



Government of the Peoples Republic of Bangladesh

**Consolidated Damage and loss Assessment,
Lessons Learnt from the Flood 2007 and
Future Action Plan**

(Executive Summary)



Report prepared by:
Disaster Management Bureau
Ministry of Food and Disaster Management
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Introduction

This Executive Summary has been produced as an interim report pending the completion of the detailed Damage and Loss Report in late November. Although it was originally planned to have the report completed by late October, 2007, this could not be achieved owing to the unavailability of assessment team members for EID holidays in October. The executive summary does capture the key issues and damages associated with the floods and can be utilized to initiate consultations with development partners and other stakeholders.

The primary focus of this report is to provide an overview of the damage that occurred as a direct result of the flooding. It should be noted however, that in a number of cases a more thorough analysis has been undertaken by some districts and departments to incorporate the full extent of damage to infrastructure whether it was caused by the flood or not. This is a very necessary approach, as the failure to make good all repairs will no doubt continue to place communities in a vulnerable situation for future floods.

The number of deaths, extent of health related problems and scope of relief required was higher than in previous floods and this can be directly linked to the significant failure of the flood protection systems and particularly embankments. The failure of key agencies to apply rigorous risk assessment and risk mitigation from both a single sector and cross sectoral basis when designing previous post flood reconstruction as it is another factor for the extent of damage. This applies directly to the construction of embankments, main highways, bridges and culverts. For example a number of embankments were breached before the flood through riverbank erosion. Prediction models and risk mapping is available and should have provided early warning to agencies on the risk of this damage occurring.

Similarly, critical infrastructure such as government buildings, schools, health clinics remain situated in high risk locations and will be continuously at risk to damage and flood inundation unless risk mitigation works are undertaken.

Warnings issued from the Flood Forecasting Warning Centre were extremely accurate and timely. These were widely disseminated with the assistance of the Disaster Management Information Centre (DMIC) of DMB that remained operational for the duration of the floods. Approximately 90 situation reports were disseminated to over 500 recipients on a daily basis during the period June through September. While there was an observed high level of government activity within each of the affected districts, it was clear that more needed to be done to strengthen the capacity of disaster management committees to enable them to translate information contained in warnings (i.e. river level is 30cm above danger level) into on-ground scenarios.

The Floods

The 2007 floods came in two waves. The first wave commenced around the 24th July 2007 and initially affected Nilphamari, Lalmonirhat and Kurigram, Sherpur, Jamalpur, Sylhet, Sunamgonj districts. In following days Rangpur Gaibandha, Bogra, Sirajgonj were flooded, and subsequently the other districts were inundated up until about the 6th August. This represented about 39 districts. The second wave commenced on the 5th September and continued up until the 15th September 2007 when some new districts

apart from the previous 39 were flooded. A total of 46 districts were affected to varying degrees during both flood waves. Refer to the attached map.

The flood inundated about 32000 Sq Km including the char areas of 6000 sq km affecting almost 16 million people in around 3 million households. Thousands of people also suffered from flood related health hazards.

Eighty five thousand (85,000) houses were completely damaged, while almost one million suffered partial damages. 649 persons were reported to have perished either as a direct impact of the flood or through flood related causes including bridge collapse or boat capsizing. A number of children drowned as a result of swimming in flood areas. A number in addition to this perished as a result of diseases caused by contaminated water and poor sanitation.

The process

The assessment of damage was undertaken through a number of strategies including the collection of information/damaged data from the Head of the agencies/departments located in Dhaka and from the respective district administration. On the 9th October a consultation workshop was conducted with the heads/representatives of agencies to analyze agency wise damage assessment data. One of the objectives of the workshop was to enlighten agencies on risk reduction/prediction models to strengthen their capacity to improve design of post flood reconstruction.

Twelve workshops were carried out in pre-selected districts including 6 severely affected, 4 moderately affected and 2 less affected. District Disaster Management Committee (DDMC) members participated in an exercise that was focused on “ground truthing” damage assessments in order to improve the accuracy of damage and also to try and ascertain the reasons why damage occurred (other than the obvious). The primary objectives of the field visits were to understand the methodology of damage data collection by the district authority, collect qualitative data on the causes of damages, and to record some important lessons learned and to gain a better understanding of coping strategies.

