of \$20.5 million financed by the Government.

<sup>b</sup> In mid-2007 prices. Includes contingencies.

<sup>c</sup> Includes interest during construction.

Source: Asian Development Bank estimates.

#### E. Financing Plan

42. The Government has requested a loan of Special Drawing Rights 75,899,000 (equivalent to \$120 million) from ADB's Special Funds resources to help finance the Project. The loan will carry interest of 1.0% per annum and maturity of 40 years, including a grace period of 10 years, with repayment of principal at 2% per year for the first 10 years after the grace period and 4% thereafter, and such other terms and conditions set forth in the draft loan agreement. The loan proceeds will be made available to all the EAs through budgetary allocations.

43. Out of the remaining project cost of \$100 million, the Government will provide \$30 million equivalent and other cofinanciers are expected to finance \$70 million equivalent.

44. **Cofinancing Opportunities.** An underlying objective of ADB's *Disaster and Emergency Assistance Policy* is to coordinate with development partners, minimize duplication, encourage cofinancing, and have a catalytic effect on the provision of additional resources. Several of these partners may be willing to complement ADB's funds for the Project through cofinancing. ADB has typically sought Board approval for the administration of loan or grant funds from

cofinanciers only when cofinancing commitments are in place. ADB has received indications from several development partners of their interest in providing loans and grants to finance the Project. JBIC indicates that it proposes to provide a loan of \$60 million equivalent and the Canadian International Development Agency a grant of \$10 million equivalent; however formal commitment to provide such financing is expected after Board consideration.<sup>25</sup> As it is envisaged that cofinancing in the form of loans and/or grants will be provided from donors, which ADB will be requested to administer, the scope of the Project reflects this likely additional funding. In the event such financing does not materialize, the Project scope will be adjusted to accommodate available financing. Given the need for expediency and efficiency in ADB's response to the disaster and emergency, Management requests Board approval of the administration of these and any other cofinanced funds obtained from development partners subsequent to the date of Board approval. Management will confirm and approve such cofinanced funds, and report to the Board in accordance with the standard reporting procedures. This procedure will be adopted only to the extent that the additional funds provided by cofinanciers will not materially alter or fundamentally affect the objectives, purposes, and scope of the Project. Any proposed cofinancing that would materially affect the objectives, purpose, or scope of the Project will be processed as a major change of scope and circulated to the Board in accordance with ADB's Project Administration Instructions 5.04 and the usual practice. Table 3 provides the financing plan, including local cost financing.

**Table 3: Financing Plan**

<b>Source</b>	<b>Total<sup>a</sup></b> <b>(\$ million)</b>	<b>%</b>
Asian Development Bank	120.00	54.55
Government of Japan	60.00	27.27
Government of Canada	10.00	4.54
Government of Bangladesh <sup>b</sup>	30.00	13.64
<b>Total</b>	<b>220.00</b>	<b>100.00</b>

<sup>a</sup> In mid-2007 prices.

<sup>b</sup> Includes taxes and duties of \$20.5 million.

Source: Asian Development Bank estimates.

## **F. Implementation Arrangements**

### **1. Project Management and Coordination**

45. Following the practice adopted for the ADB-financed Emergency Flood Damage Rehabilitation Project responding to the 2004 floods (see footnote 16), overall project coordination will be provided by the previously established Project Steering Committee (PSC), chaired by the member, Programming Division, Planning Commission. The PSC includes representation from the Agricultural and Physical Infrastructure Divisions of the Planning Commission; Ministry of Local Government, Rural Development and Cooperatives; Ministry of Water Resources; Ministry of Food and Disaster Management; and Ministry of Communications, of at least joint secretary level. Development partners may be invited by the Government to attend PSC meetings, and issues related to the development partners will be communicated by Economic Relations Division (ERD) on a timely basis. In support of timely subproject approval procedures, the same simplified Government procedures will be followed as were used under past ADB-financed flood damage rehabilitation projects, which greatly helped to expedite project

<sup>25</sup> The Government of the Netherlands has also expressed interest in providing \$20 million of cofinancing for the Project.

implementation. The PSC will provide input to the discussion on phase two: medium-term recovery assistance (up to 5 years) for other works and major mitigation efforts; and phase three: long-term disaster risk management program (paras. 22 and 23). It will also monitor the continued implementation of the 22 high-priority interventions recommended under the Early Warning Systems Studies TA (para. 31) to improve early warning systems in cooperation with neighboring upstream countries. ADB will work closely with other development partners to support long-term solutions to climate change (see para. 5). The project management structure is given in Appendix 10.

46. The EAs for the Projects will be the following: part A, quick-disbursing component: Finance Division, Ministry of Finance; part B, rural infrastructure: LGED; part C, municipal infrastructure: LGED; part D, roads: Roads and Highways Department; and part E, water resources: Bangladesh Water Development Board.

47. Each EA will be responsible in its respective sector/subsector for (i) selection of all subprojects and approval of subprojects not exceeding \$200,000 equivalent, (ii) design of civil works, (iii) preparation of tender documents for civil works and goods, (iv) appointment of consultants, and (v) submission of progress reports to the PSC and ADB. For efficiency, existing project management units (PMUs) and project implementation units established in each EA under the Emergency Flood Damage Rehabilitation Project (see footnote 16) will be utilized, and provided with adequate staff, resources, and logistical support. The project implementation arrangements are in Appendixes 5–8.

48. To ensure timely implementation, ADB will delegate responsibility for ADB's project administration to ADB's Bangladesh Resident Mission, which has extensive experience in administering similar projects, and will closely monitor compliance with ADB's requirements under the Project to ensure quality control, and accelerated implementation of subprojects through close follow-up and guidance to the EAs on project implementation matters.

## **2. Subproject Selection Criteria and Approval**

49. Subprojects under parts B–E will be identified and selected in accordance with sector-specific criteria agreed upon by the Government and ADB for each project component (Appendixes 5–8). In addition, each subproject proposal will be selected on the basis of the following general criteria:

- (i) The subproject will rehabilitate or restore damaged infrastructure and facilities caused by the 2007 floods and cyclone based on the damage and needs assessment (Appendix 2) and validated by ADB.
- (ii) Baseline data of subproject conditions, risk assessment before project startup, and established performance indicators are considered in subproject selection.
- (iii) Views of available professional expertise of ADB, cofinanciers, or their related technical assistance on flood and cyclone resistant design is appropriately reflected in subproject design.
- (iv) The subproject does not involve deferred maintenance, unless such maintenance will substantially reduce the prospect of damage from recurrence of floods and cyclones.
- (v) The subproject will incorporate appropriate cost-effective, flood and cyclone resistant design standards to the extent possible, with adequate provision for quality control.

- (vi) The subproject is technically feasible and cost-effective, and represents a least-cost alternative with appropriate adjustment for incorporating flood and cyclone resistant designs.
- (vii) The subproject incorporates beneficiary consultation and input in the selection process.
- (viii) The subproject will be completed within the project implementation period.
- (ix) The subproject will not be financed by another agency, unless ADB is a cofinancier.
- (x) Priority will be given to subprojects that rehabilitate completed ADB-financed projects.
- (xi) The subproject will comply with the Government's environmental protection regulations and ADB's environment policies. The procedure to comply with these environmental requirements was formulated in the environmental assessment and review framework prepared in close consultation with the EAs. For subprojects requiring an initial environmental examination (IEE), the IEE will be prepared and included in the subproject proposal. Government environment clearance, if required, will be obtained prior to commencing civil work.
- (xii) Subprojects are not expected to involve any land acquisition or involuntary resettlement. If either is required during the Project, it will be conducted in accordance with the Government's applicable laws and regulations, ADB's *Involuntary Resettlement Policy* (1995), ADB's *Handbook on Resettlement: A Guide to Good Practice* (1998), and the agreed resettlement framework (Appendix 11) prior to commencing civil works.

50. The EAs will prepare subproject proposals in formats agreed to by the Government and ADB. The PMU concerned will be responsible for preparation, submission, approval, implementation, and benefits monitoring and evaluation of all subprojects.

### **3. Implementation Period**

51. As the Project is for emergency assistance, project implementation will be substantially completed in 30 months i.e., tentatively by 30 June 2010. Because of the inability to undertake civil works during the wet season the project period was extended with 6 months beyond the 2-year project period generally expected under the ADB's *Disaster and Emergency Assistance Policy* (2004). The agreed implementation schedule recognizes the critical importance of restoring key infrastructure as much as possible before the onset of the next rainy season in July 2008, and builds upon ADB's past implementation experience with flood damage rehabilitation projects. The EAs submitted work plans to ADB during loan negotiations covering the next dry season up to the end of June 2008. The implementation schedule is in Appendix 12.

### **4. Procurement**

52. Procurement of works, goods, and services will be carried out in accordance with ADB's *Guidelines for Procurement*. ADB's procedures for providing rehabilitation assistance after disasters provide for flexible interpretation of these guidelines, so that project activities can start promptly. National procurement will be the preferred mode for all civil works because of the relatively short implementation period, small size of contract packages, wide geographic spread of the project sites, and need for local awareness and community participation.

53. None of the Project's individual civil works contracts is expected to exceed \$3 million. Procurement of civil works contracts with estimated values greater than \$3 million, if any, will be in accordance with international competitive bidding procedures, contracts with estimated values of \$3 million or less will be in accordance with national competitive bidding procedures, and generally be in accordance with the Government's *Public Procurement Regulations 2003* (PPR), *Public Procurement Act 2006*, and ADB's *Procurement Guidelines* (2007, as amended from time to time).<sup>26</sup> The PPR are generally acceptable to ADB for national competitive procurement procedures and were successfully used in past ADB-financed projects, including the 2005 Emergency Flood Damage Rehabilitation Project (footnote 16). ADB's portfolio experience in Bangladesh indicates that national contractors have adequate capacity to undertake such contracts. ADB will review and approve the first two civil works contracts of each EA estimated to cost less than \$200,000. Once ADB is satisfied with the EAs' procurement procedures, post-facto approval procedures will be followed. ADB will review and approve all contracts with estimated values exceeding \$200,000 equivalent. National competitive bidding for civil works will follow the single-stage, one-envelope procedure with postqualification and bidding period of 21 days. Urgent works will follow the direct procurement method specified in the PPR and ADB's *Procurement Guidelines*.<sup>27</sup> To encourage the participation of communities and local residents, especially women, and provide them with employment opportunities, small earthworks with an estimated cost of \$8,000 or less may be awarded, in line with past practices for projects of a similar nature, to labor-contracting societies in accordance with procedures acceptable to ADB.

54. Equipment and materials will be procured under international competitive bidding where the estimated cost is more than \$500,000 equivalent; shopping will be used where the estimated cost is less than \$100,000 and national competitive bidding (or for smaller packages where appropriate, limited international bidding) procedures where the estimated cost is between \$100,000 and \$500,000. The procurement plan is in Appendix 13.

55. The Government and each EA will strictly adhere to the PPR's specified time limits for evaluating and awarding contracts. Contract variations will be discouraged and be subject to prior ADB approval, except in special circumstances for particular contracts for strong technical and economic reasons to maximize social and economic benefits.

## **5. Advance Action**

56. Given the urgency of the Project, ADB approved advance action for the procurement of goods, services, and works and the recruitment of consultants, provided the advance actions take place on or after 27 September 2007, the starting date for the damage and needs assessment and project fact-finding. ADB advised the Government that approval of such advance action does not commit ADB to finance any part of the Project.

## **6. Retroactive Financing**

57. The Project provides for retroactive financing of immediate rehabilitation of key infrastructure and facilities and for consulting services. ADB management has agreed to provide

<sup>26</sup> The PPR, adopted by the Government in October 2003, provide a major step forward to more efficient and transparent procurement. They entail comprehensive reform of all aspects of procurement and are supported by ADB and other development partners active in Bangladesh. In the event of any conflict between the PPR and/or the Public Procurement Act 2006 and ADB's *Procurement Guidelines*, the latter will apply.

<sup>27</sup> Urgent restoration works are works that can be completed within 3 months before 1 May 2008. Direct contracting as specified in Section 3.6 of ADB's *Procurement Guidelines* can be applied in such cases.

retroactive financing for a maximum 30% of the total loan amount for eligible expenditures incurred not earlier than 27 September 2007 (date of project fact-finding), provided that the expenditures are in accordance with agreed procedures, are certified by the EAs, and the certification is acceptable to ADB. Retroactive financing will be approved under the following conditions: (i) in accordance with agreed procedures, (ii) verified by ADB, (iii) certified by the EAs, and (iv) the certification is acceptable to ADB. ADB advised the Government that provision of retroactive financing does not commit ADB to finance any part of the Project.

## **7. Consulting Services**

58. Given the tight implementation schedule, the EAs' uneven institutional capacity, and the need for accelerated project implementation, consulting services will be required to support project implementation. Four design and supervision consultant packages, one for each of parts B–E, are included with a total of 178 person-months of international consulting and 1,905 person-months of national consulting services. The person-months are estimated for a project scope that includes cofinancing. The four consultant packages will be procured using three contracts, one for each EA (procurement plan in Appendix 13 and terms of reference in Supplementary Appendix A). The consultants will support the EAs with day-to-day project implementation, including (i) detailed assessment and verification of damage in each sector/subsector; (ii) preparation of environmental assessment reports and implementation of environmental management for individual subprojects; (iii) identification, prioritization, and formulation of subprojects; (iv) detailed surveys and damage assessment; (v) preparation of plans, designs, specifications, and cost estimates including cost-effective enhancement of specifications to strengthen flood and cyclone resistance; (vi) rapid planning, design, and implementation of the works; (vii) preparation of tender and contract documents; (viii) evaluation of bids and contract awards; (ix) supervision of construction quality, cost and schedule control, measurement, and approval of contractor's work and progress claims; (x) monitoring of works to ensure quality control and transparency among contractors and communities carrying out smaller works; (xi) issuance of completion certificates; (xii) oversight of works in each sector/subsector and provision of detailed accounting, auditing, and reporting to the PMUs and ADB; (xiii) preparation of subproject appraisal reports in accordance with Government and ADB requirements and selection criteria; and (xiv) assessment of EA capacity and subsequent training of EA and PMU staff in methodology and procedures for damage and needs assessment, project supervision, appropriate flood and cyclone resistant design standards, risk management, and related areas. In addition, the EAs will engage NGOs for implementing and monitoring any resettlement activities, if necessary.

59. The EA concerned will engage all consultants in accordance with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time) and other arrangements satisfactory to ADB for the engagement of national consultants. Since the Project must be completed within 30 months, expeditious selection and fielding of the design and construction supervision consultants will be necessary. Accordingly, ADB has agreed with the Government on single-source selection of consultants. General conditions for direct selection of consultants require that the consultants (i) be currently engaged in ongoing ADB-financed projects within the EA concerned, or have prior substantial and satisfactory experience with previous ADB-financed flood damage rehabilitation projects in Bangladesh; (ii) have capacity to deploy needed expertise of relevance and quality at short notice; and (iii) have been selected for ongoing projects following ADB's *Guidelines on the Use of Consultants* and have performed satisfactorily pursuant to the terms of such prior engagements. These arrangements provide for efficient recruitment of consultants under the circumstances. The Government has requested and ADB has agreed to select consultants on behalf of the Government. Consultants' performance will be



closely monitored, with particular attention to quality of work and vigilance in the field to accelerate contract execution for timely completion, as per agreed contract period. Continuity of key consultants and senior field engineers should be strictly adhered to, in accordance with agreed personnel schedule and work program in respective consultant contract.

## **8. Anticorruption Policy**

60. ADB's *Anticorruption Policy* (1998, as amended to date) was explained to and discussed with the Government and EAs. Consistent with its commitment to good governance, accountability, and transparency, ADB reserves the right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive, or coercive practices relating to the Project. To support these efforts, relevant provisions of ADB's *Anticorruption Policy* are included in the loan regulations and the bidding documents for the Project. In particular, all contracts financed by ADB under the Project shall include provisions specifying the right of ADB to audit and examine the records and accounts of the EAs and all contractors, suppliers, consultants, and other service providers as they relate to the Project.

61. ADB will closely monitor anticorruption measures undertaken by the PSC and EAs, carry out random and spot checks on procurement and accounts of the Project and subprojects, and inspect facilities rehabilitated under the Project for quality control. Adopted anticorruption measures were designed based on portfolio implementation experience and preliminary outputs under ongoing TAs supporting good governance (para. 28). They include (i) strict financial management with strengthened Government monitoring and independent monitoring under the attached TA for financial management and monitoring (para. 68), (ii) use of detailed subproject selection criteria, (iii) strong project supervision with appropriate consultancy input, (iv) regular independent performance auditing, and (v) random and independent spot checks by ADB and project consultants.

## **9. Disbursement Arrangements**

62. Unless otherwise described here in the specifics, all disbursements of parts A–E will be in accordance with ADB's *Loan Disbursement Handbook* (2007, as amended from time to time). Three imprest accounts, one for each of parts B, C, and E, will be established in Bangladesh Bank. The statement of expenditures (SOE) procedure will be used to reimburse expenditures and reimburse/liquidate advances under an imprest account, and be applicable to individual payments of \$100,000 and less. The concerned EA will be responsible for managing and administering its respective imprest account and SOE in accordance with ADB's *Loan Disbursement Handbook*. The specific additional details relating to each part are as follows:

- (i) Part A. Disbursement of the quick-disbursing component will be based on the list of permissible imports (Appendix 4). Withdrawal applications must be accompanied by a certificate of the beneficiary confirming that the value of the eligible imports is greater than the loan amount claimed for disbursement.
- (ii) Parts B, C, and E. The initial advances to the imprest accounts will be 6 months of estimated expenditures or 20% of the loan amount corresponding to the respective part.
- (iii) Part D. Disbursement procedures will follow the current practices for ADB-financed road projects with the Roads and Highways Department. Accordingly, no imprest account will be established. All other disbursement procedures, including the SOE procedure, will be applicable.

## **10. Accounting, Auditing, and Reporting**

63. **Accounts and Audit.** Each EA will maintain records and accounts adequate to identify the goods and services financed by the loan proceeds, financing received, expenditures incurred, and use of local funds. The accounts will be maintained in accordance with sound accounting principles. Consolidated project accounts and related financial statements will be audited annually by the comptroller and auditor general of the Government, acceptable to ADB. The audited reports and related financial statements in English should provide an audit opinion on the financial operations of imprest accounts and SOEs and be submitted to ADB not later than 6 months after the end of the fiscal year to which they relate.

64. In addition to the Government audit, ADB will conduct project procurement audits during implementation as part of its regular reviews.

65. **Reports.** While the PSC will monitor overall implementation progress, each EA will prepare brief progress statements and submit these to the PSC with a copy to ADB at the end of each month. In addition, each EA will submit quarterly reports to the PSC and ADB. Within 3 months of physical completion of the Project, the Government will provide ADB through the PSC an overall project completion report providing a detailed evaluation of the project design, costs, contractor and consultant performance, social and economic impact, and other details as requested by ADB.

## **11. Project Performance Monitoring and Evaluation**

66. Each EA will carry out project performance monitoring and evaluation. Baseline indicators and targets for each sector and subproject will be developed prior to implementation for monitoring purposes as well as for checking against selection criteria. The outputs will provide inputs to the Project's quarterly progress reporting.

## **12. Project Review**

67. ADB will conduct regular reviews throughout project implementation. Given the relatively short implementation period and emergency nature of the Project, no midterm review will be conducted unless ADB and the Government deem it necessary.

# **IV. TECHNICAL ASSISTANCE**

68. IMED, the Implementing Agency for the TA, will appoint a project director at the joint secretary level. The TA will support the PSC, chaired by the member, Programming Division, Planning Commission. The PSC will be actively involved during TA implementation, discussing and reviewing TA findings, and providing guidance on various matters. The TA will help the Government build capacity in (i) financial management and related areas to effectively carry out monitoring functions; (ii) evaluation of project performance; and (iii) third party scrutiny of subprojects, and performance of EAs and loan consultants. The TA will design a monitoring and evaluation strategy, risk assessment approach, and assessment of cost-effectiveness; and provide support in performance assessment.

69. ADB will provide a grant of \$200,000 to finance the TA from ADB's TA funding program. The Government will provide in-kind funding including counterparts, office, and necessary information and documents estimated at \$45,000. The TA will commence on 15 February 2008 and be completed by 30 June 2010. The TA team will consist of two national individual

consultants working in parallel: a financial management specialist intermittently for 24 person-months and an engineer specialist intermittently for 24 person-months. ADB will recruit the consultants in accordance with ADB's *Guidelines on the Use of Consultants*, or other arrangements satisfactory to ADB for engaging national consultants. Outline terms of reference for the consultants are in Appendix 14.

## V. PROJECT BENEFITS, IMPACTS, ASSUMPTIONS, AND RISKS

### A. Economic Benefits

70. Given the emergency nature of the Project, previous economic analysis of similar projects was compared, no new analysis was undertaken at appraisal. Based on experience from similar earlier projects providing emergency assistance, the project components are expected to be technically feasible and cost-effective, and represent a least-cost alternative with appropriate adjustment for flood and cyclone resistant designs. Based on initial damage assessment, and considering the project completion report and project performance audit report findings of past flood and cyclone damage rehabilitation projects in Bangladesh, the economic internal rate of return for subprojects is expected to substantially exceed 12%. Reevaluation of similar components involving rehabilitation of major roads found economic internal rates of return range from 25.59% to 47.76%.<sup>28</sup> The economic benefits of the restoration activities are those accrued at the time of initial construction, but are mostly lost because of flood and cyclone damage. Project-financed restoration will bring infrastructure back to original productivity and efficiency. These benefits are high, although not always quantifiable for all project components. Most restoration works will aim to meet immediate emergency needs, but restoration of permanent structures will improve the ability to withstand future floods and cyclones.

### B. Poverty and Social Impacts

71. **Poverty Impact.** Basic facilities and key infrastructure must be restored if the affected communities are to recover from the effects of the 2007 floods and cyclone following the immediate relief support provided by the Government, UN agencies, and bilateral development partners. The Project will benefit the residents, especially the poor, in the disaster-affected areas by offsetting the food grain and inputs shortfall for effective restoration of livelihood and income. The poor will benefit from restored rural and urban infrastructure, and social services. By rehabilitating vital public and community infrastructure, the Project will help restore essential economic and social activities disrupted by the floods and cyclone. The repair of roads, bridges, and improvement of transport infrastructure will restore basic access and services to health and educational facilities. Timesavings will facilitate business and nonfarm employment. The greater access to markets for cash crops, vegetables, livestock, and employment; as well as the decline in the price of agricultural inputs will contribute to poverty reduction by accelerating growth in poor people's per capita income and assets. The flood control and irrigation measures will protect people exposed to risk of inundation from future flooding and raise agricultural output. Improved municipal infrastructure will improve health conditions particularly for slum dwellers with better water supply and sanitation, and create greater access to employment opportunities. A summary of the poverty reduction and social strategy is in Appendix 15. The Project will benefit 25 million people in 51 districts, including women, men, children, and indigenous peoples. The Project will ensure participation of affected people including indigenous people, if any, in selection and implementation of the subprojects. The rehabilitation and construction of

<sup>28</sup> ADB. 2005. *Project Completion Report on the Southwest Flood Damage Rehabilitation Project*. Manila.

flood and cyclone shelters and provision of latrines will help communities, especially the poor, during floods and cyclones.

72. **Employment Generation.** The Project will provide significant employment opportunities for skilled and unskilled labor during implementation. It will create employment opportunities for the poor in the project areas, generating about 14 million person-days of skilled and unskilled labor employment, of which about 20% will be for local destitute women ensuring equal wage for work of equal value. The poverty reduction aspects will be enhanced by encouraging contractors to engage local workers, including women, in project areas; and by using labor-contracting societies for small earthworks, providing work for poor women in the project areas.

### **C. Land Acquisition and Involuntary Resettlement**

73. Since the Project involves rehabilitation of existing flood and cyclone damaged roads, culverts and bridges, and other small urban/municipal infrastructure, it will not have any significant land acquisition and resettlement. However, a resettlement framework was prepared to ensure that if resettlement impacts are identified, the EAs will formulate and implement resettlement plans for relevant subprojects in compliance with the Government's applicable laws and regulations, ADB's *Policy on Involuntary Resettlement* (1995), and the agreed resettlement framework. The framework includes an entitlement matrix that is inclusive, covers all potential losses at replacement cost, and ensures mitigation including relocation/resettlement and restoration of income losses (Appendix 11).

74. Wherever necessary, resettlement plans will be prepared and implemented in close consultation with the stakeholders and involve focus group discussions and meetings, particularly with the people affected by the Project. The plans formulated, according to the approved resettlement framework, will be disclosed and made available in Bangla to those affected during village/community focus group meetings and posted on the EA and ADB websites. The resettlement plans will outline complaints and grievance procedures and grievance redress committees will be established to ensure stakeholder participation in the implementation process. Through public consultations, those affected will be informed that they have a right to grievance redressal. The resettlement plans will identify other institutional arrangements, including involvement of NGOs in the implementation process. A total of \$3 million is allocated for environment and social mitigation, as part of the Government funding for parts B–E; this will be reviewed based on resettlement costs. The EAs will provide a biannual review and report to ADB on land acquisition and all aspects of resettlement management. The EAs will prepare an annual report stipulating all aspects of land acquisition and resettlement outcomes for ADB.

### **D. Environmental Impacts**

75. The Project is classified as category B, in accordance with ADB's *Environment Policy* (2002). The project IEE identifies the degree of likely impacts and describes possible mitigation measures. The Project involves only rehabilitation of previously existing infrastructure to be used for the same or similar purposes. The IEE concludes that it is not likely to generate any significant environmental impacts during construction and operation. All subprojects will be required to complete and satisfy an environmental assessment screening checklist during formulation. Recommended mitigation measures will be incorporated into subproject design and contractors' work assignments. The Project allocates \$3 million for environment and social mitigation, as part of the Government funding for parts B–E; this will be reviewed based on environmental impacts identified. The Project is expected to have several environmental

benefits, including limiting land erosion and failure of embankments along damaged infrastructure; and reducing health risks by rehabilitating damaged water supply and sanitation facilities, and cleaning drainage systems. In cases where the rapid environmental assessment checklist indicates further analysis is required,<sup>29</sup> an IEE will be conducted to identify and implement mitigation measures and monitoring. The EAs are familiar with ADB's environmental guidelines and procedures. However, to ensure compliance with ADB's environmental policy and with Government environmental requirements, environmental assessment and review procedures are provided in the summary IEE (Appendix 16) to guide subproject implementation.

## E. Risks

76. A potential risk is that procedural delays in obtaining various Government approvals will slow implementation. The Government has shown strong commitment to the Project and has adopted simplified procedures, which were successfully used in past ADB-financed flood and cyclone damage rehabilitation projects. The selection of EAs with considerable experience in implementing ADB-financed projects and familiarity with ADB procedures, implementation by established PMUs, and use of existing or directly selected consultants minimizes delays at the EA level. In the past, the availability of counterpart funding has not been a problem in ADB projects in Bangladesh. As the country's macroeconomic management continues to be sound with well-coordinated fiscal and monetary policies, adequate counterpart funds are likely to be ensured.

77. Governance-related issues, including corruption, constitute another risk. This is addressed by detailed subproject selection criteria, transparent implementation and monitoring mechanisms, and specific financial controls including regular as well as random audits and the use of external auditors. Measures used include strict construction supervision and strong consultant support, use of the PPR, close monitoring by ADB staff, third party scrutiny of subprojects and monitoring and advice on the performance of the EA and the loan consultants, and random procurement and annual performance auditing at the EA level. The PSC will be supported by monitoring and evaluation specialists from IMED. PSC will be supported by two external consultants who will (i) help monitor all project activities, (ii) conduct random spot checks during project implementation, and (iii) provide capacity building in key areas of monitoring and evaluation. A third risk is recurrence of major disasters and related extensive damage. This risk is addressed by adopting appropriate cost-effective flood and cyclone-resistant design standards including capacity building, which is expected to reduce damage from future disasters. The risk of inadequate maintenance is addressed by close monitoring and ongoing policy dialogue by ADB.

## VI. ASSURANCES AND CONDITIONS

78. In addition to the standard assurances, the Government and the executing agencies; Bangladesh Water Development Board, Finance Division, LGED, and Roads and Highways Department; have given the following assurances, which are incorporated in the legal documents:

- (i) **Project steering committee.** The PSC will be established for monitoring the implementation of the Project and overseeing all project governance-related

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<sup>29</sup> If any subproject requires (i) a change in alignment (for roads, canals, dikes, and bridges) for safety reasons; (ii) a large borrow pit, or (iii) a large command area (for irrigation), an IEE will be conducted and the IEE report will be sent to ADB for its review and approval.

- matters, including any issues that may arise to mismanagement and breach of quality standards in design or execution of the Project. It will meet at regular intervals but at least once in every 60 days to review progress of the Project.
- (ii) **Subproject selection criteria and monitoring.** The Government will ensure that all subprojects meet, to the satisfaction of ADB, the agreed general and sector-specific selection criteria and implementation arrangements, and that all subprojects are properly controlled and monitored to the satisfaction of ADB.
  - (iii) **Operation and maintenance.** The Government will ensure that all facilities rehabilitated under the Project are properly operated and maintained by the relevant EAs in accordance with sound practices. To this end, within 12 months of the date of loan effectiveness, each of the relevant EAs will prepare an action plan that will include maintenance plans with funding requirements and other pertinent elements for year-round effective maintenance of rehabilitated facilities. A copy of the action plan will be submitted to ADB for follow-up. The Government will make available, on a timely basis, the necessary funds for operation and maintenance after implementation of the Project.
  - (iv) **Counterpart funds.** The Government will allocate and release, on a timely basis, adequate counterpart funds from its budget for each fiscal year during project implementation.
  - (v) **Delegation of financial powers.** The Government will ensure that delegated financial powers, as approved by the Ministry of Finance, are followed under this Project.
  - (vi) **Beneficiary participation.** The EAs will actively seek beneficiary participation in the selection, design, and implementation of all rehabilitation works carried out under the Project.
  - (vii) **Environment.** The subproject will be implemented in compliance with the Government's environmental protection regulations and ADB's environmental policies. The procedure to comply with these environmental requirements was formulated in the environmental assessment and review framework prepared in close consultation with the EAs. For subprojects that require an initial environmental examination (IEE) or environmental impact assessment (EIA), these will be prepared and included in the subproject proposal. The Government environmental clearance, if required, will be obtained prior to commencing any civil works. The Government will ensure that (a) appointment of an environment specialist for each EA shall be included in the budget, and (b) each EA will submit semiannual reports on the implementation of mitigation measures, as described in summary IEE (Appendix 16).
  - (viii) **Environment mitigation measures.** The Government will ensure that all contracts financed under the Project include contractual clauses during design and construction requiring that all necessary steps be taken to avoid adverse consequences to the natural environment, noise pollution, and environmental hygiene-related issues; and as pertains to the selection of sites for extraction of construction materials and selection of roads for transporting such construction materials.
  - (ix) **Resettlement.** The Government will ensure that, to the extent possible, subprojects will not require land acquisition or involuntary resettlement. In the event that land acquisition or involuntary resettlement is required for any subproject, then the Government will prepare a resettlement plan in accordance with the Government's applicable laws and regulations, ADB's *Involuntary Resettlement Policy* (1995), ADB's *Handbook on Resettlement: A Guide to Good*

*Practice* (1998), and the resettlement framework; for submission to ADB for review and approval before any land acquisition is initiated.

- (x) **Gender.** The Government will ensure that, in accordance with ADB's *Policy on Gender and Development* (1998), (a) project interventions take into account the different impacts and needs of women and men; (b) special features are built into subprojects to facilitate and encourage women's involvement and to ensure tangible benefits to women; (c) specific women-related interventions include activities that uplift women from situations of vulnerability to positions of stability; and (d) project reporting reflects how gender-related needs are being addressed under the Project, and details the successes encountered, constraints met, and measures adopted to overcome them.
- (xi) **Core labor standard:** The Government will ensure that the civil works comply with all applicable labor laws, do not employ child labor for construction and maintenance activities, and provide appropriate facilities in construction campsites. The Government will set employment targets for poor and vulnerable people, particularly women, for all construction and maintenance activities; require contractors to use local unskilled labor; and require contractors not to differentiate wages between men and women for work of equal value. A specific clause will be included in bidding documents, and compliance will be strictly monitored during project implementation.
- (xii) **Indigenous people.** The Government will ensure that subprojects will not affect vulnerable population groups, such as indigenous people. In the event of their involvement in any of the subprojects, the Government will take necessary actions required in accordance with the Government's applicable laws and regulations, and ADB's *Policy on Indigenous Peoples* (1998).
- (xiii) **Audits.** In accordance with the Ministry of Finance Circular No. AM/AB/Ba-1/Policy(02)/2006/512, dated 22 May 2007, the Government will ensure that the EAs implement internal audits of project activities to ensure productive use of the resources and performance evaluation of the Project.
- (xiv) **Anticorruption.** The Government will ensure that all agreed measures will be strictly implemented.
- (xv) **Disaster management and risk reduction.** The Government will continue to mainstream disaster risk management and strengthen the disaster risk reduction system in accordance with the National Disaster Management Plan. To this end, within 3 months of the date of loan effectiveness, each of the relevant EAs will submit to ADB a prioritized and time-bound action plan that will include planned measures, and necessary actions to reduce disaster risks in planning, design and preparation, and implementation of infrastructure projects. The action plan will be jointly monitored by the Government and ADB on a quarterly basis.
- (xvi) **Risk management and maintenance.** The Government will link the short-term erosion prediction system developed under the Project with (a) disaster preparedness programs being developed by the National Disaster Management Bureau and (b) the EAs' regular operations (by prioritizing the works in high risk areas); and ensure that the aforementioned systems for planning, design, implementation, and monitoring are well integrated into the present systems.

## VII. RECOMMENDATION

79. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve

- (i) the loan in various currencies equivalent to Special Drawing Rights 75,899,000 to the People's Republic of Bangladesh for the Emergency Disaster Damage Rehabilitation (Sector) Project from ADB's Special Funds resources with an interest charge at the rate of 1.0% per annum; a term of 40 years, including a grace period of 10 years; with repayment of principal at 2% per year for the first 10 years after the grace period and 4% thereafter; and such other terms and conditions as are substantially in accordance with those set forth in the draft Loan and Project Agreements presented to the Board; and
- (ii) the administration by ADB of loans or grants in accordance with the proposal set out in paragraph 44 of this report for the Emergency Disaster Damage Rehabilitation (Sector) Project to be provided by any development partner or cofinancier on a loan or a grant basis, after the date of the Board's approval of the project loan.

Haruhiko Kuroda  
President

Date                      22 January 2008



## DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators <sup>a</sup>	Data Sources/Reporting Mechanisms	Assumptions
<b>Impact</b> Contribute to quick restoration of economic activities in 51 districts for about 25 million people seriously affected by the floods and cyclone	(i) Local market trading is restored after project completion (ii) GDP growth is restored to predisaster level or higher 1 year after project completion	(i) National economic data and indicators (ii) District statistics and data, surveys, including poverty reduction surveys	
<b>Outcome</b> (i) Restore economic and social activities in flood and cyclone affected areas for about 25 million people. (ii) Reduce damage from subsequent floods and cyclones.	(i) Rehabilitated infrastructure adopting appropriate flood- and cyclone-resistant design standards (ii) Reduced damage to infrastructure from future floods and cyclones (iii) Improved access to health and education facilities and markets (iv) Improved incomes and self-reliance	(i) Government's progress reports (ii) Audit reports (iii) Project progress reports (iv) Project review missions (v) Surveys and socioeconomic survey as part of project completion report	(i) Complementary postflood and cyclone recovery assistance provided (ii) Strong Government commitment (iii) Institutional capacity is strengthened with appropriate training in damage assessment and adoption of cost-effective flood- and cyclone-resistant design standards (iv) Adequate Government provision of annual maintenance funds (v) Adoption of anticorruption measures
<b>Outputs</b> <b>Part A: Quick-Disbursing Component</b> High unexpected expenditures by the Government for flood- and cyclone-related recovery and rehabilitation efforts are partially financed	Imports of \$75.56 million of high-priority items indicated in a list of goods and flood and cyclone damage rehabilitation works undertaken	(i) Customs data (ii) Government progress reports	Timely import of essential goods and services required for flood- and cyclone related recovery and rehabilitation
<b>Part B: Rural Infrastructure</b> Rural infrastructure rehabilitated	(i) Part B: 3,000 kilometers (km) of rural roads and union roads) and 9,000 meters of bridges and culverts rehabilitated and restored (ii) Part C: 700 km of roads, 65 km of drains, and 850 meters of bridges and	(i) Government progress reports (ii) Audit reports (iii) Project progress reports (iv) Project review missions (v) Surveys	(i) Timely awards of civil works contracts (ii) Satisfactory performance by national contractors
<b>Part C: Municipal Infrastructure</b> Rehabilitated municipal roads,			

Design Summary	Performance Targets/Indicators <sup>a</sup>	Data Sources/Reporting Mechanisms	Assumptions
drains, bridges, and culverts. Rehabilitated municipal footpaths, and drains in slums	culverts rehabilitated and restored (iii) Part D: 800 km of roads and 64 bridges and culverts rehabilitated and restored (iv) Part E: 331 subprojects implemented restoring flood control, drainage, and irrigation facilities (v) Employment for 14 million person-days of labor will be generated of which 20% will be for women (vi) Restore, repair, and /or build 300 cyclone shelters		
<b>Part D: Roads</b> Rehabilitated national, regional, and district roads and bridges			
<b>Part E: Water Resources</b> Rehabilitated flood control, drainage, and irrigation facilities			
<b>Activities with Milestones</b> <b>1. Part A</b> Quick-disbursement request submitted by 1 February 2008 <b>2. Part B to E</b> 2.1. The established Government project steering committee and each executing agency's project management unit are fully operational at the time of loan effectiveness 2.2. The Government has approved consultant contracts 2 months after loan effectiveness 2.3. The Government has approved maintenance plans 12 months after loan effectiveness 2.4. The Government approved detailed implementation schedule for 2007/08 by loan negotiations, and subsequent annual schedules by March of the year before the related fiscal year 2.5. The Government submits requests for retroactive financing by loan effectiveness 2.6. The Government approves the National Disaster Management Plan by February 2008			<b>Inputs</b> <b>Project:</b> International consultants and national consultants input, and Asian Development Bank loan of \$120 million, and \$70 million funded by other cofinanciers. <b>Government:</b> Counterpart funding and in-kind contribution equal to \$30 million, and all relevant reports, documents, and information made available as needed.

<sup>a</sup> Performance indicators and targets including that on employment generation for the poor and women will be developed, as part of the Project's monitoring and evaluation system, during the project inception period. Information available during processing was not adequate to reliably define numeric indicators for all districts and all sectors.

## DISASTERS IN BANGLADESH

### A. Floods in Bangladesh

1. Floods are the natural disaster causing the most extensive economic and social damage in Bangladesh. Since 1904, floods have killed 50,513, injured 102,280, and rendered 32,703,724 homeless. Around 329 million inhabitants have been affected, and flood damage is valued at a minimum of \$10 billion.<sup>1</sup> In the last 50 years, at least six major floods have affected up to 75% of Bangladesh's land area, causing significant economic and social losses.<sup>2</sup> Because Bangladesh is 1 of the 10 most densely populated countries in the world,<sup>3</sup> the recurrent floods and their effects have caused human suffering on a massive scale (Table A2.1).

**Table A2.1: Significant Flood Disasters in Bangladesh 1954–2004**

Event	Impact
1954 floods	Affected 55% of the country
1974 flood	2,000 deaths, followed by famine with 30,000 deaths
1984 flood	Inundated 52,520 square kilometers
1987 floods	Inundated over 50,000 square kilometers, 2,055 deaths
1988 floods	60% of country inundated, 2,300 estimated deaths, 45 million homeless
1998 floods	68% of country inundated, 31 million homeless, 980,000 homes damaged, 1,100 deaths
2004 floods	38% of country inundated, 4 million homes damaged, 750 deaths

Source: Asian Development Bank and World Bank estimates.

2. The suffering continues even after the floods have subsided. Recurrent floods contribute to the shifting of river courses and result in riverbank erosion and siltation. Riverbank erosion renders land uncultivable, and annually deprives an estimated 100,000 inhabitants of their livelihood. Siltation closes the distributary channels' off-takes and deprives distributaries from receiving water from the parent channels during dry months. The result is drought and famine. The damage wrought by floods in Bangladesh is staggering, especially when compared with the damage suffered by other countries that are vulnerable to floods (Table A2.2).

**Table A2.2: Effect of Floods in Selected Developing Member Countries**

Country	Killed per Flood Event	Injured per Flood Event	Homeless per Flood Event	Otherwise Affected per Flood Event
Bangladesh	801	1,646	981,512	4,484,569
Cambodia	138	7	35,726	1,150,095
Indonesia	46	2,697	2,169	49,643
Philippines	42	9	7,954	165,597
Viet Nam	128	28	9,041	769,839

Sources: EM-DAT: Office of Foreign Disaster Assistance/Centre for Research on the Epidemiology of Disasters (OFDA/CRED), International Disaster Database, [www.em-dat.net](http://www.em-dat.net) - Université catholique de Louvain, Brussels, Belgium. 27 September 2004.

<sup>1</sup> EM-DAT: Office of Foreign Disaster Assistance and Centre for Research on the Epidemiology of Disasters, International Disaster Database, [www.em-dat.net](http://www.em-dat.net) - Université catholique de Louvain, Brussels, Belgium, 3 October 2007.

<sup>2</sup> According to EM-DAT, economic damage has increased over the years. In 1984, estimated damage due to floods was valued at \$378 million; in 1988, \$1 billion; in 1989, \$1.2 billion; and in 2004 an estimated \$2.2 billion.

<sup>3</sup> Bangladesh has a population of around 140 million inhabiting an area of approximately 147,000 square kilometers.

3. In Bangladesh, on average 801 people die whenever a disaster caused by floods occurs; on average 1,646 are injured; 981,512 are rendered homeless; and 4,484,569 are otherwise affected by a flood disaster.

## **B. Causes of Flooding**

4. Bangladesh's geographic location, topography, and climate render it extremely vulnerable to recurrent flooding. The entire country is a delta formed by sediment deposits carried by three major rivers—the Brahmaputra, Ganges, and Meghna. The Ganges-Brahmaputra-Meghna basin is relatively young and is undergoing a major river-forming process. Flooding is a natural part of this process. Bangladesh's topography is mostly flat; 60% of the country is less than 6 meters above sea level, and around 71% of its land is regularly subject to flood inundation. It has a tropical humid climate, and its dry season lasts only 6 months. The average annual rainfall is between 1,200 and 6,500 millimeters.

5. Bangladesh generally experiences four types of floods: (i) flash floods, (ii) floods caused by torrential rains, (iii) river floods, and (iv) floods caused by storm surges and tidal flooding. Flash floods, which occur within a period of a few minutes to a few hours, often occur in areas at the foot of the northern and eastern hills, and are the result of heavy rainfall occurring in neighboring upland areas. Rain-fed floods occur where natural drainage systems have deteriorated or have been disturbed by human interference. When intense rainfall takes place in those areas, natural drainage systems cannot carry the runoff generated by the storm and temporary inundation results. River floods result from the snowmelt in the Himalayas, and heavy monsoon rainfall over the Himalayas, Assam, Tripura hills, and upper Brahmaputra and Ganges floodplains outside Bangladesh. When water levels in the three major rivers rise simultaneously, extreme flood events occur all over Bangladesh. Storm surges cause floods along coastal areas. Storm surges cause high sea levels because of low barometric pressure combined with strong onshore winds. Continental shelves along the Bay of Bengal are shallow, and the coast in the eastern portion is conical and funnel-like in shape.

6. In recent years, urban flooding or inundation has become more prevalent, due to the practice of filling low-lying areas within cities and destroying the natural drainage system. As a result, floods have affected metropolitan areas such as Dhaka, Chittagong, Khulna, Rajshahi, and Sylhet; as well as towns like Comilla, Jessore, Mymensingh, Noakhali, and Rangpur.

## **C. Flood Management Policies, Strategies, and Control Measures**

7. Government flood control policy has been intertwined with issues of securing Bangladeshi's life and property, livelihood, and food security. In 1964, the Government prepared a water development master plan that, among other things, recommended construction of embankments on major rivers. The plan's implementation continued until the late 1980s, and more than 7,000 kilometers of river embankments were constructed. As a result, the population density within the protected areas increased, and livelihood activities moved away from fishing to intensive agriculture.

8. In the 1970s, the Government embarked on small and medium-scale flood control, drainage, and irrigation projects that contributed to increasing agricultural products and protecting agricultural crops from floods. Total investments in these projects totaled \$4.0 billion, and provided flood protection to 5.37 million hectares of land, including about 8 million hectares of flood-vulnerable land, or 35% of total land area. However, some of these projects had

adverse environmental impacts, including the alteration of tidal river morphology, and negative effects on fish resources and navigation.

9. In the mid-1980s, the Government began preparing Bangladesh's National Water Plan. The plan focused on water resource management and development for agricultural and nonagricultural use. The first phase was completed in 1987 and the second in 1991. The plan's analysis of flooding was subsequently superseded by the Flood Action Plan, created by the Government after the 1987 and 1988 floods. The plan comprised approximately 26 components including five regional studies and numerous thematic studies covering technical, environmental, and social issues.

10. The culmination of the Flood Action Plan was the publication of the Bangladesh Water and Flood Management Strategy in September 1995. The National Water Policy was declared in 1999. The National Water Management Plan was formulated and approved in March 2004, with access to safe drinking water and sanitation as its top priority. The National Water Management Plan envisages the water sector regulated under law with independent regulatory bodies formed to ensure quality and cost-effective water service delivery.

11. The Government has adopted both structural and nonstructural measures to control floods in Bangladesh. Among the structural measures are the construction of embankments, polders, dams, barrages, regulators, sluices, channel improvements, and methods for river closure. Embankments have been found to be the most convenient and economical method of controlling floods for strategic and large urban areas. Nonstructural measures for flood management include establishment of the Flood Forecasting and Warning Center. In 1991 the Government decided to improve the center's forecasting services by developing a flood forecast model. At present, flood forecast services are provided at 50 stations; flood monitoring is conducted at another 30. Flood forecasts have a lead time of 24–48 hours, and all forecasts are given on a real-time basis. Longer lead times are required to issue earlier warnings. In addition, more data is needed from the upper river basins in neighboring countries, as is active collaboration with the countries in the subregion on river management issues.

12. The ongoing Comprehensive Disaster Management Program being implemented by the Government through the Ministry of Food and Disaster Management, and financed by the United Nations Development Programme, Department for International Development (United Kingdom), and European Union, is helping develop systems and processes, and build capacity in disaster management. Approved in 2003, the program's objective is to strengthen the capacity of the disaster management system to reduce unacceptable risks, improve response and recovery management at all levels, and effectively integrate and manage the national food security system. It provides a strategic institutional and programming approach designed to optimize reduction of long-term risk and strengthen the operating capacity for responding to emergency and disaster situations including action to improve recovery from these events. The program covers five strategic focus areas: (i) professionalizing the disaster management system; (ii) developing partnerships; (iii) empowering communities; (iv) expanding risk reduction programs across a broader range of hazards; and (v) strengthening emergency response capabilities.

#### **D. Key Priorities in Flood Management and Risk Reduction**

13. As a priority, the Government needs to integrate disaster risk considerations into national development planning and programs to improve sustainable development outcomes and develop stronger institutions, mechanisms, and community capacities that can

systematically build resilience to natural hazards and disasters. Nonstructural measures for flood management and protection need to be given higher priority and mainstreamed into the Government's planning process.

14. Short-term priorities for the Government include to (i) approve the National Disaster Management Plan, (ii) revise the Standard Orders on Disasters; (iii) strengthen the process and, enhance capacity in preparing damage and needs assessments; (iv) develop and adopt flood-resistant design standards in public infrastructure development; (v) update countrywide topographical and elevation data, and use it to create a digital elevation model; (vi) enhance the existing flood forecasting system with respect to elevation data, and provide linkage to major infrastructure and agricultural land; and (vii) enhance the weather forecasting period from the current 2 days to up to 20–30 days.

15. In the medium term, improvements are needed in all phases of the hazard risk management cycle (preparedness, reconstruction, recovery, and prevention), adopting a more comprehensive risk management approach and strategy. Promulgation of a disaster management act is an important step in strengthening the legal framework. Increased subregional cooperation in water management issues is critical for sustainable development of the large Ganges-Brahmaputra-Meghna river basin. Urban flooding needs greater attention and higher priority, especially in Dhaka, including more resources allocated for improving drainage and sewage in urban areas.

#### E. Summary Impact of 2007 Floods and Cyclone

16. National damage estimates are presented in Table A2.3, and a summary of the impact of the 2007 cyclone in Table A2.4.

**Table A2.3 Summary of Initial Flood Damage Estimates (Public and Private Sector)**

Sl. No	Sector	Department, Agency, Ministry (Data Source)	Damage Element	Cost (Tk million)	Remarks
<b>A. Food and Agriculture</b>					
1.	Agriculture (crop)	Department of Agricultural Extension, Ministry of Agriculture	Crop (transplanting aman seedlings, jute, vegetables, and other crops)	42,165.88	Private land and farms. Tk22,270.63 in first flood and Tk19,895.25 in second flood
2.	Livestock	Department of Livestock Services, Ministry of Fisheries and Livestock	Cattle, buffalo, sheep, goats, chicken, ducks, forages and straw	608.55	Includes housing damage of 2,794 farms of large ruminants and 5,412 poultry firms
3.	Fisheries	Department of Fisheries, Ministry of Fisheries and Livestock	Fish fingerlings, freshwater fish, shrimps/prawns, pond embankments	1,964.95	Includes 7 government fish farms
4.	Deep and shallow tubewell	Barind Multipurpose Development Authority, Ministry of Agriculture	Pump house and tubewell machinery		Data being compiled

Sl. No	Sector	Department, Agency, Ministry (Data Source)	Damage Element	Cost (Tk million)	Remarks
5.	Seeds and irrigation	Bangladesh Agriculture Development Corporation, Ministry of Agriculture	Stored seeds and seedlings, and irrigation channels		Data being compiled
6.	Food	Directorate General of Food, Ministry of Food and Disaster Management	Local supply depots, stored food grains		Data being compiled
7.	Forest	Forests Department, Ministry of Forest and Environment	Forests, nursery, roads and buildings in forests	37.80	
<b>B. Infrastructures- Health</b>					
1.	Public health	Department of Public Health Engineering, Ministry of Local Government and Cooperatives	Tubewells and platforms	137.22	70,367 tubewells contaminated and damaged
2.			Latrines (rings and slabs)		Data being compiled
3.		Department of Health, Ministry of Health and Family Planning	Health infrastructure (health centers, clinics, medicine, and other items damaged)	344.40	Rehabilitation budget considering the damages
4.		Department of Family Planning, Ministry of Health and Family Planning	Health subcenters, community clinics		Data being compiled
<b>C. Transport, Communications, and Public Works</b>					
1.		Local Government and Engineering Division, Ministry of Local Government and Cooperatives	Roads, bridges, culverts, and other infrastructure, approaches to bridges, drains, upazilla bhaban, growth center, embankments	11,425.30	The value is for rehabilitation plan of the damaged structure and estimated value for reconstruction. Rural infrastructure damage: Tk8,238 million, municipal: Tk3,158, and other structures: Tk29.3 million
2.			Flood shelters		Data being compiled
3.		Roads and Highways Department, Ministry of Communication	Highway, roads, bridges, and other infrastructure	6,904.90	Rehabilitation plan for the damaged structures following estimated value of damage element

Sl. No	Sector	Department, Agency, Ministry (Data Source)	Damage Element	Cost (Tk million)	Remarks
4.		Bangladesh Water Development Board, Ministry of Water Resources	Embankment, bridge culvert, roads and buildings, sluice gate, regulator, inlet, outlet etc.	5,549.74	
5.		Bangladesh Handloom Board, Ministry of Textiles and Jute	Handlooms	282.26	No damage data, but a rehabilitation plan
6.		Bangladesh Small and Cottage Industries Corporation	Building, roads, culverts, and drains	17.00	No damage data, but a rehabilitation plan
7.		Telephone and telegraph	Infrastructure (cabinets, telephone pole, cables, offices)	6.15	The amount has already been spent for repairs
8.		Power Development Board	Infrastructure (meters, polls, and transmitters)	94.05	Rehabilitation plan considering damage element
9.		Rural Electrification Board	Electricity-related infrastructure	29.13	Rehabilitation plan considering damage element
10.		Directorate of Relief and Rehabilitation, Ministry of Food and Disaster Management	Shelters		Data being compiled
11.		Bangladesh Railway	Railway infrastructure	370.96	Rehabilitation plan considering damage element
12.		Bangladesh Inland Water Transport Authority, Ministry of Shipping	Infrastructure	367.38	Rehabilitation plan considering damaged element
13.		Other	Other infrastructure		Data being compiled
<b>D. Education</b>					
1.	Primary Education	Directorate of Primary Education	Primary school buildings and other related offices and infrastructure	1,114.20	Rehabilitation plan; 8,668 primary schools were damaged; 205 new schools are planned
2.	Secondary and higher	Directorate of Education Engineering	School, college and madrasah buildings and related offices-/infrastructures	430.23	15 fully and 3,559 partially damaged nongovernment and government) colleges and madrasa
<b>Total (Tk million)</b>				<b>71,850.10</b>	
<b>Total (\$ million)</b>				<b>1,047.68</b>	

Source: Disaster Management Bureau, Ministry of Food and Disaster Management, November 2007.



**Table A2.4: Summary Impact of 2007 Cyclone**

<b>Item</b>	<b>Quantity</b>
1. Affected Districts	30
2. Most Affected Districts	12
3. Affected Upazila	200
4. Affected Unions	1,811
5. Affected Households	1,611,139
6. Affected People	8,923,259
7. Crops Damaged (hectares)	
Fully damaged (hectares)	186,971
Partially damaged (hectares)	537,409
8. Damaged Houses	
Fully damaged houses	365,670
Partially damaged houses	842,657
9. Death Toll	3,347
10. People Injured	55,282
11. People Missing	1,180
12. Dead Livestock and Poultry	467,469
13. Damaged Educational Institution	
Fully damaged (number)	1,355
Partially damaged (number)	7,893
14. Damaged Roads (kilometers)	
Fully damaged (kilometers)	648
Partially damaged (kilometers)	2,122
15. Damaged Bridges and Culverts (number)	1,654
16. Damaged Embankment (kilometers)	614
17. Damaged Trees (number)	3,369,366

Sources: Ministry of Food and Disaster Management and Ministry of Planning.

## **DISASTER MANAGEMENT IN BANGLADESH**

1. The Ministry of Food and Disaster Management (MFDM), the national focal point for disaster management in Bangladesh, has three agencies Disaster Management Bureau (DMB), Directorate of Relief and Rehabilitation, and Directorate General of Food. Among the many government agencies that assist MFDM in its work are (i) Fire Services and Civil Defense Department; (ii) Disaster Emergency Centre, Armed Forces Division; (iii) Bangladesh Meteorological Department; (iv) Flood Forecasting and Warning Center; (v) Bangladesh Police; (vi) Rapid Action Battalion; and (vii) Cyclone Preparedness Programme. MFDM also has technical and scientific partnerships with (i) Space Research and Remote Sensing Organization, (ii) Geological Survey of Bangladesh, (iii) Centre for Environmental and Geological Information System, (iv) Water Resources Planning Organization, (v) Institute of Water Modeling, (vi) Bangladesh University of Engineering and Technology, and other institutions. The offices of the deputy commissioner in the districts, the offices of the upazila nirbahi officers in the subdistricts, and the union parishads at the lowest level of the administration play crucial roles in disaster management.

### **A. Organization**

2. Bangladesh has an elaborate system of disaster management. A series of interrelated national and subnational institutions have been created to ensure effective planning and coordination of disaster management and emergency response (Figure A3). The principal national institutions in disaster management include (i) National Disaster Management Council, headed by the Prime Minister, formulates and reviews disaster management policies and issues directives; (ii) Inter-Ministerial Disaster Management Co-ordination Committee, headed by the Minister of MFDM, implements National Disaster Management Council disaster management policies and decisions; (iii) National Disaster Management Advisory Committee provides advice; (iv) Cyclone Preparedness Program Implementation Board, headed by the MFCM secretary, reviews preparedness activities for the initial stage of an impending cyclone; (v) Disaster Management Training and Public Awareness Building Task Force, headed by the DMB director general, coordinates disaster-related training and public awareness activities of the Government, nongovernment organizations (NGOs), and other organizations; (vi) Focal Point Operation Coordination Group of Disaster Management, headed by the DMB director general, reviews and coordinates the activities of various departments and agencies related to disaster management, and reviews the contingency plan prepared by concerned departments; (vii) NGO Coordination Committee on Disaster Management, headed by the DMB director general, reviews and coordinates activities of concerned NGOs in the country; and (viii) Committee for Speedy Dissemination of Disaster Related Warning/Signals, headed by the DMB director general, examines and determines the ways and means for speedy dissemination of warning signals among the people.

3. Institutions at the field level include (i) district disaster management committees (DMCs), headed by the deputy commissioner, coordinate and review district disaster management activities; (ii) upazila DMCs, headed by upazila nirbahi officers, coordinate and review upazila disaster management activities; (iii) union DMCs, headed by the union parishad chairperson, coordinate, review, and implement the unions' disaster management activities; (iv) pourashava DMCs, headed by the pourshava chairpersons, coordinate, review, and implement disaster management activities within their area of jurisdiction; and (v) city corporation DMCs, headed by the city corporation mayors, coordinate, review, and implement disaster management activities within their area of jurisdiction.

## B. Legal and Regulatory Framework

4. The Standing Order on Disasters provides detailed roles and responsibilities for all DMCs, relevant ministries, divisions, departments, and agencies for normal risk reduction and during emergency response periods. The Government is enacting a disaster management law.

## C. Risk Reduction Strategy

5. The Government has made a shift in disaster management strategy from disaster response to disaster risk management. The disaster management strategy has three distinct features. It aims to substantially reduce disaster losses in lives and in social, economic, and environmental assets of communities and the nation. It emphasizes the integration of disaster risk considerations into national development planning and programs to improve sustainable development outcomes. It includes specific actions to develop stronger institutions, mechanisms, and community capacities that can systematically build resilience to natural hazards and disasters. The priority has been to focus on community preparedness, response, recovery, and rehabilitation.

6. Bangladesh has created a model to guide the design of disaster management programs, including development or review of policy and training course material. The model has three key elements: (i) defining the risk environment, (ii) managing the risk environment, and (iii) responding to the threat environment. The model ensures that the move to a more comprehensive risk reduction culture remains central to all efforts.

- (i) **Defining the risk environment.** This element promotes the use of scientific analysis (including climate change impacts) as the basis for accurately determining the future risk environment related to all hazards, sectors, and geographic areas. Bangladesh has adopted the process outlined in the International Risk Management Standard, Australian/New Zealand Standard (AS/NZS: 4360-1999), to guide all community risk assessments.
- (ii) **Managing the risk environment.** This promotes the design of risk reduction strategies (community-based adaptation programs) as an outcome of the risk assessment process; and ensures prevention, preparedness, response, and recovery programs are multihazard focused and move from being hazard generic in nature to risk specific. This will enable communities to better understand their changing risk environment and become more resilient through proactive risk reduction efforts.
- (iii) **Responding to the threat environment.** This involves responding to an actual threat situation. It helps disaster management officials to clearly articulate the difference between risk reduction and emergency response, and understand how accurately defining risk environments can influence and enhance emergency response systems and decisions.

## D. Disaster Management Plans

7. **National Plan for Disaster Management 2007–2015.** The plan is an outcome of the national and international commitments of the Government and MFDM to address disaster risks comprehensively. The plan was developed to reduce the vulnerability of the poor to the effects of natural, environmental, and human-induced hazards to a manageable and acceptable humanitarian level by (i) bringing a paradigm shift in disaster management from conventional response and relief practice to a more comprehensive risk reduction culture, and

(ii) strengthening the capacity of the disaster management system to improve response and recovery management at all levels. The plan outlines indicative key issues that relevant regional and sectoral plans would consider such as (i) risk reduction, (ii) capacity building, (iii) climate change adaptation, (iv) livelihood security, (v) gender mainstreaming, (vi) community empowerment, and (vii) response and recovery management. While linked to international and national drivers, the plan's strategic goals are drawn from the South Asian Association for Regional Cooperation Disaster Management Framework. MFDM and an interministerial committee have endorsed it and it is currently awaiting approval by the National Disaster Management Council.

8. **Corporate Plan 2005–2009.** MFDM's corporate plan sets out the priorities and broad strategies for achieving reform within the disaster management sector and ensures strong linkages with Government priorities for the achievement of goals associated with the national poverty reduction strategy and international drivers such as the Millennium Development Goals. Each of the three MFDM agencies has prepared 2–3 year strategic plans based on the Corporate Plan and an operations plan detailing the priorities for each 12-month period. These plans are used to assist MFDM and its agencies in formulating collaborative partnerships, particularly with NGOs, for sustainable delivery of services relative to each strategy. While this is an administrative document, it is expected to get legal coverage under the disaster management act (to be enacted). The plan's six strategic focus areas are (i) professionalizing the disaster management system, (ii) mainstreaming risk management programming (partnership development), (iii) strengthening community institutional mechanisms (community empowerment), (iv) expanding risk reduction programming across a broader range of hazards, (v) strengthening emergency response systems, and (vi) maintaining and strengthening the national food security system, with a focus on ensuring access to sustainable food supplies.

## **E. Integration of Disaster Risk Management in Development Programs**

9. Considering vulnerability to natural and environmental hazards, development planning in Bangladesh has addressed risk reduction in some sector plans. For example, extensive river flooding causes disruption and damage to infrastructure, agriculture, and livelihoods. The National Water Management Plan underlines the importance of implementing effective nonstructural measures to reduce the impact of floods and erosion. Recent policies and plans recognize the importance of participatory planning that focuses on sustaining people's livelihoods. Drought-induced famine, global warming, cyclonic storms, and other hazards have required the Government to factor in strategic planning in the national development cycle. The National Environment Management Action Plan takes into account disaster management and risk reduction as a vital component and need. The Integrated Coastal Zone Management Program has components to address risk reduction. However, a holistic and comprehensive risk reduction culture needs to be developed within national policies and strategies for disaster risk reduction. MFDM's Comprehensive Disaster Management Program, supported by the United Nations Development Programme, Department for International Development (United Kingdom), and European Union, is helping develop and strengthen human and institutional capacities, increase public participation in risk reduction activities, and educate policy makers to achieve wider acceptance of disaster risk reduction concepts to address national and human development problems.

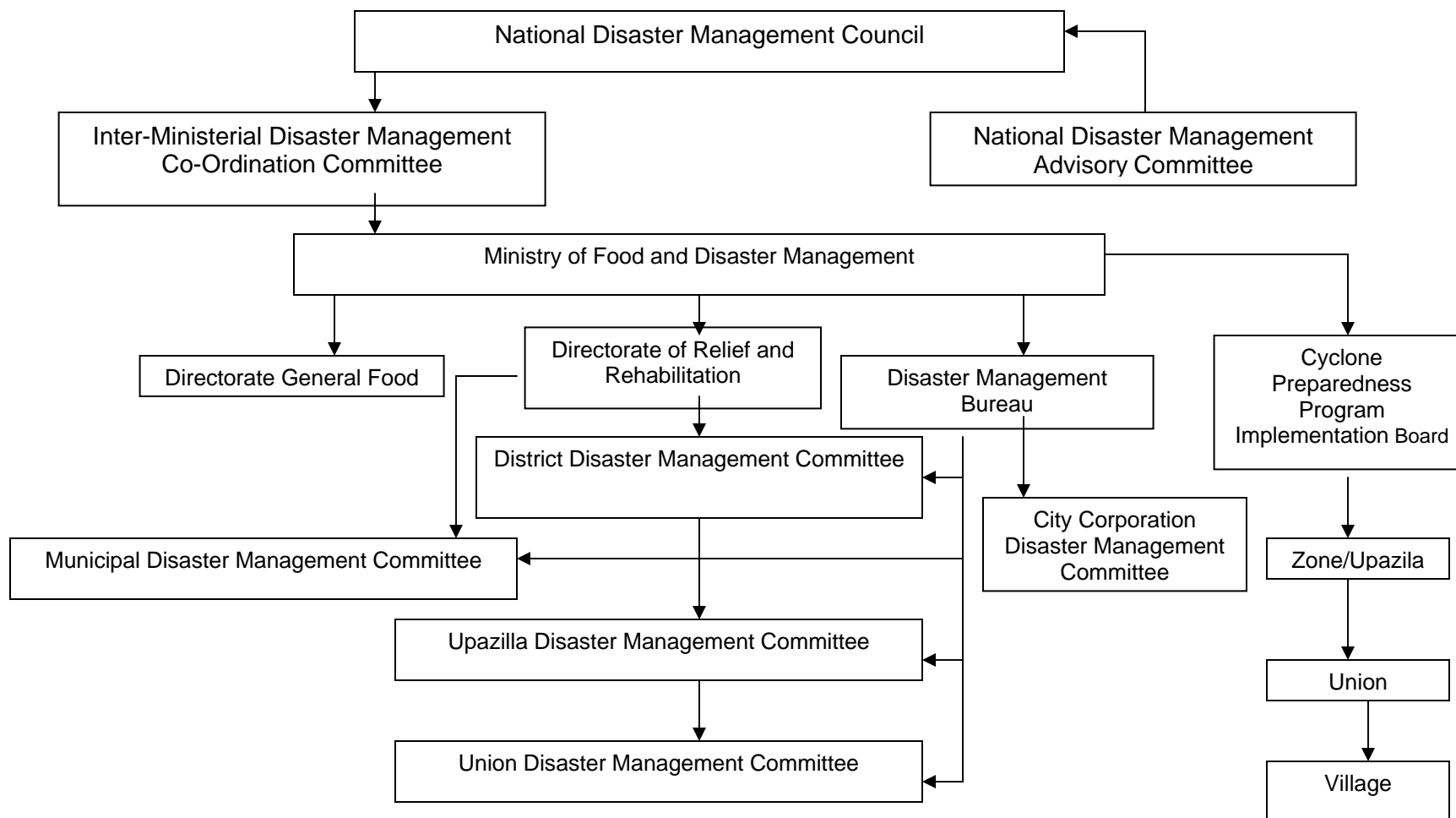
10. Disaster risk reduction is incorporated in the Poverty Reduction Strategy in the sections on disaster vulnerability and risk management. The Government's strategy acknowledges that disaster management involves the management of both risks and consequences of disasters, including prevention, emergency response, and postdisaster recovery. The Medium-Term

Macroeconomic Framework covers these issues. The risk reduction approach has not yet been fully mainstreamed in the development process. The National Environment Management Action Plan formulation process encompasses disaster risk reduction. The national adaptation plan of action is being under the leadership of the Ministry of Environment and Forest. Bangladesh is represented at the United Nations Framework Convention on Climate Change forums.

11. The National Adaptation Plan of Action will focus attention on three impacts associated with climate change: increasing rise of sea level, changing rainfall patterns, and increasing frequency and intensity of extreme events. In the World Summit on Sustainable Development the Bangladesh delegation, lead by the minister of finance and planning, called for greater support from developed nations to address critical issues hindering the economic and social development of less-developed nations. In the Bali Summit<sup>1</sup>, Bangladesh successfully pushed forward the issues concerning Bangladesh and the less-developed nations.

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<sup>1</sup> <http://www.un.org/climatechange/>

**Figure A3 Disaster Management Institutions in Bangladesh**

Source: Asian Development Bank.

**LIST OF PERMISSIBLE IMPORTS**

No.	Description
1	Food grain (rice and wheat)
2	Fertilizer (raw, processed, and urea)

Source: Asian Development Bank fact-finding mission.

## RURAL INFRASTRUCTURE

### A. Damage and Impact

1. The damage includes paved roads, earthen roads, bridges, culverts, some growth center markets, and flood shelters. Some other infrastructure facilities, such as, union parishad complexes and ghats, were not included as the extent of damage was not substantial and can be repaired by local resources. Immediately after the water started to recede, the Local Government Engineering Department (LGED), together with the help of consultants working under its ongoing projects, carried out an assessment of the flood and cyclone damage of rural infrastructure nationwide. The outcome of the damage assessment shows that the unusual high water flow and longer duration of the flood caused extensive damage to rural roads including paved (upazila and union roads) and earthen roads. Some of the damage was due to lack of appropriate maintenance and/or lack of skilled work. In the affected areas, only a few road embankments were left above water. Wave action generated by strong winds caused erosion on both sides of the road embankments. The water scoured parts of road embankments that had insufficient waterways. Loaded trucks and buses destroyed the surface of paved roads in places. Many bridge approaches were washed away when the water receded and traffic was completely disrupted for many days. In severe cases, only bridges were left and approach roads on both sides of bridges disappeared.

### B. Scope

2. This project component will rehabilitate rural infrastructure, including rural roads (damaged paved upazila and union roads), bridges and culverts, and flood and cyclone shelters (including livestock shelters) located in the 23 districts (Barisal, Chuadanga Faridpur, Feni, Gaibandha, Gopalganj, Jamalpur, Jhenidah, Khulna, Kishoregonj, Kurigram, Lalmonrihat, Madaripur, Magura, Mymensingh, Netrokona, Nilphamari, Noakhali, Rajbari, Rangpur, Satkhira, Shariatpur, and Sherpur). Subprojects will be selected in close coordination with other development partners to avoid any duplication of interventions. Additional districts may be added, on a priority basis, after completion of the damage and needs assessment following the cyclone.

3. The Project will finance rehabilitation of damage of high priority rural infrastructure. It emphasizes adequate drainage at appropriate locations. During subproject preparation, necessary consideration will be taken from a hydrological point of view. About 3,000 kilometers of rural roads and 9,000 meters of bridges and culverts will be rehabilitated under the Project. Appropriate slope protection works at vulnerable points and provision of adequate drainage facilities will be made as preventive measures to reduce future flood and cyclone damage. Flood and cyclone refuge shelters developed under Asian Development Bank (ADB)-assisted Third Rural Infrastructure Development Project<sup>1</sup> provided shelter for hundreds of homeless poor people and their cattle. The Government has taken up programs to construct several flood and cyclone refuge shelters in the country under different rural development projects. Under this project component, 300 flood and cyclone shelters (including livestock shelters) will be constructed or rehabilitated and provided with latrines to help communities, especially the poor, during future floods and cyclones.

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<sup>1</sup> ADB. 1997. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Third Rural Infrastructure Development Project*. Manila.



### C. Subproject Selection Criteria and Approval

4. Subprojects will meet the general criteria outlined in the main text of this report (para. 49) and the following component-specific criteria. Construction of rehabilitation works should be implemented based on priority selection criteria to be prepared by the consultants and agreeable to ADB.

- (i) The subprojects will rehabilitate or restore damaged upazila and union paved roads, bridges, and culverts that are under LGED's responsibility.
- (ii) Priority must be given to roads, structures, and protection works to ensure reduction of future vulnerability of the infrastructure.
- (iii) The number of subprojects will be minimized but the estimated contract value should generally be within the approval level of the chief engineer, LGED, to allow for speedy approvals of bid evaluations and contracts.

5. The selection of the first two subprojects to be carried out by the project management unit (PMU) will be subject to prior review and approval by ADB before commencement of detailed design. Any subsequent selected subproject exceeding \$200,000 equivalent will be submitted to ADB for concurrence, while selection of subprojects up to \$200,000 equivalent will be reported to ADB in a timely manner. Random audits and checks will be undertaken by ADB to ensure compliance with requirements of subproject selection criteria and implementation arrangements. In the event that the subproject selection criteria and/or implementation arrangements are not complied with, the subproject will not be eligible for ADB financing.

### D. Cost Estimates and Financing Plan

6. The total cost required for rehabilitating rural infrastructure under the Project is estimated at \$36.05 million equivalent, comprising \$5.54 million in foreign exchange costs and \$30.51 million equivalent in local currency costs (Table A5.1). The total cost includes local taxes, customs, and duties.

**Table A5.1: Cost Estimates (excluding interest during construction)**  
(\$ million)

Item	Foreign Exchange	Local Currency	Total Cost
Civil Works	4.71	28.01	32.72
Consultants	0.83	1.65	2.48
Environment and Social Mitigation	0.00	0.85	0.85
<b>Total</b>	<b>5.54</b>	<b>30.51</b>	<b>36.05</b>

Source: Asian Development Bank estimates.

7. ADB, CIDA, and JBIC will provide financing of \$28.44 million equivalent for this part of the Project, to finance 100% of the total foreign exchange cost of \$5.54 million, and \$22.90 million of the total local currency cost. The Government will finance \$7.61 million, the remainder of the local currency cost, from its own resources (Table A5.2).

**Table A5.2: Financing Plan (excluding interest during construction)**  
(\$ million)

Source	Foreign Exchange	Local Currency	Total Cost	Percent
Asian Development Bank <sup>a</sup>	5.54	22.90	28.44	79
Government	0.00	7.61	7.61	21
<b>Total</b>	<b>5.54</b>	<b>30.51</b>	<b>36.05</b>	<b>100</b>

<sup>a</sup> Including cofinancing.

Source: Asian Development Bank estimates.

## E. Implementation Arrangements

8. **Project Management.** LGED under the Local Government Division of the Ministry of Local Government, Rural Development, and Cooperatives will be the Executing Agency for rehabilitation of rural infrastructure under the Project. LGED has satisfactorily completed past ADB-financed flood damage rehabilitation projects. Under direct supervision of the additional chief engineer (implementation) as the project coordinator, a full time project director will be responsible for overall implementation and coordination of the Project in accordance with the same procedures as the ongoing project. The PMU set up for the 2005 ADB-assisted Emergency Flood Damage Rehabilitation Project (Part-A: Rural Infrastructure)<sup>2</sup> will continue working for the Project. Executive engineers of each district, in consultation with local communities, will select the subprojects. The team leader of the project consultants will endorse the selection to ensure proper application of selection criteria.

9. **Procurement.** Procurement will follow guidelines for the Project.

10. **Implementation Schedule.** The Project will be implemented over 30 months including two construction seasons, and is expected to be completed by June 2010. LGED submitted work plans to ADB covering the next dry season up to the end of June 2008 during loan negotiations. Start-up activities include (i) detailed assessment of damage to rural infrastructure; (ii) preparation of subproject priority selection criteria; (iii) selection of subprojects according to the established criteria; (iv) preparation of detailed designs, cost estimates, and tender documents; and (v) supervision of emergency works to be implemented under retroactive financing arrangements.

10. **Consulting Services.** Consulting services will be required to provide necessary and adequate inputs to ensure timely implementation of activities under the component. Terms of reference for project consultants are given in Supplementary Appendix A.

<sup>2</sup> ADB. 2005. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Emergency Flood Damage Rehabilitation Project*. Manila.

## **MUNICIPAL INFRASTRUCTURE**

### **A. Damage and Impact**

1. The 2007 disasters caused severe damage to urban roads; bridges and culverts; and water supply, drainage, and sanitation system in the country; 83 pourashavas (municipalities) were affected severely. Floods together with heavy rains caused extensive damage to municipal roads, bridges and culverts, drains, public toilets, etc. Wave action generated by strong winds caused erosion to pourashavas' peripheral road embankments. Many bridge approaches were washed away and traffic was completely disrupted for many days. Collapsing drains and siltation aggravated the existing shattered environment.

2. The disruption of communication by the damage to urban roads and other infrastructure had a significant impact on the livelihood of urban residents. During the floods, the main communication mode in many areas was by country boats. Once the water receded, various types of waterborne diseases emerged due to the collapse of drainage systems. Due to the floods and cyclone, income of pourashava households was reduced, and resource mobilization from pourashavas, including revenue collection, have been affected, making restoration of damaged infrastructure to the preflood state difficult given pourashava resources. Solid waste disposal, including health and environmental restoration in slums and low-income areas requires immediate attention.

### **B. Scope**

3. This component will rehabilitate urban infrastructure, including roads, drains, bridges and culverts, and footpaths located in 30 pourashavas (Bhanga, Brahmanbaria, Chagolnaia, Chandpur, Chowmohani, Faridpur, Feni, Gazipur, Gopalpur Tangail, Goplaganj, Jamalpur, Magura, Manikganj, Mirkadeem, Moksudpur, Munshiganj, Nagarkanda, Narshingdi, Noakhali, Parsuram, Rajbari, Serajganj, Shahzadpur, Shariatpur, Singair, Singra, Sonaimuri, Sunamganj, Tangail, and Tongi). This includes pourashavas affected by the July and September 2007 floods and cyclone, and involves approximately 700 km of roads, 65 km of drains, and 850 meters of bridges and culverts. Additional pourashavas may be added on a priority basis after completion of the damage and needs assessment following the cyclone.

### **C. Subproject Selection Criteria and Approval**

4. Subprojects will meet the general criteria outlined in the main text of this report (para. 49) and the following component-specific criteria. Construction of rehabilitation works should be implemented based on priority selection criteria to be prepared by the consultant and agreeable to ADB.

- (i) The subprojects will rehabilitate or restore damaged paved roads, structures, and drains that are the responsibility of the pourashavas.
- (ii) Subprojects for small infrastructure (footpaths, drains, structures, etc.) rehabilitation within slums in the pourashava area will get priority.
- (iii) The number of subprojects will be minimized but the estimated contract value should generally be within the approval level of the chief engineer, LGED to allow for speedy approvals of bid evaluations and contracts.

5. The selection of the first two subprojects to be carried out by the PMU will be subject to prior review and approval by ADB before commencement of detailed design. Any subsequent

selected subproject exceeding \$200,000 equivalent will be submitted to ADB for concurrence, while selection of subprojects up to \$200,000 equivalent will be reported to ADB in a timely manner. ADB will undertake random audits and checks to ensure compliance with requirements of subproject selection criteria and implementation arrangements. In the event that the subproject selection criteria and/or implementation arrangements are not complied with, the subproject will not be eligible for ADB financing.

#### D. Cost Estimates and Financing Plan

6. The total cost for the rehabilitation of urban infrastructure is estimated at \$21.92 million equivalent, comprising \$2.89 million in foreign exchange costs and \$19.03 million equivalent in local currency costs (Table A6.1). The total cost includes local taxes, customs, duties, and operating costs for the PMU at LGED headquarters and project implementation units at pourashavas.

**Table A6.1: Cost Estimates (excluding interest during construction)**  
(\$ million)

Item	Foreign Exchange	Local Currency	Total Cost
Civil Works	2.63	17.13	19.76
Consultants	0.26	0.77	1.03
Project Management Unit	0.00	0.60	0.60
Environment and Social Mitigation	0.00	0.53	0.53
<b>Total</b>	<b>2.89</b>	<b>19.03</b>	<b>21.92</b>

Source: Asian Development Bank estimates.

7. ADB, CIDA and JBIC will provide \$17.40 million equivalent for this component to finance \$2.89 million of the foreign exchange cost (100% of the total foreign exchange cost) and \$14.51 million equivalent of the local currency cost. The Government will finance the remainder, \$4.52 million equivalent of the local currency cost from its own resources (Table A6.2).

**Table A6.2: Financing Plan (excluding interest during construction)**  
(\$ million)

Source	Foreign Exchange	Local Currency	Total Cost	Percent
Asian Development Bank <sup>a</sup>	2.89	14.51	17.40	79
Government	0.00	4.52	4.52	21
<b>Total</b>	<b>2.89</b>	<b>19.03</b>	<b>21.92</b>	<b>100</b>

<sup>a</sup> Including cofinancing.

Source: Asian Development Bank estimates.

## E. Implementation Arrangements

8. **Project Management.** LGED, under the Ministry of Local Government, Rural Development and Cooperatives, will be the executing agency for the urban infrastructure component. LGED has satisfactorily completed past ADB-financed flood damage rehabilitation projects. Under direct supervision of the additional chief engineer (implementation) as the project coordinator, a full-time project director will be responsible for overall implementation and coordination of the Project in accordance with procedures of the recently completed ADB-assisted Emergency Flood Damage Rehabilitation Project (see footnote 16). The PMU of that project will continue working for the proposed Project. The project director and PMU will be responsible for maintaining proper accounts of all project expenditure for audit. For this purpose, required incremental staffing will be provided to assist the project director.

9. The PMU will (i) prepare the overall project implementation plan and consolidated annual work plan; (ii) assist pourashavas in preparing estimates, contract packaging, and tender processing; (iii) monitor and supervise all project management activities; (iv) organize monitoring and evaluation activities; and (v) prepare necessary progress reports and the project completion report. The project director will be supported by one deputy project director. The PMU will be properly staffed and assisted by consultants with expertise in engineering, finance, and accounting.

10. In each pourashava, a PIU will be established, if not existing, for the Project. Existing PIUs established under ADB-assisted urban project towns<sup>1</sup> will be responsible for implementation of the flood and cyclone damage rehabilitation works. Necessary additional technical staff may be provided to assist the PIUs. The PIU will be headed by the pourashava chairperson and he/she will be assisted by the pourashava chief executive officer for day-to-day operations of the Project. The PIU will be located within the pourashava office and be responsible for (i) preparation of the annual development program for the respective pourashava, (ii) preparation of tender documents, (iii) tendering, and (iv) implementation of construction works. An infrastructure improvement section will be formed under the PIU to be responsible for implementation of all rehabilitation/reconstruction works of physical infrastructure. The section will be headed by the head of the engineering section of the concerned pourashava. For close supervision of all physical works including environmental activities, the regional superintending engineer of LGED will be empowered to carry out regular supervision, monitoring, and reporting of all project implementation activities to the PMU. The quality of construction materials will be ensured with the help of LGED's district laboratory.

11. **Procurement.** Procurement will follow guidelines for the Project.

12. **Implementation Schedule.** The Project will be implemented over 30 months including two construction seasons; implementation is expected to be completed by June 2010. LGED has submitted work plans covering the next dry season up to the end of June 2008 to ADB during loan negotiations.

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<sup>1</sup> ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Urban Governance and Infrastructure Improvement (Sector) Project*. Manila; and ADB. 2004. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Secondary Towns Integrated Flood Protection - Phase 2*. Manila.

13. **Consulting Services.** Consulting services will be required to provide necessary and adequate inputs to ensure timely implementation of the component activities. Terms of reference for project consultants are given in Supplementary Appendix A.

## **ROADS**

### **A. Damage and Impact**

1. The 2007 disasters caused extensive damage to the road network. In the initial stage of the floods, road links were under water and the pavement structures became weaker as the duration of inundation increased. During this time, they were still traversed by trucks and buses, which contributed significantly to the destruction of pavement surfaces; however, the need to move people and supplies around the country could not be denied. The next phase of road damage occurred when the second wave flood occurred. As the waters started receding in mid-September and rushed to find convenient outlets, embankments were scoured, abutments washed away, and many bridges and culverts were damaged or disappeared.

2. Based on information available to the Roads and Highways Department (RHD), 4,328 kilometers (km) of road were submerged, and flooding damaged 1,420 km of pavement, 114 bridges and culverts, and three ferry landings. The total cost is estimated at \$100 million. Damages following the cyclone remains to be fully assessed.

### **B. Project Scope**

3. This project component comprises the rehabilitation of damaged national, regional, and district roads within the country's seven road zones: Barisal, Comilla, Dhaka, Khulna, Rajshahi, Rangpur, and Sylhet. This component will cover all repair and rehabilitation of damaged roads and bridges. Where technically feasible and justified, the design of the rehabilitation work will be improved where needed, and the focus will be on mitigating damage from future floods and cyclones, e.g., raising a road level above highest flooding level or allowing additional vents where water logging leads to overtopping. This is in line with the findings of the damage and needs assessment conducted by an ADB-JBIC-World Bank joint mission. The survey identified priorities and estimates for the rehabilitation cost. Rehabilitation works will be carried out to restore the facility to the preflood or higher standard as considered cost effective in the long run. Where appropriate, it will include flood and cyclone protection measures to mitigate damage from future floods and cyclones.

### **C. Subproject Selection Criteria and Approval**

4. Subprojects will meet the general criteria outlined in the main text of this report (para. 49) and the following component-specific criteria. Construction of rehabilitation works will be based on priority selection criteria prepared by the consultant and agreeable to ADB.

- (i) The subprojects will rehabilitate or restore damaged roads, bridges, and culverts that are under RHD responsibility.
- (ii) Priority must be given to roads, structures, and protection works to ensure reduction of future vulnerability of the infrastructures.
- (iii) The number of subprojects will be minimized but the estimated contract value should generally be within the approval level of the chief engineer, RHD, to allow for speedy approvals of bid evaluations and contracts.

5. The selection of the first two subprojects to be carried out by the project management unit (PMU) will be subject to prior review and approval by ADB before commencement of detailed design. Any subsequent selected subproject exceeding \$200,000 equivalent will be submitted to ADB for concurrence, while selection of subprojects up to \$200,000 equivalent will

be reported to ADB in a timely manner. ADB will undertake random audits and checks to ensure compliance with requirements of subproject selection criteria and implementation arrangements. In the event that the subproject selection criteria and/or implementation arrangements are not complied with, the subproject will not be eligible for ADB financing.

#### D. Cost Estimates and Financing Plan

6. The cost of immediate and short-term restoration work<sup>1</sup> amounts to about \$50.33 million equivalent, including consultant costs of \$3.9 million. The foreign exchange component of the loan amounts to \$19.90 million excluding interest during construction. The total local currency cost of \$30.43 million includes local taxes and duties, and PMU costs. The cost of consultant services of \$3.9 million includes remuneration and other expenses; takes into consideration the duration of services; and provides for office equipment, vehicles, office supplies, and vehicle operation. The summary of cost estimates is given in Table A7.1.

**Table A7.1: Summary Cost Estimate (excluding interest during construction)**  
(\$ million)

Item	Foreign Exchange	Local Currency	Total Cost
Civil Works	18.21	27.40	45.61
Consultants	1.69	2.21	3.90
Environmental and Social Mitigation		0.82	0.82
<b>Total</b>	<b>19.90</b>	<b>30.43</b>	<b>50.33</b>

Source: Asian Development Bank estimates.

7. ADB, CIDA and JBIC will finance all of the foreign exchange cost of \$19.90 million and the local currency cost of \$19.77 million equivalent for a total of \$39.67 million. ADB financing will cover the entire cost, both foreign and local, of consulting services. The Government will finance the remaining local currency costs of \$10.66 million equivalent, which includes taxes and duties. The financing plan is given in Table A7.2.

**Table A7.2: Financing Plan**  
(\$ million)

Source	Foreign Exchange	Local Currency	Total Cost	Percent Financing
Asian Development Bank <sup>a</sup>	19.90	19.77	39.67	79
Government		10.66	10.66	21
<b>Total</b>	<b>19.90</b>	<b>30.43</b>	<b>50.33</b>	<b>100</b>

<sup>a</sup> Including cofinancing

Source: Asian Development Bank estimates.

<sup>1</sup> Immediate and short-term restoration works are works required to restore the road to preflood condition. Many will be completed by 30 June 2009. Bridge and culvert works are expected to be finished by 31 June 2010.



## E. Implementation Arrangements

8. **Project Management.** RHD under the Ministry of Communications will be the executing agency for this part of the Project. RHD is responsible for administration of the national, regional, and zilla (district) roads. It has a chief engineer as chief executive, and 12 additional chief engineers (ACEs): five assist the chief engineer in various functions at headquarters. The others are responsible, one in each of seven zones, (Dhaka, Sylhet, Chittagong, Comilla, Rajshahi, Rangpur, Khulna, and Barisal) for construction and maintenance operations. RHD has been carrying out road works for about 30 years, including ADB and World Bank-financed projects, and has acquired considerable experience in flood and cyclone rehabilitation. Arrangements agreed upon for project implementation will be adequate to satisfactorily execute the RHD component.

9. The chief engineer will have overall responsibility for implementing the component with day-to-day implementation works coordinated by the ACE, exclusively dedicated to the Project. The respective zonal ACEs will act as project directors, the respective superintending engineers as additional project directors, and their executive engineers as project managers. The ACE for the Project will (i) undertake coordination within RHD and the Government and with other agencies including the project steering committee and ADB; and (ii) be responsible for the submission of progress reports and disbursement requests to ADB. The zonal ACEs will make payments to contractors, and the project coordinator will process withdrawals from ADB.

10. **Implementation Schedule.** The component will be completed by 30 June 2010. Most road civil works will be completed by June 2009, while bridge and culvert works will be completed by June 2010.

11. **Procurement.** Procurement will follow guidelines for the Project.

12. **Implementation Schedule.** Consulting services will be required to provide necessary and adequate inputs to ensure timely implementation of component activities. Terms of reference for the project consultants are given in Supplementary Appendix A.

## WATER RESOURCES

### A. Damage and Impact

1. The joint Asian Development Bank (ADB), Japan Bank for International Cooperation (JBIC), and World Bank damage and needs assessment mission estimated damage in the water resources sector caused by the floods requiring rehabilitation at about \$80 million (Table A8.1). Damages following the cyclone remains to be fully assessed.

**Table A8.1: Damage to Water Management Facilities**

Item	Full Damage	Partial Damage
Embankment (kilometer)	143	1,381
Irrigation and Drainage Canals (kilometer)	1	139
Sluices, Bridges, Culverts (number)	18	263
Protective Works (kilometer)	18	47
Groyne <sup>a</sup> (number)	0	8
Spur <sup>b</sup> /Hard Point <sup>c</sup>	0	41

<sup>a</sup> A rigid hydraulic structure built out from the shore (in coastal engineering) or from the bank (in rivers) and interrupts the flow of water and sediment.

<sup>b</sup> River engineering structure that is projected from the bank of a stream at some angle to the main flow direction to divert the flow of the river towards the main stream.

<sup>c</sup> Very short rock wall, constructed as a defense or as a boundary, that is used to stabilize a certain location of a riverbank.

Sources: Asian Development Bank-Japan Bank for International Cooperation-World Bank estimates.

### 1. Scope

2. Large and medium-scale rehabilitation works will cover urgent rehabilitation of flood control, drainage, and irrigation facilities in 47 districts, and continuous work in adjacent district, to restore them to their condition prior to the flood and cyclone, and to restore some of them for disaster prevention. These facilities include embankments; flood control; drainage; irrigation canals and structures; and protective works including groynes<sup>1</sup>, spurs<sup>2</sup>, and hard points<sup>3</sup>. Restoration works include filling embankment breaches, resectioning/replacement, protective works, and protection of damaged embankments. Damaged or destroyed flood control structures and canals may be repaired, replaced or reexcavated. Subprojects related to the damage following the cyclone may be added on a priority basis, after the damage and needs assessment is completed.

3. The Bangladesh Water Development Board (BWDB), the executing agency, will carry out surveys and the consultants prepare detailed design of the damaged facilities for approval by BWDB. The consultants will ensure that the quality of works is of cost-effective flood and cyclone resistant standard.

<sup>1</sup> A rigid hydraulic structure built out from the shore (in coastal engineering) or from the bank (in rivers) and interrupts the flow of water and sediment

<sup>2</sup> River engineering structure that is projected from the bank of a stream at some angle to the main flow direction to divert the flow of the river towards the main stream.

<sup>3</sup> Very short rock wall, constructed as a defense or as a boundary, that is used to stabilize a certain location of a riverbank.

## 2. Subproject Selection Criteria and Approval

4. BWDB has identified 331 subprojects in eight zones (including coastal zone) to be included under the water resources management component, and prepared estimates of rehabilitation costs based on field visits and the damage and needs assessment mission. Subprojects to be selected will meet the general criteria as outlined in the main text of this report (para. 49) and the following component-specific criteria. For work efficiency and quality assurance, BWDB will ensure sufficient work quantity in each contract package, so that well-qualified and efficient large contractors can be mobilized with adequate equipment.

- (i) Subproject will rehabilitate/reconstruct damaged infrastructure of BWDB embankments, irrigation and drainage canals, sluices, bridges, culverts, protective works, groynes, spurs, and hard points caused by the 2007 disasters.
- (ii) Priority will be given to rehabilitation of the damaged BWDB embankments and protective works, while providing sufficient protection against future floods and cyclones.
- (iii) The number of subprojects will be minimized but the estimated contract value should generally be within the approval level of the director general, BWDB, to allow for speedy approvals of bid evaluations and contracts.

5. The selection of the first two subprojects to be carried out by the project management unit (PMU) will be subject to prior review and approval by ADB before commencement of detailed design. Any subsequent selected subproject exceeding \$200,000 equivalent will be submitted to ADB for concurrence, while selection of subprojects up to \$200,000 equivalent will be reported to ADB in a timely manner. ADB will undertake random audits and checks to ensure compliance with requirements of subproject selection criteria and implementation arrangements. In the event that the subproject selection criteria and/or implementation arrangements are not complied with, the subproject will not be eligible for ADB financing.

## 3. Cost Estimates and Financing Plan

6. The total component cost is estimated at \$34.14 million equivalent (excluding interest during construction), including \$5.76 million in foreign exchange and \$28.38 million equivalent in local currency. The cost summary is shown in Table A8.2.

**Table A8.2: Project Cost Estimate**  
(\$ million)

Item	Foreign Exchange	Local Currency	Total Cost
Civil Works	4.41	26.49	30.90
Consulting Services	1.35	1.09	2.44
Environment and Social Mitigation	0.00	0.80	0.80
<b>Total</b>	<b>5.76</b>	<b>28.38</b>	<b>34.14</b>

Source: Asian Development Bank estimates.

7. The financing plan (excluding interest during construction) is shown in Table A8.3.

**Table A8.3: Financing Plan**

(\$ million)

Source	Foreign Exchange	Local Currency	Total Cost	Percent
Asian Development Bank <sup>a</sup>	5.76	21.17	26.93	79
Government	0.00	7.21	7.21	21
<b>Total</b>	<b>5.76</b>	<b>28.38</b>	<b>34.14</b>	<b>100</b>

<sup>a</sup> Including cofinancing.

Source: Asian Development Bank estimates.

#### 4. Implementation Arrangements

8. **Project Management.** For the reconstruction of facilities under this component, the director general, BWDB, will be responsible for overall coordination and monitoring of the project activities, with the assistance of the consultants. BWDB has satisfactorily completed past ADB-financed flood damage rehabilitation projects. BWDB will appoint an additional chief engineer/superintending engineer as project coordinator and a superintending engineer/senior executive engineer as project director, and provide five executive engineers and five subdivisional engineers to the PMU. At the field level, responsibility for project implementation will rest with executive engineers, under the supervision of their circle superintending engineer and zonal chief engineer. The executive engineers will be responsible for preparing tender documents, selecting contractors, awarding contracts, supervising construction, providing quality control, and establishing accounting and detailed financial control. Design will be approved by the chief engineer of design, BWDB. Delegation of powers presently held by director general will be given to the additional director general and chief engineers in line with Government's *Public Procurement Regulations 2003*.<sup>4</sup>

9. **Implementation Schedule.** The component will be implemented over 30 months. Most of the civil works are expected to start in February 2008 and be completed by June 2009; the works requiring survey and design should be completed by June 2010.

10. **Procurement.** Procurement will follow guidelines for the Project.

11. **Consulting Services** Consulting services will be required to provide necessary and adequate inputs to ensure timely implementation of the activities under the component. Terms of reference for project consultants are given in Supplementary Appendix A.

<sup>4</sup> Ministry of Planning, Implementation Monitoring and Evaluation Division, Central Procurement Technical Unit. 2003. *Public Procurement Regulations 2003*. Dhaka

## DETAILED COST ESTIMATES

Table A9.1: Detailed Cost Estimates by Expenditure Category<sup>a</sup>

(\$ million)

Item	Foreign Exchange	Local Currency	Total Cost <sup>c</sup>	% of Total Base Cost
<b>A. Investment Costs</b>				
1. Part A: Quick-Disbursing	75.56		75.56	34
2. Part B: Rural Infrastructure	4.71	28.86	33.57	15
3. Part C: Municipal Infrastructure	2.63	18.26	20.89	10
4. Part D: Roads	18.21	28.22	46.43	21
5. Part E: Water Resources	4.41	27.29	31.70	15
6. Environment and Social Mitigation <sup>b</sup>				
7. Project Implementation Support	4.13	5.72	9.85	4
<b>Subtotal (A)</b>	<b>109.65</b>	<b>108.35</b>	<b>218.00</b>	<b>99</b>
<b>B. Financing Charges during Implementation</b>				
Interest during Implementation	2.00		2.00	1
<b>Total (A+B)</b>	<b>111.65</b>	<b>108.35</b>	<b>220.00</b>	<b>100</b>

<sup>a</sup> In mid-2007 prices.<sup>b</sup> Included with total of \$3 million under local currency financing from the Government.<sup>c</sup> Includes taxes and duties, estimated at \$20.5 million, financed by the Government, and contingencies.

Source: Asian Development Bank estimates.

Table A9.2: Detailed Cost Estimates by Expenditure Category and Financier<sup>a</sup>

		(\$ million)							
Item	Cost	ADB		JBIC		CIDA		Government <sup>b</sup>	
		\$	% of Cost Category	\$	% of Cost Category	\$	% of Cost Category	\$	% of Cost Category
<b>A. Investment Costs</b>									
1. Part A: Quick-Disbursing	75.56	50.00	66	25.56	34				
2. Part B: Rural Infrastructure	33.57	14.74	44	8.68	26	2.54	8	7.61	22
3. Part C: Municipal Infrastructure	20.89	9.33	44	5.44	26	1.60	8	4.52	22
4. Part D: Roads	46.43	20.18	44	12.12	26	3.47	8	10.66	22
5. Part E: Water Resources	31.70	13.90	44	8.20	26	2.39	8	7.21	22
6. Environmental and Social Mitigation <sup>c</sup>									
7. Project Implementation Support	9.85	9.85	100						
<b>Subtotal (A)</b>	<b>218.00</b>	<b>118.00</b>	<b>54</b>	<b>60.00</b>	<b>28</b>	<b>10.00</b>	<b>5</b>	<b>30.00</b>	<b>13</b>
<b>B. Financing Charges during Implementation</b>	<b>2.00</b>	<b>2.00</b>	<b>100</b>						
<b>Total (A+B)</b>	<b>220.00</b>	<b>120.00</b>	<b>55</b>	<b>60.00</b>	<b>27</b>	<b>10.00</b>	<b>5</b>	<b>30.00</b>	<b>13</b>
<b>% Total Project Costs</b>	<b>100</b>		<b>55</b>		<b>27</b>		<b>5</b>		<b>13</b>

ADB = Asian Development Bank, CIDA = Canadian International Development Agency, JBIC = Japan Bank for International Cooperation.

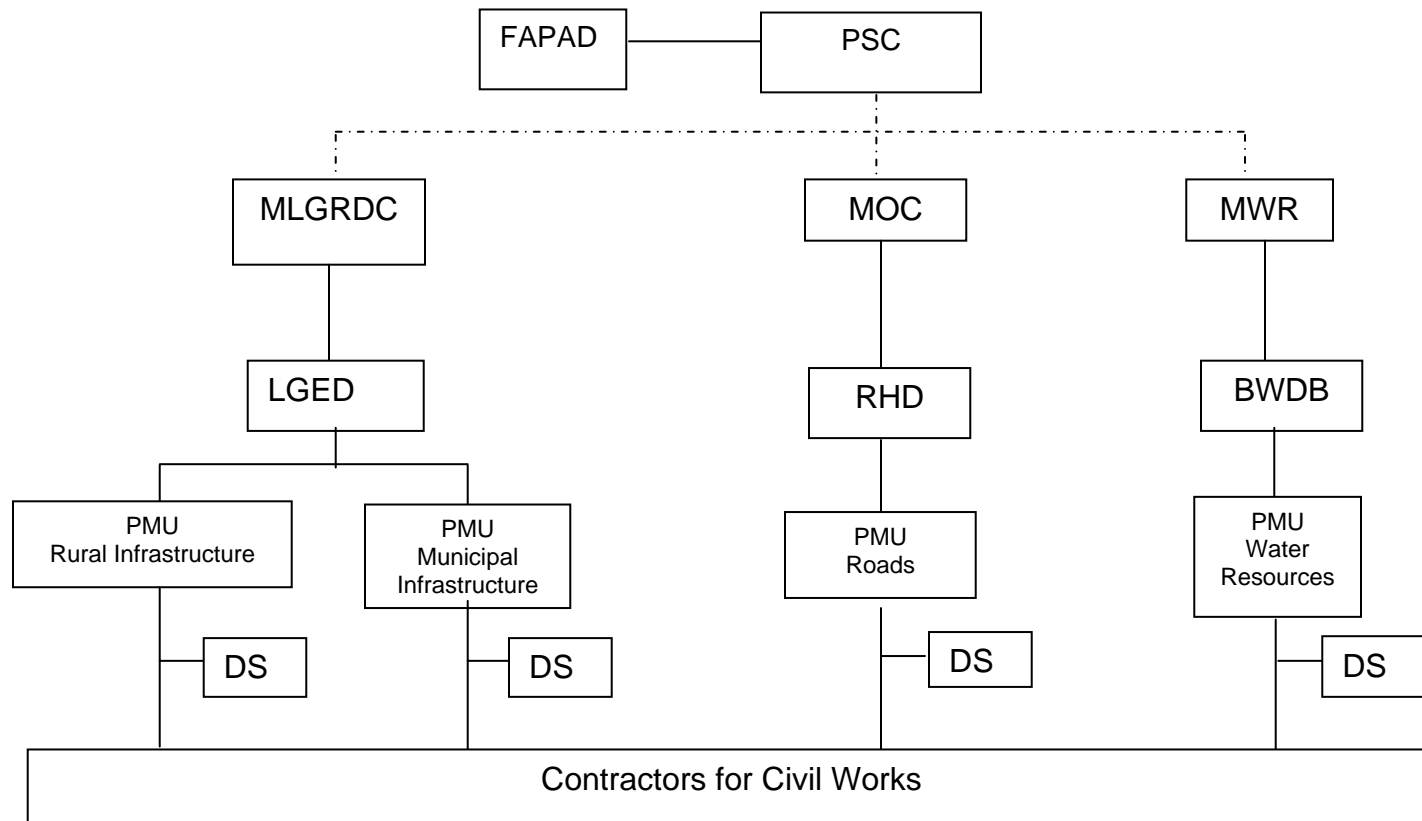
<sup>a</sup> Includes taxes and duties, financed by the Government, and contingencies.

<sup>b</sup> Taxes and duties financed by the Government included with \$20.5 million.

<sup>c</sup> Included with total of \$3 million under local currency financing by the Government for Parts B to E.

Source: Asian Development Bank estimates.

## PROJECT MANAGEMENT STRUCTURE



BWDB = Bangladesh Water Development Board; DS = design and construction supervision consultants; FAPAD = Foreign Aided Project Audit Directorate; LGED = Local Government Engineering Department; MLGRDC = Ministry of Local Government, Rural Development and Cooperatives; MOC = Ministry of Communications; MWR = Ministry of Water Resources; PMU = project management unit; PSC = project steering committee; RHD = Roads and Highways Department.  
Source: Asian Development Bank.

## RESETTLEMENT FRAMEWORK

### A. Project Background

1. The Project involves rehabilitation of damaged (i) national, regional, and district roads, bridges, and culverts under the Roads and Highways Department (RHD); (ii) rural infrastructure comprising *upazilla* (subdistrict) roads, union council roads, bridges, culverts, and flood and cyclone shelters under the Local Government Engineering Department (LGED); (iii) urban and municipal infrastructure (secondary towns) under LGED; and (iv) water resources under the Bangladesh Water Development Board (BWDB). The findings of the Asian Development Bank (ADB)-World Bank-JBIC Damage and Needs Assessment Mission of October 2007 do not envisage any significant land acquisition or other resettlement impacts, as the Project focuses rehabilitating existing infrastructure. Resettlement plans will be prepared wherever the need for land acquisition is identified. This resettlement framework is to ensure that if resettlement impacts are identified, the Project's executing agencies will formulate and implement resettlement plans for relevant subprojects in compliance with the Government's applicable laws and regulations, ADB's *Involuntary Resettlement Policy* (1995), and agreed resettlement framework for the Project.

2. As part of the subproject selection criteria, subprojects that may entail land acquisition and resettlement will be avoided. In certain cases, the expected changes in the status of a subproject could be (i) raising of the road/bank protection embankment beyond the flood level, where necessary; (ii) new construction and reconstruction of small bridges and culverts, and in some cases widening bridges and culverts; and (iii) retiring or resectioning flood protection embankments. The Government and ADB have agreed on the following resettlement framework for rehabilitation works to guide the Government in preparing resettlement plans as necessary during project implementation.

### B. Policy Framework and Entitlements

3. The resettlement framework was prepared as the primary document to provide the basis for preparing resettlement plans for subprojects, where necessary. It identifies the broad scope of the Project and outlines the policy, procedures, and institutional requirements for formulating resettlement plans during project implementation. It sets out the policies and procedures to be adopted by the executing agencies (EAs) in the screening and preparation of resettlement plans for subprojects before submission to ADB for review and approval. The EAs will be responsible for preparing social analyses and resettlement plans for subprojects based on principles and guidelines outlined in the resettlement framework. Implementation of the investment subprojects is likely to commence from early 2008.

4. The current legislation governing land acquisition for public or development purposes is the Acquisition and Requisition of Immovable Property Ordinance (1982). The ordinance does not cover project-affected people without land title or ownership records such as informal settlers and squatters. Also, the compensation does not constitute the market or replacement value of the property acquired. Furthermore, the ordinance does not take account of the social and economic consequence of land acquisition both in terms of replacement value and restoration of lost income. Thus, owing to the absence of a policy consistent with ADB's *Involuntary Resettlement Policy*, a project-specific resettlement framework and resettlement procedural guidelines are adopted. The framework and guideline stipulations will apply to all subprojects approved under the Project.



5. The resettlement framework stipulates eligibility and provisions for all types of losses (land, crops and trees, structures, businesses and employment, and workdays and wages). Affected households including those of indigenous peoples compensated by the deputy commissioner for lost assets will receive (i) an additional cash grant to match replacement value of land and other assets; and (ii) other resettlement assistance such as shifting allowance, and compensation for loss of workdays/income due to displacement. Households headed by women and other vulnerable households such as squatters and informal settlers and those of indigenous peoples will be eligible for cash assistance for relocation and house reconstruction. Information on affected people including indigenous peoples in the project area is not known as the subprojects are not yet selected. Any adverse impact, if identified, will be mitigated through implementation of the involuntary resettlement plan of the specific subproject. Table A11.1 presents an entitlement matrix based on potential losses. The mitigation measures in the matrix are standard practices and consistent with ADB-funded projects in Bangladesh. The entitlements may be enhanced to reflect subproject status during project implementation.

**Table A11.1: Entitlement Matrix**

Type of Loss	Application	Definition of People Affected	Entitlement	Expected Results
1. Loss of land (agricultural, commercial, and homestead)	Land on the project right-of-way to be acquired by deputy commissioner	Legal owner(s) of land	<p>Cash compensation under law determined by deputy commissioner in respective districts</p> <p>Positive differential in respect of replacement market price to be determined by property valuation assessment team</p> <p>Refund of all taxes and cesses associated with land sale and purchase</p>	Replacement of land of equal value and use or the replacement value of land to the affected people
2. Loss of residential /commercial structure	Structure on the right-of-way identified by deputy commissioner and the social economic survey	Legal owner(s) of structures and nontitled owners including occupiers, encroachers, or informal settlers identified by the social economic survey for each household/shop	<p>Cash compensation under law to be determined by deputy commissioner based on joint verification with legal owners and occupiers, encroachers, and informal settlers</p> <p>Positive differential in respect of replacement market price to be determined by property valuation assessment team to titled and nontitled owners</p> <p>Transfer grant equivalent to 12.5% of the value of nonconcrete structure assessed by property valuation assessment team to titled and nontitled owners</p> <p>Transfer grant equivalent to 5% of the value of concrete structure (pucca/semi-pucca) assessed by property valuation assessment team to titled and nontitled owners</p> <p>Reconstruction grant equivalent to 12.5% of the value of nonconcrete structure assessed by property valuation assessment team for titled and nontitled owners</p>	Reconstruction of structure at a new site

Type of Loss	Application	Definition of People Affected	Entitlement	Expected Results
			Homestead development and reconstruction grant of Tk15,000 to nontitled owners (squatters, occupiers/encroachers, sheltered, etc.) Salvaged materials free of cost	
3. Loss of trees, crops, perennials	Standing crops, trees on the right-of-way	Legal owner(s) of land	Compensation at the rate estimated by the Department of Forest for trees and the Department of Agriculture Extension for crops fixed by the deputy commissioner Salvaged materials free of cost	Compensation for standing crops and trees
4. Loss of access to agricultural, commercial, and homestead land	Agricultural and commercial plots on the project right-of-way	Legal tenants of land identified by deputy commissioners and nontitled tenants (renters, leaseholders, sharecroppers) identified by social economic survey	Crop compensation to titled sharecroppers or lessees by deputy commissioner Cash grant of Tk300/decimal <sup>a</sup> of land sharecropped by nontitled sharecroppers Cash grant for alternative housing to renters of residential and commercial land for 3 months at the current rate or lump sum Tk6,000, whichever is greater Cash grant of Tk500/decimal to renters of land for tanks/fish ponds etc.	Compensation for loss of access to farmland
5. Loss of income and work days due to dislocation	Households (both titled and nontitled), employees in small business enterprises identified on the right-of-way, and informal dwellers	Head of poor households/ owners of shops and employees identified by the social economic survey	Cash grant of Tk5,000 per household or 30-day wages at the current rate (whichever is greater) as subsistence for lost income /workdays Lump sum cash grant of Tk6,000 for loss of business income by affected traders/shops and owners of rental land/premises Cash grant of Tk4,000 to affected employees or equivalent to 2 months of wages, whichever is greater	Subsistence and income in postdisplaced period
6. Affected vulnerable households including those of indigenous people	Vulnerable households on the right-of-way (both titled and nontitled)	Vulnerable households identified by social economic survey (poor households headed by women including indigenous people, hard core poor households, and poor households losing more than 10% of their agriculture income)	Additional cash grant of Tk5,000 to head of affected households Training and credit facilities under income generation program Employment in project construction work, if available	Poverty reduction measures and development

Type of Loss	Application	Definition of People Affected	Entitlement	Expected Results
7. Displacement of community structure	Community structure on the project right-of-way, if removed for project interest	Community representative as identified by the social economic survey	<p>Cash compensation under law to be determined by deputy commissioner based on joint verification</p> <p>Positive differential in respect of replacement market price to be determined by property valuation assessment team</p> <p>Transfer grant equivalent to 5% of the assessed value of structure by property valuation assessment team</p> <p>Dismantling and reconstruction cash assistance including land as assessed by property valuation assessment team considering the cash compensation under law for concerned land and structure</p>	Restoration of community structure for common benefits
8. Access to community/ civic facilities at relocated sites	All households on the right-of-way if they relocate in group	Households identified by social economic survey/joint verification	Community infrastructure facilities, access roads, plantation, tubewells, sanitary latrines, and drainage	Development of cluster settlements assisted by executing agency to ease host-guest relation
9. Unforeseen or unintended impacts	Any impact recognized at the final design stage	Concerned affected people	Determined as per the spirit of this resettlement framework	No impact is left unmitigated.

<sup>a</sup> Unit of area measurement, which equals 40.48 sq meter.

Source: Asian Development Bank.

### C. Procedure for Preparing Resettlement Plans

6. During the early stage of subproject preparation and screening, the EAs will carry out an initial social assessment, in parallel with an initial environmental examination, to determine potential land acquisition and resettlement. Checklists for land acquisition and resettlement will include effects, if any, of land acquisition, loss of income/livelihood, and resettlement needs. The results of the initial social assessment will be included in the subproject proposal. The EAs will carry out social impact assessment surveys (census and 20% socioeconomic survey of the people affected by the subproject), based on preliminary technical designs. If the impact is significant (200 or more people experience major impacts, i.e., physically displaced from housing or losing 10% or more of their productive assets), the EA will prepare a full resettlement plan for subproject preparation. If the impact is insignificant, meaning less than 200 persons, a short resettlement plan will be required. Like the full resettlement plan, the short plan will ensure compensation, rehabilitation, and relocation arrangements as per the resettlement framework. It will also include measures to ensure that socioeconomic conditions, needs, and priorities of women are identified and that the process of land acquisition and resettlement does not disadvantage women.

7. The EAs will review the resettlement plans and submit them to ADB for review and approval. If impacts on indigenous peoples are identified then an indigenous peoples development plan will be prepared according to ADB's *Policy on Indigenous Peoples* (1998).

Consultants preparing the resettlement plans will be familiar with ADB's safeguard requirements for involuntary resettlement. Detailed terms of reference approved by ADB, will be given to the consultants to ensure that resettlement plans meet ADB's policy requirements. The terms of reference will include a resettlement checklist for an initial social assessment to guide subproject preparation and screening.

#### **D. Institutional Responsibilities and Resettlement Cost**

8. Depending on the project component, the concerned EA (i.e., BWDB, LGED, or RHD) will be responsible for overall coordination, planning, implementation, and financing responsibilities. The EAs fully recognize the complexity of resettlement for project-affected people. They will therefore hire resettlement specialists with the supervision consultants, as well as an experienced NGO for resettlement plan implementation with clearly defined scope/tasks. The EAs with assistance from resettlement specialist(s) will undertake a land acquisition survey; census and asset inventory survey, and prepare a full/short resettlement plan and proposals for land acquisition by subcontracting an experienced local agency under the consultancy. During the process, the EA with the assistance of consultant will ensure that (i) the agency responsible for resettlement plan preparation is aware of the resettlement framework for resettlement planning so that appropriate entitlements and mitigation measures are established in the plan; and (ii) resettlement budgets are delivered on time to the deputy commissioner and the implementing NGO for timely resettlement plan implementation. The EA will ensure that the resettlement plan is submitted to ADB for approval, and that funds for compensation and entitlement under the resettlement plan are fully provided to those affected prior to the award of the civil work contract.

9. The EA will implement the resettlement plans by setting up a resettlement unit within the project management unit (PMU) established by each EA. The resettlement unit, under the overall responsibility of the project director, will undertake day-to-day activities with the appointed NGO and consultants. It will employ, at the PMU, one senior official of the EA at the rank of executing engineer as chief resettlement officer who will supervise implementation with the support of the supervision consultants. At the field level, a resettlement coordinator will be assigned in the subproject management offices at the rank of assistant engineer to undertake day-to-day activities with the appointed NGO. The subproject superintending engineer will provide the resettlement coordinator with the necessary administrative support to implement the resettlement plans. The project director will ensure the land acquisition with assistance from district administrations and the chief resettlement officer. The appointed NGO will open field offices, carry out an information campaign, and involve people affected by the subproject, including women, in the implementation process from the very beginning. The resettlement unit will also form grievance redress committees (GRCs) at the executing agency level with the project director as chair, representative of the implementing NGO as member secretary, and representatives of those affected by the subproject including women and representatives of the local communities as members.

#### **E. Disclosure, Consultation, and Grievances**

10. The resettlement plans will be prepared and implemented in close consultation with the stakeholders and will involve focus group discussions and meetings, particularly with people affected by the subproject. The resettlement plans formulated according to the approved resettlement framework will be disclosed and made available in Bangla to those affected during village/community focus group discussion meetings. Resettlement plans and the resettlement framework will be posted on the websites of each of the EAs (BWDB, LGED, and RHD) and

ADB. Further, a copy of the entitlement matrix, translated in Bangla, will be distributed to affected families for information at the time of detailed census and socioeconomic surveys for preparation of resettlement plans.

11. Complaints and grievance procedures will be outlined in the resettlement plans and GRCs will be established to ensure stakeholders participation in the implementation process. Through public consultations, those affected will be informed that they have a right to grievance redressal. They can call upon support of the implementing NGO to assist them in presenting their grievances or queries to the GRC. Other than disputes relating to ownership right under the court of law, the GRC will review grievances involving all resettlement benefits, relocation, and other assistance. Grievances will be redressed within a month from the date of lodging the complaints.

12. To ensure peoples participation, the NGO will form resettlement advisory committees involving local leaders and representatives of affected people (both men and women), and members of local councils. The committees will advise on the best ways to implement the resettlement program smoothly and efficiently. The GRC, resettlement advisory committee joint verification team, and property valuation assessment team will be formed and activated during land acquisition process to allow those affected to have sufficient time to lodge complaints and safeguard their recognized interests.

#### **F. Budget**

13. The land acquisition and resettlement budget will include all costs for acquisition of assets, relocation/resettlement benefits, income restoration, and all other grants outlined in the entitlement matrix. The Government will provide the entire fund for land acquisition and resettlement, based on subproject cost estimates. Presently, a lump sum of \$3 million has been included as provisional costs to cover all social costs, which will be increased if required during project implementation. The fund for land acquisition will be disbursed through the deputy commissioner office and additional benefits will be paid directly by the EA through the implementing NGO. The resettlement specialist will determine the quantity of losses and eligibility of assistance and benefits, and produce a resettlement budget for the concerned EA for approval and provision of funds.

#### **G. Monitoring and Evaluation**

14. The concerned EA will establish a monthly monitoring system involving the chief resettlement officer, resettlement coordinator, and NGOs who will be responsible for monitoring the progress of all aspects of land acquisition/resettlement activities. The project director will provide ADB with quarterly reports on resettlement implementation. The EAs will prepare an annual report stipulating all aspects of land acquisition and resettlement outcomes and submit it to ADB.

## IMPLEMENTATION SCHEDULE

	2007		2008												2009												2010					
Activity	N	D	Ja	F	Ma	Ap	M	Ju	J	A	S	O	N	D	Ja	F	Ma	Ap	M	Ju	J	A	S	O	N	D	Ja	F	Ma	Ap	M	Ju
Selection and engagement of consultants																																
Selection of sub-project, design, and cost estimate																																
Bid processing and contract award																																
Implementation of civil works																																

Ja = January, F = February, Ma = March, Ap = April, M = May, Ju = June, J = July, A = August, S = September, O = October, N = November, D = December.

Source: Asian Development Bank.

## PROCUREMENT PLAN

### Part B

#### Project Information

Country	People's Republic of Bangladesh
Name of Borrower	People's Republic of Bangladesh
Project Name	Emergency Disaster Damage Rehabilitation (Sector) Project, Part B: Rural infrastructure
Loan or TA Reference	To be determined (tbd)
Date of Effectiveness	tbd
Amount \$ (total from all financiers):	\$32.72 million for works and \$2.48 million for consultant services
Of which Committed, \$	tbd
Executing Agency	Local Government Engineering Department
Approval Date of Original Procurement Plan	12 December 2007
Approval of Most Recent Procurement Plan	12 December 2007
Publication for Local Advertisement <sup>1</sup>	tbd
Period Covered by this Plan	2007–2009

#### Procurement Thresholds, Goods and Related Services, Works, and Supply and Install

Procurement Methods	To be used above/below (\$)
ICB works	At least \$3,000,000
ICB goods	At least \$500,000
NCB works	Less than \$3,000,000
NCB goods	Less than \$500,000
Shopping Works	Less than \$100,000
Shopping Goods	Less than \$100,000

#### Procurement Thresholds, Consultants Services

Procurement Methods	To be used above/below (\$)
Single-Source Selection (SSS)	For included package
Consultants Qualifications Selection (CQS)	Less than \$200,000
Least-Cost Selection (LCS)	Less than \$100,000

#### List of Contract Packages in Excess of \$100,000, Goods, Works and Consulting Services

Ref	Contract Description	Estimated Costs (\$)	Procurement Methods	Expected Date of Advertisement	Prior Review (Y/N)	Comments
1	Consulting	\$2.48 million	SSS	Fourth quarter 07	Y	Financed by ADB, selected by ADB
2	Civil works	\$32.72 million (250–300 packages)	NCB	First-third quarter 08	Y	Financed by ADB and Borrower

ADB = Asian Development Bank, N = no, NCB = national competitive bidding, SSS = single source selection, Y = yes.

<sup>1</sup> General procurement notice.

### Proposed Detailed Contract Packages

Description		Number of Contracts	Cost Estimate per Contract (\$ million)	Aggregated Total Cost Estimate	Mode of Procurement	Responsible Agency
A. Civil Works						
Rural infrastructure		250–300	>\$100,000 <\$3,000,00	\$32.72 million	NCB	EA
B. Consulting Services						
Hifab International AB, Sweden		1	\$2,480,000	\$2.48 million	SSS	EA/ADB
<b>Total</b>		<b>251–301</b>		<b>\$35.20 million</b>		

ADB = Asian Development Bank, EA = executing agency, NCB = national competitive bidding, SSS = single source selection.



## Part C

### Project Information

Country	People's Republic of Bangladesh
Name of Borrower	People's Republic of Bangladesh
Project Name	Emergency Disaster Damage Rehabilitation (Sector) Project, Part C: Municipal infrastructure
Loan or TA Reference	To be determined (tbd)
Date of Effectiveness	tbd
Amount \$ (total from all financiers):	\$19.76 million for works and \$1.03 million for consultant services
Of which Committed, \$	tbd
Executing Agency	Local Government Engineering Department
Approval Date of Original Procurement Plan	12 December 2007
Approval of Most Recent Procurement Plan	12 December 2007
Publication for Local Advertisement <sup>2</sup>	tbd
Period Covered by this Plan	2007 - 2009

### Procurement Thresholds, Goods and Related Services, Works, and Supply and Install

Procurement Methods	To be used above/below (\$)
ICB works	At least \$3,000,000
ICB goods	At least \$500,000
NCB works	Less than \$3,000,000
NCB goods	Less than \$500,000
Shopping Works	Less than \$100,000
Shopping Goods	Less than \$100,000

### Procurement Thresholds, Consultants Services

Procurement Methods	To be used above/below (\$)
Single-Source Selection (SSS)	For included package
Consultants Qualifications Selection (CQS)	Less than \$200,000
Least-Cost Selection (LCS)	Less than \$100,000

### List of Contract Packages in Excess of \$100,000, Goods, Works and Consulting Services

Ref	Contract Description	Estimated Costs (\$)	Procurement Methods	Expected Date of Advertisement	Prior Review (Y/N)	Comments
1	Consulting	\$1.03 million	SSS	4th quarter 2007	Y	Financed by ADB, selected by ADB
2	Civil works	\$19.76 million (140–200 packages)	NCB	1st-3rd quarter 2008	Y	Financed by ADB and Borrower

ADB = Asian Development Bank, N = no, NCB = national competitive bidding, SSS = single source selection, Y = yes.

<sup>2</sup> General procurement notice.

**Proposed Detailed Contract Packages**

<b>Description</b>	<b>Number of Contracts</b>	<b>Cost Estimate per Contract (\$ million)</b>	<b>Aggregated Total Cost Estimate</b>	<b>Mode of Procurement</b>	<b>Responsible Agency</b>
A. Civil Works					
Municipal infrastructure	140–200	>\$100,000 <\$3,000,00	\$19.76 million	NCB	EA
B. Consulting Services					
Hifab International AB, Sweden	1	\$1,030,000	\$1.03 million	SSS	EA/ADB
<b>Total</b>	<b>141–201</b>		<b>\$20.79 million</b>		

ADB = Asian Development Bank, EA = executing agency, NCB = national competitive bidding, SSS = single source selection.

**Part D****Project Information**

Country	People's Republic of Bangladesh
Name of Borrower	People's Republic of Bangladesh
Project Name	Emergency Disaster Damage Rehabilitation (Sector) Project, Part D: Roads
Loan or TA Reference	To be determined (tbd)
Date of Effectiveness	tbd
Amount \$ (total from all financiers):	\$45.61 million for works and \$3.90 million for consultant services
Of which Committed, \$	tbd
Executing Agency	Roads and Highways Department
Approval Date of Original Procurement Plan	12 December 2007
Approval of Most Recent Procurement Plan	12 December 2007
Publication for Local Advertisement <sup>3</sup>	tbd
Period Covered by this Plan	2007–2009

**Procurement Thresholds, Goods and Related Services, Works, and Supply and Install**

<b>Procurement Methods</b>	<b>To be used above/below (\$)</b>
ICB works	At least \$3,000,000
ICB goods	At least \$500,000
NCB works	Less than \$3,000,000
NCB goods	Less than \$500,000
Shopping Works	Less than \$100,000
Shopping Goods	Less than \$100,000

**Procurement Thresholds, Consultants Services**

<b>Procurement Methods</b>	<b>To be used above/below (\$)</b>
Single-Source Selection (SSS)	For included package
Consultants Qualifications Selection (CQS)	Less than \$200,000
Least-Cost Selection (LCS)	Less than \$100,000

**List of Contract Packages in Excess of \$100,000, Goods, Works and Consulting Services**

<b>Ref</b>	<b>Contract Description</b>	<b>Estimated Cost (\$)</b>	<b>Procurement Methods</b>	<b>Expected Date of Advertisement</b>	<b>Prior Review (Y/N)</b>	<b>Comments</b>
1.	Consulting	\$3.90 million	SSS	4th quarter 2007	Y	Financed by ADB, selected by ADB
2.	Civil works	\$45.61 million (90 packages)	NCB	1st–3rd quarter 2008	Y	Financed by ADB and Borrower

ADB = Asian Development Bank, N = no, NCB = national competitive bidding, SSS = single source selection, Y = yes.

<sup>3</sup> General procurement notice.

**Proposed Detailed Contract Packages**

<b>Description</b>	<b>Number of Contracts</b>	<b>Cost Estimate per Contract (\$ million)</b>	<b>Aggregated Total Cost Estimate</b>	<b>Mode of Procurement</b>	<b>Responsible Agency</b>
A. Civil Works					
Roads and structures	90	>\$100,000 <\$3,000,00	\$45.61 million	NCB	EA
B. Consulting Services	1	\$3,900,000	\$3.90 million	SSS	EA/ADB
Snowy Mountain Engineering Corporation, Australia in association with ACE Consultants Limited, Bangladesh					
<b>Total</b>	<b>91</b>		<b>\$49.51 million</b>		

ADB = Asian Development Bank, EA = executing agency, NCB = national competitive bidding, SSS = single source selection.

**Part E****Project Information**

Country	People's Republic of Bangladesh
Name of Borrower	People's Republic of Bangladesh
Project Name	Emergency Disaster Damage Rehabilitation (Sector) Project, Part E: Water resources
Loan or TA Reference	To be determined (tbd)
Date of Effectiveness	tbd
Amount \$ (total from all financiers):	\$30.90 million for works and \$2.44 million for consultant services
Of which Committed, \$	tbd
Executing Agency	Bangladesh Water Development Board
Approval Date of Original Procurement Plan	12 December 2007
Approval of Most Recent Procurement Plan	12 December 2007
Publication for Local Advertisement <sup>4</sup>	tbd
Period Covered by this Plan	2007–2009

**Procurement Thresholds, Goods and Related Services, Works, and Supply and Install**

<b>Procurement Methods</b>	<b>To be used above/below (\$)</b>
ICB works	At least \$3,000,000
ICB goods	At least \$500,000
NCB works	Less than \$3,000,000
NCB goods	Less than \$500,000
Shopping Works	Less than \$100,000
Shopping Goods	Less than \$100,000

**Procurement Thresholds, Consultants Services**

<b>Procurement Methods</b>	<b>To be used above/below (\$)</b>
Single-Source Selection (SSS)	For included package
Consultants Qualifications Selection (CQS)	Less than \$200,000
Least-Cost Selection (LCS)	Less than \$100,000

**List of Contract Packages in Excess of \$100,000, Goods, Works and Consulting Services**

<b>Ref</b>	<b>Contract Description</b>	<b>Estimated Costs (\$)</b>	<b>Procurement Methods</b>	<b>Expected Date of Advertisement</b>	<b>Prior Review (Y/N)</b>	<b>Comments</b>
1	Consulting	\$2.44 million	SSS	4th quarter 2007	Y	Financed by ADB, selected by ADB
2	Civil works	\$30.90 million (250–300 packages)	NCB	1st-3rd quarter 2008	Y	Financed by ADB and Borrower

ADB = Asian Development Bank, N = no, NCB = national competitive bidding, SSS = single source selection, Y = yes.

<sup>4</sup> General procurement notice.

**Proposed Detailed Contract Packages**

Description	Number of Contracts	Cost Estimate per Contract (\$ million)	Aggregated Total Cost Estimate	Mode of Procurement	Responsible Agency
A. Civil Works Embankments and structures	250–300	>\$100,000 <\$3,000,00	\$30.90 million	NCB	EA
B. Consulting Services DHV BV, Netherlands	1	\$2,440,000	\$2.44 million	SSS	EA/ADB
<b>Total</b>	<b>251–301</b>		<b>\$33.34 million</b>		

ADB = Asian Development Bank, EA = executing agency, NCB = national competitive bidding, SSS = single source selection.

## **TECHNICAL ASSISTANCE GRANT TO SUPPORT FINANCIAL MANAGEMENT AND MONITORING**

### **A. Objective**

1. The objective of the technical assistance (TA) is to assist the Government of Bangladesh in monitoring the Emergency Disaster Damage Rehabilitation (Sector) Project. This will entail supporting the project steering committee (PSC).

### **B. Scope and Outline Terms of Reference**

2. The TA will entail the following major tasks:
- (i) Prepare a monitoring and evaluation strategy for ongoing monitoring of the Project and portfolio of subprojects.
  - (ii) Provide procurement performance auditing.
  - (iii) Provide third party scrutiny of subprojects following submission by executing agencies (EAs) and prior to approval by the PSC and Asian Development Bank (ADB).
  - (iv) Objectively monitor and advise on performance of the project EAs and consultants.
  - (v) Prepare monthly, quarterly, and annual progress reporting formats for the project monitoring units for project progress reports that include, in addition to timeliness of implementation process, physical implementation progress, and disbursement; and assessment of
    - (a) budget performance (actual unit price and quantity versus budgeted unit price and targeted quantities);
    - (b) value for money, specifically cost-effectiveness of procurement and implementation;
    - (c) quality of implementation;
    - (d) implementation constraints; and
    - (e) follow-up actions taken regarding issues raised during previous reporting periods, etc.
  - (vi) Review and assess project progress reports, and prepare recommendations for follow-up by the EAs.
  - (vii) Follow-up recommendations provided on previous progress reports.
  - (viii) Define EA/subproject risk criteria to evaluate and prioritize projects to be monitored and to determine the level of monitoring to be afforded to each EA/project, that is, high risk requiring more intensive/more in-depth monitoring, versus low risk requiring less intensive/less in-depth monitoring.
  - (ix) Develop and undertake a structured EA risk assessment approach.
  - (x) Develop and undertake a structured project risk assessment approach.
  - (xi) Prepare an annual monitoring and evaluation work plan based on EA/project risk evaluations.
  - (xii) Develop a customized monitoring and evaluation approach that appropriately addresses medium and high-risk EAs/projects.
  - (xiii) Undertake other monitoring and evaluation tasks as identified by the PSC and/or as a result of the performance audit process.

### C. Cost Estimates and Financing Plan

3. The cost of the TA is estimated at \$245,000 equivalent. ADB will provide \$200,000 on a grant basis from ADB's TA funding program. Cost estimates are provided in Table A14.

**Table A14: Cost Estimates**  
(\$)

Item	Foreign Exchange	Local Currency	Total Cost
<b>A. Asian Development Bank Financing<sup>a</sup></b>			
1. Consultants and Experts			
a. Remuneration and Per Diem (national consultants)		144,000	144,000
b. Local Travel		11,000	11,000
2. Equipment <sup>b</sup>	3,000	10,000	13,000
3. Communications, Reports, and Workshops		10,000	10,000
4. Contingencies	2,000	20,000	22,000
<b>Subtotal (A)</b>	<b>5,000</b>	<b>195,000</b>	<b>200,000</b>
<b>B. Government Financing</b>			
Counterpart Staff, Office Space, Telecommunications	0	45,000	45,000
<b>Subtotal (B)</b>	<b>0</b>	<b>45,000</b>	<b>45,000</b>
<b>Total (A+B)</b>	<b>5,000</b>	<b>240,000</b>	<b>245,000</b>

<sup>a</sup> Financed by the Asian Development Bank's technical assistance funding program.

<sup>b</sup> Furniture, office equipment, computers, printer, fax, mobile phones, and software.

Source: Asian Development Bank estimates.

### D. Implementation Arrangements

4. The Implementation Monitoring and Evaluation Division (IMED) of the Ministry of Planning, the Implementing Agency for the TA, will appoint a project director at the joint secretary level. The TA will support the PSC. The PSC will be actively involved during TA implementation, discussing and reviewing TA findings, and providing guidance on various matters.

5. The TA will commence on 15 February 2008 and be completed by 30 June 2010. The TA team will consist of two national individual consultants working in parallel, a financial management specialist for 24 person-months and a engineer specialist for 24 person-months, both on intermittent basis. The consultants will be recruited by ADB in accordance with ADB's *Guidelines on the Use of Consultants*, or other arrangements satisfactory to ADB for the engagement of national consultants. The terms of reference follow.

6. **National Financial Management Specialist** (24 person-months). The specialist will work with the national engineering specialist. The specialist will be a senior financial management expert with minimum 10 years experience in project monitoring and evaluation



and risk assessment with emphasis on financial management of externally funded development projects. The specialist will have the following responsibilities:

- (i) Develop, jointly with the national engineering specialist and in close coordination with the EAs, a monitoring and evaluation strategy for the Project.
- (ii) Conduct, jointly with the national engineering specialist, procurement performance auditing.
- (iii) Monitor and advise on the performance of the EAs and consultants.
- (iv) Prepare, jointly with the national engineering specialist, inception report, brief monthly reports, and final report on the TA.
- (v) Develop reporting formats, jointly with the EAs, for monthly, quarterly, and annual progress reporting.
- (vi) Review and assess project progress reports, and prepare recommendations for follow-up by the EAs.
- (vii) Assess and report on the timeliness and effectiveness of follow-up EA actions taken regarding recommendations provided on previous progress reports.
- (viii) Define EA/project risk criteria to evaluate and prioritize projects to be monitored and to determine the level of monitoring to be afforded to each EA/subproject, that is, high risk requiring more intensive/more in-depth monitoring, versus low risk requiring less intensive/less in-depth monitoring.
- (ix) Develop and undertake structured EA and project risk assessment approaches.
- (x) Prepare an annual monitoring and evaluation work plan based on EA/project risk evaluations.
- (xi) Develop a customized monitoring and evaluation approach that appropriately addresses medium- and high-risk EAs/subprojects.
- (xii) Undertake other monitoring and evaluation tasks as identified by the PSC and/or as a result of the performance audit process.

7. **National Engineering Specialist** (24 person-months). The specialist will work with the national financial management specialist. The specialist will be a senior graduate civil engineer with minimum 10 years experience in project monitoring and evaluation and risk assessment with emphasis on implementation of externally funded infrastructure projects. The specialist will have the following responsibilities:

- (i) Develop, jointly with the national financial management specialist and in close coordination with the EAs, a monitoring and evaluation strategy for the Project.
- (ii) Conduct, jointly with the national financial management specialist, procurement performance auditing.
- (iii) Provide third party scrutiny of subprojects following submission by the EAs prior to approval by the PSC and ADB.
- (iv) Monitor and advise on the performance of the EAs and consultants.
- (v) Prepare, jointly with the national financial management specialist, an inception report, brief monthly reports, and final report on the TA.
- (vi) Develop reporting formats, jointly with the EAs, for monthly, quarterly, and annual progress reporting.
- (vii) Review and assess project progress reports, and prepare recommendations for follow-up by the EAs.
- (viii) Assess and report on the timeliness and effectiveness of follow-up EA actions taken regarding recommendations provided on previous progress reports.
- (ix) Define EA/project risk criteria to evaluate and prioritize projects to be monitored and to determine the level of monitoring to be afforded to each EA/project, that is, high risk requiring more intensive/more in-depth monitoring, versus low risk requiring less intensive/less in-depth monitoring.

- (x) Develop and undertake structured EA and project risk assessment approaches.
- (xi) Prepare an annual monitoring and evaluation work plan based on EA/project risk evaluations.
- (xii) Develop a customized monitoring and evaluation approach that appropriately addresses medium- and high-risk EAs/subprojects.
- (xiii) Undertake other monitoring and evaluation tasks as identified by the PSC and/or as a result of the performance audit process.

#### **E. Reporting Requirements**

8. The consultants will submit to ADB three hard copies and to the PSC 20 hard copies of the following consolidated reports: (i) inception report with detailed implementation plan, 3 weeks from commencement in the field; (ii) monthly reports; (iii) draft final reports, 1 month before end of assignment; and (iv) final report, 2 weeks after receiving comments from ADB and the Government. All reports will, in addition, be submitted in an editable format on CD-ROM to ADB and the PSC.

## SUMMARY POVERTY REDUCTION AND SOCIAL STRATEGY

Country/Project Title: People's Republic of Bangladesh/ Emergency Disaster Damage Rehabilitation (Sector) Project

Lending/Financing  
Modality:

Project loan

Department/  
Division:

Bangladesh Resident Mission, South Asia Regional Department

### I. POVERTY ANALYSIS AND STRATEGY

#### A. Linkages to the National Poverty Reduction Strategy and Country Partnership Strategy

**Contribution of the sector or subsector to reduce poverty in Bangladesh:** In 2005, Bangladesh, one of the poorest countries of the world, had 40% of its population living below the poverty line; in rural areas the rate was 43.8%. The country is characterized by an extensive network of rivers draining around 113 million cubic meters of water to the Bay of Bengal, of which 90% flows from the upper catchments outside the country. The flat topography, high intensity rainfall, and inadequate capacity of rivers cause drainage congestion, inundation, and flooding during the monsoon. The Brahmaputra and Ganges rivers and their tributaries dominate the economic and social life of the country. The cyclones and storms generated in the Bay of Bengal also affect the lives, properties, and infrastructure in the coastal areas because of tidal wave, tornadoes, cyclones, etc. Since 1971, the country has faced almost 200 disasters, including cyclones, floods, droughts, and river erosion, causing severe damage to assets and lives. The poorest income groups are the most vulnerable to disaster and have to struggle to recover the loss of their livelihood almost every year. The disaster-induced rural–urban migration in search of livelihood has created pressures on urban areas. Many towns and the capital Dhaka also face disasters during monsoons, often due to blockage of sewerage and drains, lack of flood protection, and damage to infrastructure and transport facilities. Heavy rain, storms, and influx of water with inadequate drainage lead to water clogging and overflowing of water bodies, flooding of cropland, damage of housing, etc. This results in widespread suffering of the poor and deplorable living conditions. In 2007, about 25 million people were affected by floods and the cyclone. Economic activities were hampered leading to large-scale unemployment, particularly for the poor working in agriculture. Loss of livestock and crops created severe household budget deficits. Damage of water and sanitation infrastructure led to disease and hazards. The poor became victims of hunger and malnutrition.

In Bangladesh, investment in rural and urban transport and water management infrastructure is critical for the overall process of sustainable poverty reduction. Infrastructure development projects have been highly effective in reducing poverty by directly or indirectly generating income, and by creating new employment opportunities especially in the nonformal sectors. Transport infrastructure helps the poor by providing connectivity and access to markets, schools, and health centers. Flood control structures are essential to protect people and assets, promote economic growth, and provide shelter to the poor during disasters. Essential inputs for recovery of agriculture are important for livelihood restoration. The Government's National Strategy for Accelerated Poverty Reduction emphasizes infrastructure development for economic growth and poverty reduction, as well as social protection for the poor.

The Project will be instrumental in reducing the vulnerability of the poor, contributing to essential inputs supply; restoring connectivity and access; and improving the environment. Rehabilitation of roads, rural and municipal infrastructure, and flood protection infrastructures will enable poorer groups to benefit directly from employment created in construction, operation, and maintenance of infrastructure; and indirectly through increased economic activities as the result of the Project. It will directly generate income-earning opportunities of about 14 million person-days for poor women and men. The supply of essential inputs for agriculture restoration will be increased. Restoration of transport infrastructure will support employment for the poor on buses, trucks, and other traditional modes of transport on rural roads; in ancillary support and service provisions; and in trading by facilitating private sector operation. It will facilitate year-round mobility for accessing economic and social services, all of which are indispensable to poverty reduction. The flood and cyclone resistant infrastructure designs and rehabilitation of disaster shelters will be helpful to protect residents from future disasters. The Asian Development Bank (ADB) has invested in many infrastructure projects; the proposed Project will make a significant contribution to sustaining and enhancing benefits in the infrastructure sector and to reducing poverty by facilitating recovery of livelihoods.

#### B. Poverty Analysis

**Targeting Classification:** General intervention

##### 1. Key Issues

Disasters affect the poor disproportionately in terms of health, housing, employment, livelihoods, and food security. A high incidence of poverty is evident in the project area. Of the 10 worst flood-affected districts, 5 have chronic poverty that registers above the national level as measured by the human poverty index. The cyclone affected all districts of the poorest division, Barisal. The lower income groups having lost assets and income have been worst affected by the floods and cyclone. The poverty analysis and loss estimates are based on assessments and estimates of the Government, United Nations agencies, nongovernment organizations (NGOs), and other civil society groups. During the flood and cyclone, more than 42% of the total area of 46 districts were inundated affecting about 14 million people. Subsequently the cyclone affected 30 districts of which 12 were severely hit. The floods and cyclone affected 25 million people. The damage included roads, houses, bridges, embankments, railways, and water and sanitation infrastructure. People took refuge in flood and cyclone shelters, mosques, schools, and other public buildings; highways; and embankments. About 70,367 tubewells were affected during the flood and

about 70% of the latrines of the cyclone-affected districts were damaged. These required disinfection, repair, and new installation. Production loss of rice is estimated at 1.8 million tons. The livestock, fisheries, and poultry subsectors suffered losses and unemployment, especially for the poor and women. Microfinance beneficiaries, who are all among the poor and mostly women, have suffered loss of their self-employment activities and livelihoods. During the floods, the handloom subsector of Sirajganj experienced damage to about 50%–70% of factories causing loss of assets and employment. The cyclone extensively damaged fish farms in the coastal districts. The impact on human health was also significant, caused mostly by waterborne disease, including diarrhea and subsequent malnutrition and morbidity. The situation was aggravated by exorbitant price increases, especially for food items. Loss of income and employment may result in residents selling assets and resorting to money lenders. Loss of housing and shelters due to disaster may lead to rural–urban migration. Many losses are hidden and cannot be quantified.

In many cases, absence or damage of flood control and drainage infrastructure and cyclone-resistant shelter facilities caused the above losses and affected other infrastructure such as roads, bridges, and rural and municipal infrastructure.

Food and shelters are primary needs of people during floods and cyclones. Many affected people were given food, shelter, medicine, clothes, etc. by NGOs, other community groups, development agencies, and philanthropic groups, as well as the Government. Many were served by community resources. But in the recovery phase, the people have identified poor infrastructure facilities and agriculture inputs as the most important areas for rehabilitation for restoring livelihoods and access to other services.

## 2. Design Features

The project design includes several features that will help reduce poverty directly or indirectly. It will

- contribute to importing essential commodities for an effective recovery program to ensure smooth supply in the market;
- include direct employment of poor unskilled women and men in short-term and seasonal labor-intensive construction activities under labor-contracting societies and contractors;
- employ poor women in infrastructure maintenance for specific periods;
- reconstruct irrigation and water management structures to facilitate agricultural and fisheries production and generate employment;
- restore transport communication structures to create employment opportunities in transport and ancillary activities;
- restore road infrastructure to help transport goods and services; and
- with the improvement of infrastructure and related facilities; support restoration, expansion, and sustained occupational opportunities for the poor in nonagricultural sectors.

## C. Poverty Impact Analysis for Policy-Based Lending

1. Not applicable

## II. SOCIAL ANALYSIS AND STRATEGY

### A. Findings of Social Analysis

The poor were severely impacted by the flood and cyclone and required urgent support for food, medicine, and shelter, which were provided by the Government, United Nations, and NGOs. As time passed, rehabilitation requirements were highlighted. Important among these is employment for income. Wage employment is considered the first priority among the poorest. Fertilizer, seeds, poultry feed, and capital are needed by farmers and corrugated steel sheets are needed for housing rehabilitation. Infrastructure is considered a priority for recovery as well as for long-term protection. Therefore, this emergency loan Project is supporting infrastructure restoration to the predisaster situation and a quick recovery program by assisting in importing fertilizer and other necessary inputs for disaster damage recovery.

### B. Consultation and Participation

1. Provide a summary of the consultation and participation process during project preparation.

This is an emergency support project; assessment and consultation was done jointly with the Government and other partners to ensure participation of relevant stakeholders. All the executing agencies (EAs) and others were consulted. A participatory process was adopted to identify the project components during the joint World Bank-ADB-JBIC mission. Later ADB with the Government identified areas to be supported by the Project. Consultation with civil society was done and regular interactions were held with the Disaster and Emergency Response Subgroup led by the United Nations Development Programme. The needs assessment and prioritization were done collectively and project components were identified and discussed with all major stakeholders during the assessment and fact-finding mission. Stakeholders gave high priority to ADB support for infrastructure rehabilitation, including rehabilitation of rural and municipal infrastructure, roads (rural and highways), bridges, culverts, water conservation, flood control, and irrigation and drainage schemes. The outputs of the mission were (i) formulation of a project design and components, (ii) formulation of criteria for selection and approval of infrastructure for

rehabilitation and improvement, and (ii) estimation of budget for rehabilitation support. In addition, mechanisms to ensure participation of poor and women and ways for EA institutional strengthening were discussed and identified. A TA was proposed for financial management and monitoring of the Project.

2. What level of consultation and participation (C&P) is envisaged during the project implementation and monitoring?

☐ Information sharing ☐ Consultation ☒ Collaborative decision making ☐ Empowerment

3. Was a C&P plan prepared? ☐ Yes ☒ No

If a C&P plan was prepared, describe key features and resources provided to implement the plan (including budget, consultant input, etc.). If no, explain why.

This is an emergency response project with short duration designed jointly with the Government and other stakeholders, all of the EAs were consulted. They agreed on the following to ensure participation of relevant stakeholders: (i) a participatory approach will be followed during project implementation to strengthen Government capacity to implement the Project and to increase sustainability of the infrastructure; and (ii) a sector approach will be followed to identify and approve the subprojects based on specific criteria. The identification, selection, and implementation phase will ensure stakeholder participation in implementation, operation, and maintenance of improved infrastructure. To ensure efficient implementation, a project steering committee was established with participation of all the EAs and relevant ministries; it is chaired by the member, Programming Division, Planning Commission. The local government institutions and NGOs will be involved during identification, implementation, and monitoring of the subprojects. Local poor will be involved in construction, operation, and maintenance activities and labor contracting societies will be formed for earthwork and maintenance including tree plantation.

### C. Gender and Development

#### 1. Key Issues

**Strategy to maximize impacts on women:** The Project has important gender implications. The rehabilitation of damaged infrastructure will support women in restoring their incomes and accessing various services through the rehabilitation of infrastructure. Substantial short-term and seasonal employment will be created for women in construction and maintenance of infrastructure. Earthwork components will ensure employment of women through the formation of labor-contracting societies. Employment and income-earning opportunities in women's market corners and platforms will be restored. Women will also participate in operation and maintenance activities and thereby help restore their incomes. Efforts will be taken to reduce the gap in wages for women and men in construction activities. The Project will facilitate women's mobility for employment, income, and access to services for their families.

**2. Key Actions.** Measures included in the design to promote gender equality and women's empowerment—access to and use of relevant services, resources, assets, or opportunities and participation in decision-making process:

☐ Gender plan ☒ Other actions/measures ☐ No action/measure

Creation of employment opportunities for women in reconstruction activities, special compensation packages for women in resettlement plan.

### III. SOCIAL SAFEGUARD ISSUES AND OTHER SOCIAL RISKS

Issue	Significant/Limited/ No Impact	Strategy to Address Issue	Plan or Other Measures Included in Design
Involuntary Resettlement	Limited	Generally the Project does not involve land acquisition and resettlement; subprojects are located within the existing rights-of-way. However, in some cases, temporary structures, shops, or micro service units, etc. may trigger compensation requirements. Should any subproject lead to resettlement or affect people, resettlement including compensation, will be guided by the resettlement framework presented in Appendix 11.	<input type="checkbox"/> Full Plan <input type="checkbox"/> Short Plan <input checked="" type="checkbox"/> Resettlement Framework <input type="checkbox"/> No Action

Issue	Significant/Limited/ No Impact	Strategy to Address Issue	Plan or Other Measures Included in Design
Indigenous Peoples	Limited positive impact	No adverse impact on indigenous people is likely. Indigenous people living in the project areas will potentially benefit from the improved infrastructure and essential inputs. As the Project will adopt a sector approach, any potential adverse effect on indigenous people, if identified will be addressed during the design of subprojects through the resettlement plan of the subproject. The Project will ensure the participation of identified indigenous people in planning and implementation of the subprojects to ensure that they benefit from the infrastructure rehabilitation.	<input type="checkbox"/> Plan <input checked="" type="checkbox"/> Other Action <input type="checkbox"/> Indigenous Peoples Framework <input type="checkbox"/> No Action
Labor <input checked="" type="checkbox"/> Employment opportunities <input type="checkbox"/> Labor retrenchment <input type="checkbox"/> Core labor standards <sup>i</sup>	Significantly positive	No adverse impact is anticipated. The Project will have a significant positive impact by creating short-term employment opportunities in infrastructure construction and maintenance, mainly for poor unskilled laborers, both female and male. An estimated; 14 million person-days of employment will be generated directly for poor women and men through labor-contracting societies and under contractors. With the improvement of the infrastructure and related facilities, occupational opportunities for the poor in nonagriculture sectors will be restored, expanded, and sustained. It will help reduce unemployment caused by the disasters and employment in other sectors.	<input type="checkbox"/> Plan <input checked="" type="checkbox"/> Other Action <input type="checkbox"/> No Action
Affordability	No impact	Rural residents, including the poor, generally lack or have poor access to infrastructure. The Project will help to improve connectivity and provide better access to basic infrastructure.	<input type="checkbox"/> Action <input checked="" type="checkbox"/> No Action
Other Risks and/or Vulnerabilities <input type="checkbox"/> HIV/AIDS <input checked="" type="checkbox"/> Human trafficking <input checked="" type="checkbox"/> Others (Natural Calamities-flood / river erosion)	Limited	The Project will have disaster-integrated designs for infrastructure and conduct policy dialogue with the Government to increase the infrastructure maintenance budget	<input type="checkbox"/> Plan <input checked="" type="checkbox"/> Other Action <input type="checkbox"/> No Action
<b>IV. MONITORING AND EVALUATION</b>			
Are social indicators included in the design and monitoring framework to facilitate monitoring of social development activities and/or social impacts during project implementation? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			

## SUMMARY INITIAL ENVIRONMENTAL EXAMINATION

1. The proposed Emergency Disaster Damage Rehabilitation (Sector) Project will help the Government of Bangladesh to rehabilitate and restore damages of the 2007 floods and cyclone. It will allow early access to basic services to people and restore economic and social activity in the affected areas, especially for the poor. The Project will follow a sector approach to facilitate selection of the highest priority subprojects during implementation.

2. The initial environmental examination (IEE) forms an overall initial scoping of the broad framework of the Project and allows key environmental issues to be identified so that the detailed subproject formulation can take them into account. Considering the urgent nature of Project the IEE was conducted based on assessment of selected affected areas, with varied nature of damage with respect to rural and municipal infrastructure; national, regional, and district roads and bridges; and flood control and irrigation facilities: 61% of the 2,495 square kilometers of this district was affected by the 2007 disasters. Subprojects will be formulated by the respective executing agency based on the specific nature of damage, i.e., rural or municipal infrastructure, water resources, roads, or bridges.

3. Environmental assessment and review procedures were prepared to guide environmental screening, and categorization and selection of subprojects; and to facilitate environmental assessment, public consultation, and information disclosure and compliance with the environmental assessment requirements of the Government and Asian Development Bank (ADB).

4. The summary IEE (SIEE) was prepared for use by the Project and includes a general overview of the Project, brief description of environmental impacts associated with rehabilitation activities in the 2007 disaster damaged areas, and an environmental impact assessment review procedure.

### A. Overview of the Project

5. The Project will rehabilitate high-priority, disaster-damaged infrastructure and facilities by providing civil works; equipment, and materials; and includes consulting services for project design, implementation, monitoring, and evaluation. The rehabilitation will be done by adopting appropriate disaster-resistant design standards to reduce damage to infrastructure in the event of future flood or cyclone. The Project will be processed and implemented in accordance with sector loan requirements.

### B. Environmental Screening of Sector Impacts and Summary of Likely Subprojects

#### 1. Description of Project Activities

6. The Project is spread across the country. The likely project components with project area and activities involved are highlighted in Table A16.1.

7. The rehabilitation work for roads, bridges, and river embankments are likely to be within the right-of-way. No widening is involved. The rehabilitation of roads, river embankments, and drains will focus on the specific damaged section and will not cover an extensive length. Depending on the highest flood level, the road embankment height or bridge height may have to be increased. The filling material is likely to be sourced from the right-of-way or from nearby

areas. Most of the material is likely to be transported by road. Construction material is likely to be transported by river for river embankment or protection works.

**Table A16.1: Project Components**

Project Part		Project Area/Zone	Scope of Work
B.	Rural Infrastructure	23 districts	Rehabilitate rural infrastructure facilities including feeder roads, rural roads, bridges, and culverts. Main civil work will involve restoration and protection of embankment and drainage including tree planting. Flood and cyclone shelters (including livestock shelters) will be constructed/repared and provided with latrines to help communities, especially the poor, during future floods and cyclones. Design standard is based on improved LGED standards as developed by the project
C.	Municipal Infrastructure	30 municipalities	Rehabilitate urban infrastructure, including roads, drains, bridges and culverts, and footpaths. Design standard is based on improved LGED standards as developed by the Project.
D.	Roads	7 road zones	Rehabilitate national, regional, and district roads, bridges, and culverts. Design standard is based on improved RHD standards as developed by the Project, which includes where technically feasible and justified, improvements to mitigate impact of future floods and cyclones, e.g., improved slope protection, raising of road level above highest flooding level, or allowing additional vents where water logging leads to overtopping.
E.	Water Resources	47 districts	Rehabilitate large and medium-scale infrastructure flood control, drainage, and irrigation facilities to restore, improve, and reduce future disaster impacts. These facilities include embankments, flood control, drainage, and irrigation canal and structures, and protective works including groynes, spurs, and hard points. Restoration works will include filling embankment breaches, resectioning, protective works, and protecting damaged embankments.

LGED = Local Government Engineering Department, RHD = Roads and Highways Department.  
Source: Asian Development Bank.

## 2. Description of the Environment

### a. Physical Resources

8. Bangladesh is characterized by tropical monsoon climate. Annual rainfall is high, between 1,200 and 6,500 millimetres. The country has three distinct seasons: winter, summer and monsoon. Nearly 80% of the annual rainfall falls from May to September during the monsoon season, when moisture-laden winds blow from the south and southeast. Flooding is a recurring phenomenon. Bangladesh suffered losses from damaging floods extensively in 1974, 1988, 1998, 2004, and 2007. The 2007 floods and cyclone have affected a very large area of the country: 51 districts were affected by the 2007 floods and cyclone. Riverbank erosion and channel migration is significant and is associated with the major system of the country, particularly along the Brahmaputra–Jamuna, Ganges–Padma, and lower Meghna rivers. Most of the country lies in the delta of three of the world's major rivers (Brahmaputra, Ganges, and Meghna). A few small tracts of higher land occur in Sylhet, Mymensingh, and Chittagong Hill Tracts regions. Maximum elevation is 850 meters on the Bangladesh-Myanmar border. The



southwestern region consists of a large number of dead and cut-off rivers, the coastal part of which includes the famous Sundarbans mangrove forest, which was extensively damaged following the cyclone. Except for small higher areas of old alluvium rising to about 30 meters in the northwest (Barind tract) and north-center (Madhupur tract), the Ganges–Brahmaputra deltaic plain region is a flat surface of recent alluvium, having a gentle slope and generally with an elevation of less than 10 meters above mean sea level. Bangladesh has 230 rivers; 57 are transboundary rivers.

9. The geographic setting of Bangladesh makes the country particularly vulnerable to natural disasters. The mountains and hills bordering almost three fourths of the country's frontier, along with the funnel-shaped Bay of Bengal in the south, have made the country a meeting place of life-giving monsoon rains. Extreme rainfall and earthquakes in the adjacent Himalayan range also had effects in Bangladesh.

#### **b. Ecological Resources**

10. Bangladesh has an estimated 1,010,000 hectares (ha) of forests, covering some 7.8% of land area including several national parks and wildlife sanctuaries. The forests are broadly classified into three categories based on the topographic conditions (i) hill forests, (ii) plain sal forests, and (ii) mangrove littoral forests. In terms of forestland under forestry use, the hill forests contribute 508,991 ha (45.4%) followed by the littoral mangrove forests and coastal forests extending over 489,872 ha (43.7%), and plain sal forest accounts for 121,884 ha (10.9%) of the forest area. The damage due to floods and cyclones are confined to lower reaches. Only a small number of national parks, sanctuaries, or forest areas were affected by the floods, but the cyclone caused extensive damage to littoral mangrove forests in Sundarban.

11. The wilderness areas have a wide variety of animal diversity typical of a tropical area. The fauna, specially the wildlife includes 125 species of mammals, 750 species of birds, 125 species of reptiles, and 9 species of amphibian. The large forest area of the Sundarban in the southwest is the home of the endangered Bengal tiger. Elephants are found mainly in the forests of the Chittagong Hill Tracts districts. Most of the rehabilitation sites are in plains and have natural vegetation.

12. Hundreds of varieties of fish are found in the country. As per International Union for the Conservation of Nature, 266 species of freshwater fish and 442 marine species are found in Bangladesh. While much of the fish is consumed domestically, Bangladesh exports a sizable quantity of freshwater fish to India and other neighbouring countries, as well as freshwater shrimp and lobster. The floods and cyclone also damaged various infrastructure used by fisherfolk.

#### **c. Economic Development, Social, and Cultural Resources**

13. Bangladesh is the 7th most populous nation in the world. The current population density is 750 per kilometer. The total fertility rate is now 3.1 children per woman, compared with 6.2 three decades ago. The overall population growth rate is 1.7%. The population is relatively young, with the 0–25 age group comprising 60%, while 3% are 65 or older. Life expectancy is 66 years. The increased growth of the urban population will result in shortage of urban infrastructure such as water supply, sewage, and health facilities. Damage of this infrastructure due to disaster aggravates water supply and sanitation problems.

14. The country has achieved an average annual growth rate of over 6% during recent years. The middle class and the consumer industry have expanded. Health and education have recently improved as poverty has decreased.

15. Bangladesh has an extensive and diversified transport system, which includes about 220,000 km of roads, 2,700 km of railroads, 6,000 km of major waterways, two major seaports and eight airports. The 2007 floods and cyclone caused localized damage to transport infrastructure. Road transport was by far the worse affected transport mode.

#### **d. Screening of Potential Environmental Impacts and Mitigation Measures**

16. The proposed Project aims to rehabilitate disaster-damaged facilities and infrastructure so as to restore critical social and economic activities. As such the positive environmental impacts are substantial. Short-term minor negative impacts may be associated with the rehabilitation activities (material transportation, earthwork, operation of tar boiler/hot mix plant, operation and maintenance of construction machinery, etc.), which can be moderated with the adoption of appropriate mitigative measures. Generic mitigation measures and monitoring plans are proposed based on the type of rehabilitation works and preliminary environmental assessment conducted during the field visit. During implementation, detailed site-specific environmental and social impacts, mitigation measures, and monitoring plan will be assessed and developed for subprojects and included in the contract documents.

17. **Air Quality and Noise.** Handling of construction materials, equipment movement, and other construction activities may generate dust and noise. The impact will be temporary and restricted within the closed vicinity of the construction activities. All vehicles, equipment, and machinery used for construction will be regularly maintained. Water will be sprayed frequently on dry surfaces, earth mixing sites, and loose material and spoil soil storage areas. Vehicle delivering loose and fine material will be covered. Road embankments will be covered with vegetation. Hot mix plant/tar boilers will be located at least 500 meters away and will be located at the downwind direction with respect to human settlement. Vehicle and equipment will be fitted with silencers and maintained regularly. Diesel generators will be fitted with acoustic enclosures. Work will be restricted to daytime, reducing nuisance from noise.

18. **Soil and Land.** The rehabilitation activities under the Project may have adverse impacts on soil and land. Impacts may include loss of productive area, loss of productive soils due to borrowing of earth, soil contamination due to disposal of spoil soils, spread of waste during drains repair, and loss of rice fields within or adjacent to the road right-of-way due to clearance/material extraction/dumping of cut spoil. Selection of borrow areas will be based on topography, land use, and drainage pattern. The top soil will be preserved and reused. The extraction of construction materials from riverbeds will be minimized. Fuel and lubricants will be stored on paved surfaces, away from rivers and streams. Slope protection measures including vegetation will be adopted. Appropriate waste handling and management procedures will be developed and implemented. Septic tanks (adequately designed) will be provided at the construction camps.

19. **Flora and Fauna.** Transport of construction material by river may damage charland<sup>1</sup> vegetation and animal habitat. Surface runoff and improper handling of construction waste may

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<sup>1</sup> The islands of sediment created, accumulated, and stabilized with the change of course of the river used for cultivation

affect the water quality of rivers and canals, which may impact aquatic fauna. Charland will be protected from any damage due to cutting or dredging for ship movement for material transportation through river. Precautions will be taken to prevent surface runoff or construction waste finding its way to water bodies.

20. **River Hydrology and Morphology.** Reconstruction of embankments and protective works may have morphological impacts on river flow and resulting change in the shape of the riverbed and river course. It may also result in drainage congestion. Proper construction planning will be done to avoid drainage congestion. Embankments, protective work, and road design will consider factors such as highest flood level, river hydrology and morphology, river/channel siltation, drainage pattern, topography, seismicity, and channel encroachment by the population.

21. **Economic Impacts.** The Project will have various beneficial impacts due to early restoration of basic infrastructure facilities especially in rural areas. However, a civil work may cause some temporary damage to crops and agricultural land due to poor handling of solid wastes. All precautions will be taken to ensure that no damage occurs to crops and agriculture land due to construction activities. In unavoidable circumstances, the project implementing agency will follow the Government and ADB policies for compensation and involuntary resettlement. During implementation, local villagers will be recruited as much as possible to provide income opportunities and to minimize wastes and pollution generated from work camps.

### 3. Institutional Arrangements

22. The Bangladesh Environment Conservation Act 1995 and The Environmental Conservation Rules 1997 define the environmental assessment and review procedure for development projects in the country. According to these legislations, projects are categorized in four categories (green, amber A, amber B, and red). The clearance requirement defined under the legislation will only apply to subprojects requiring reconstruction/expansion of flood control embankment, reconstruction/expansion of roads (regional, national), and bridge (length 100 meters and above), which will fall under the red category. Therefore, environmental clearance from the Department of Environment (DOE) is not needed for many subprojects. However wherever reconstruction of roads, bridges (>100 m) and flood control structures is involved, the environmental clearance from DOE will be required. In the latter case, an IEE will have to be carried out. The IEE, the proposed terms of reference for environmental impact assessment (EIA), environmental management plan (EMP) and no objection certificate (NOC) from the local authority will be submitted to DOE for environmental clearance.

23. The institutional arrangements already established within each executing agency (EA) will be used. The project management unit (PMU) and the project implementation units (PIUs), under the EAs, will be responsible for undertaking environmental assessment, environmental mitigation measures and monitoring, preparation of an IEE and SIEE if necessary, and reporting to ADB. The PMUs and PIUs are expected to be facilitated by the Environmental Cell of the EA or the environment specialist to be hired for the Project or to be provided by the design and supervision consultant for any environmental issue.

#### **4. Environmental Management and Monitoring Plan**

24. The EMP is prepared to ensure that all adverse impacts of the subprojects are prevented and properly mitigated. It provides a set of mitigation, monitoring, and institutional measures to be undertaken in a time-bound manner during design, construction, and operation.

25. The environmental management and monitoring will be based on IEE/EIA recommendations. The cost of mitigation measures and monitoring will be part of the project cost. An environment specialist will be provided for each EA to assist the respective PMU and PIU staff in strengthening their capacity to carry out environmental assessment and implement mitigation measures. Provision of increasing public awareness on environmental measures will also be included in the budget.

26. To ensure effective implementation of the environmental assessment and mitigation measures, a reporting system is a prerequisite. During construction, the EA will submit a half yearly report on implementation of the mitigation measures to ADB.

#### **5. Public Consultation and Information Disclosure**

27. Because of the urgent nature of the Project, conducting a detailed public consultation was not possible. However detailed interactions were made with concerned officials from the EAs, NGOs, and government offices, and interviews were held with affected villagers during the field visit undertaken on 21–25 October 2007.

28. During implementation, further consultation will be conducted for each subproject to identify and take into account any concerns of the villagers and communities about the design and rehabilitation work. Necessary project information will be shared with the concerned villagers and communities.

#### **6. Findings and Recommendations**

29. Positive environmental impacts will be substantial. Short-term minor negative impacts may be associated with the rehabilitation activities; these can be addressed with the adoption of appropriate mitigative measures. As per the public consultation, lack of maintenance of a protective embankment has caused fast embankment erosion resulting in higher damage from 2007 floods and cyclone. Provision may be made in the contract to maintain the rehabilitation work for a minimum specified time especially with respect to soil erosion and tree plantation. Provision should also be made for monitoring the erosion around bridge sites.

#### **C. Environmental Assessment and Review Procedure for Future Projects**

30. The environmental assessment and review procedures have been prepared to guide the environmental screening of each subproject and facilitate institutional arrangements and compliance with the environmental assessment requirements of the Government and ADB (Supplementary Appendix C).

## 1. Environmental Criteria for Subprojects Selection

31. The Project will include subprojects falling under B and C category<sup>2</sup> as per ADB *Environmental Assessment Guidelines* (2003). In addition, all subprojects must comply with the environmental requirements specified in the ADB's *Environment Policy* (2002) and *Environment Assessment Guidelines*.

32. To ensure environmentally sustainable rehabilitation work, all subprojects will be subjected to an environmental assessment screening to identify subprojects located in environmentally sensitive areas, assess the potential negative environmental impacts, and determine the need for an IEE. If the screening indicates further analysis required<sup>3</sup>, an IEE will be conducted to identify and implement environmental mitigation measures and monitoring, and IEE reports will be sent to ADB for its review. Environment clearance will be obtained from DOE, for subprojects falling under the red category as per The Environmental Conservation Rules 1997 of Bangladesh.<sup>4</sup> An IEE along with terms of reference for an EIA and EMP will have to be submitted to DOE to obtain environment clearance if applicable for a subproject. An EIA will be undertaken as per approved terms of reference and submitted to DOE. The EIA and EMP will be sent to ADB for review.

## 2. Responsibilities and Authorities

33. Several EAs will be involved in the environmental aspects of the subprojects.

34. The institutional responsibilities of the EAs and ADB are given in Table A16.2

## 3. Environmental Assessment Requirement

35. All subprojects will be screened based on the screening checklist and by considering the classification under Environmental Conservation Rules 1997.

36. Subprojects classified as category A will require preparation of a detailed EIA and SEIA as per ADB requirements.<sup>5</sup> Subprojects classified as category B will require preparation of an IEE and SIEE as per ADB requirements. Requisite Government clearance/permissions will be obtained as applicable under Environment Conservation Rules, Bangladesh Wildlife Preservation Order 1973/1974, Forest Act 1927, and Protection and Conservation of Fish Act 1950. Subprojects classified as category C will not require preparation of an IEE or EIA as per ADB requirements. However, environmental implications are still reviewed.

<sup>2</sup> The subprojects located in environmentally sensitive areas or ecologically critical areas will be classified as category A. The environmentally sensitive areas are generally defined as those requiring special management attention to protect important scenic values, fish and wildlife resources, historical and cultural values, and other natural systems or processes. Those areas include national forests, mangroves, wetlands, steep slope areas, buffer zones, and areas that cover endangered species. The Environment Conservation Rules 1997 considers the following factor while declaring an area ecologically critical: ancient monument, archeological site, forest sanctuary, national park, game reserves, wild animal habitat, mangroves, forests areas, biodiversity of relevant areas, and human habitat.

<sup>3</sup> IEEs will be conducted for all subprojects likely to have adverse environmental impacts due to project activities such as (i) a change in alignment for roads, canals, dikes, and bridges; (ii) borrowing earth from large areas; and (iii) construction of a bridge instead of a road due to river morphological changes, and be sent to ADB for review.

<sup>4</sup> As per the rule and nature of project activity, no project will fall under amber A, amber B, or green category.

<sup>5</sup> For a category A subproject, the summary EIA is made available to the public by posting it on the ADB website no later than 120 days prior to the consideration of the project by ADB board. This condition may not apply in this case as it is an emergency flood damage rehabilitation project.

#### 4. Procedures for Environmental Assessment of Subprojects

37. The procedures for environmental assessment of subprojects must be in line with the requirements of the Government, as well as ADB's *Environment Policy*, *Environmental Assessment Guidelines*, and their environment assessment and review procedures. The PMU/PIU of the respective EA will undertake rapid environmental assessment for each subproject as per the defined EA screening checklist. The rapid environmental assessment will be submitted to ADB for review and endorsement of the classification. Subprojects selection will be based on the selection criteria described in para. 49. The PIU/PMU will prepare an IEE and SIEE. ADB's *Environmental Assessment Guidelines* will be used to identify major environmental issues. The IEEs and SIEEs will be submitted to ADB, which will review them. Environmental clearance, where applicable, must be obtained before submission of the IEE and SIEE to ADB. The PMUs/PIUs will prepare half yearly reports for subprojects, including the implementation status of mitigation measures and monitoring.

**Table A16.2 Institutional Responsibilities**

Item	EA	ADB
Inception	<ul style="list-style-type: none"> <li>• Develop EA screening checklist with the help of its environmental cell or hired qualified consultant</li> <li>• Submit EA screening checklists to ADB for review</li> <li>• Assess the applicability of Environment Conservation Rule 1997 for obtaining environment clearance certificate; if applicable obtain necessary clearance</li> <li>• Check if any restriction for construction of temporary and permanent embankment and other structures in the waters of subproject area is imposed under the Protection and Conservation of Fish Act 1950 and if yes, obtain necessary concurrence/permission from fishery officer</li> <li>• Undertake IEEs and SIEEs for subprojects where they are required in compliance with Government and ADB requirement.</li> <li>• Undertake EIAs for subprojects falling under the red category as per the Environment Conservation Rules 1997</li> <li>• Submit IEEs and SIEEs to ADB for review</li> <li>• Submit EIA wherever prepared in compliance with the national legislation to ADB for review</li> <li>• Confirm to ADB that all statutory environmental clearance have been obtained for the subprojects where applicable prior to commencement of work</li> <li>• Ensure adequate mitigation measures and monitoring requirements are included in the contract documents</li> </ul>	<ul style="list-style-type: none"> <li>• Review and endorse the developed EA screening checklists</li> <li>• Review rapid environmental assessment and endorse the environmental categorization (B or C)</li> <li>• Review IEEs and SIEEs to ensure compliance with the environmental assessment requirements of the Government and ADB</li> </ul>
Construction	<ul style="list-style-type: none"> <li>• Implement and ensure implementation of adequate mitigation measures and monitoring as well as environmentally sound construction methods</li> </ul>	<ul style="list-style-type: none"> <li>• Review the progress of implementation of mitigation measures and actual impacts as needed during review mission</li> </ul>

Item	EA	ADB
	<ul style="list-style-type: none"> <li>• Ensure that contractors have access to IEEs including details of mitigative measures/EMP</li> <li>• Ensure that contractors understand their responsibilities to mitigate environmental problems associated with their construction activities</li> <li>• If any unexpected environmental impacts occur, consult with ADB and undertake appropriate remedial measures</li> <li>• Prepare and submit half yearly environmental monitoring reports to ADB</li> </ul>	<ul style="list-style-type: none"> <li>• Review the half yearly reports and provide necessary feedback to EA/PMU if necessary</li> </ul>

ADB = Asian Development Bank, EA = executing agency, IEE = initial environmental examination, EMP = environmental management plan, SIEE = summary initial environmental examination.

Source: Asian Development Bank.

## 5. Public Consultation and Information Disclosure Plan

38. The EA will ensure that public consultation will be conducted for each subproject to identify and take into account the concerns raised by the affected villagers and communities in the design and rehabilitation work. Necessary project information will be shared with the concerned villagers and communities. All documents on environmental issues, including IEEs, and progress reports will be properly kept as part of the project documentation and made available to the public if requested.

## 6. Staff Requirements and Budget

39. Environmental mitigation and monitoring requirements and cost will be based on IEE/EIA recommendations and will be part of the project cost. The recruitment of an environment specialist within the PMU of the EA will be included in the budget to help respective PMU and PIU staff strengthen their capacity to carry out environmental assessment and implement mitigation measures. Provision for increasing public awareness of environmental measures will also be included in the budget.

## D. Conclusion

40. The 2007 disasters caused four main environmental impacts: riverbank erosion, soil erosion, water logging, and water contamination and health risk. The Project involves rehabilitation of damaged infrastructure and will have substantial benefits particularly in terms of limiting adverse impacts.

41. Considering the nature of subproject components, no significant adverse environmental impacts are likely to be associated with the proposed rehabilitation work. The proposed generic mitigation measures and detailed site specific mitigation measures to be identified during implementation are likely to minimize negative environmental impacts. The environmental assessment and review procedures will provide adequate guidance to carry out IEE and implement environmental mitigation measures as well as monitoring in accordance with the environmental assessment requirements of the Government and ADB. A detailed EIA will be required for subprojects falling under red category as per the Environmental Conservation Rules of Bangladesh or subprojects classified as category A as per ADB guidelines.