Following the workshops, the team visited the affected areas and flood exposed elements. The members were accompanied by concerned departmental officials of the Government of Bangladesh. The officials of concerned departments at districts level were interviewed. Focus group discussions were also held at the field level using semi-structured questionnaires of informal and formal discussion also took place in the workshop about the present situation of the flood affected people.

Brief Overview of Sectoral Damage

Primary infrastructure (considering Flood Management): The structures related to water management are considered in this section. This includes the levee, embankment, drainage channel, irrigation canal, sluice gate, regulator, bridge culvert and approach road to bridge. The water development board consolidated report on cumulative damages of the structures is BDT 5549.7 (USD 81.6 million). Some of the major damaged elements on 2007 are the Brahmaputra right embankment have damaged in some areas partially (Rangpur and Bogra districts), in some areas fully (Sirajgonj and Gaibandha). Rangpur Town protection Embankment, Sirajgonj town protection embankment. Nitrokonka Kalmakanda embankment of 500 meter. East side of Gaokanda embankment. Lakhar char to Betua bazaar road cum embankment, Some of the critical damage structures Flood 2007 identified by the field team is presented in table 1.

Secondary infrastructures: Office building, markets, schools, roads (paved roads, earth roads, carpeted roads, feeder roads), bridge and culverts, tube-wells, latrines, health centers, handlooms. According to Roads and Highways department, about 55% of roads were affected by the 2007 flood which is in length of 2,344 km. A total 52 bridges were damaged (1811 meter in length). The LGED reported a total of 14,294km roads (paved and unpaved) were damage in 46 districts. The flood washed away 849 bridge and culverts and 14 Union council buildings and 8 growth centers. A total of 70,367 tube-wells were inundated and contaminated. According to directorate of Primary Education 8,668 primary schools were partially damaged and 205 primary schools need to be rebuilt. The education engineering department reported that a total 15 schools were fully damaged and 3,559 were partially damaged.

Food and agriculture sector damage: A total about 1.12 million ha of cropland were either partially or fully damaged in this flood which accounted the 42165.8 (million Taka (BD 22270.63 in 1st spell flood and 19895.25 in 2nd spell flood). These losses are from the private farms of the standing crops (Taman, seeding, broadcast aman, jute and vegetable). The death of livestock which estimates was BDT 5.8 million. Considering the losses accounted for milk, meat, egg, infrastructural damage of the total livestock sector is 608.55 million (Table 2). The fisheries sector losses are BDT 1,965 million which included the losses from fish fingerlings, fishes, shrimp, and fisheries infrastructures. The forestry sector estimated the damage and losses is Taka 37.80 million which includes damage of trees, nursery and infrastructures.

DAMAGE DATA COLLECTION AND COMPILATION PROCEDURES:

Data provided by the District administration: Damage data is primarily collected by concerned department(s) and compiled by District Authorities through District Relief and Rehabilitation Offices. In some cases Upazila Nirbahi Officers (UNO) collected data (area of damages) from the union council chairmen and members and verified/crosschecked by the officials. It was observed that data collected by concerned departments was more reliable since the departments have available information about infrastructures.

Data collection at the field level is difficult as the mode of data processing is not the same which resulted in compilation difficulties. Less manpower and limited time also affected the assessment process.

Data from the Head of the agencies/departments

The data provided by the Head of the concerned agencies/departments are the compiled data of whole country received from the field office of the department/agencies. In most of the cases the agencies have prepared rehabilitation plan considering the damage but no exact damage data and information about damaged element were provided. In some cases the damages caused in previous years was not repaired but was still also included in the rehabilitation plan for this year. It was clear that there was not a great deal of consultation with communities when preparing damage assessments and more specifically the cause of damage.

General Observations

1. Damage caused by the flooding could be categorized as direct and consequential. For example the failure of the flood protection system (direct impact) resulted in far reaching consequential impacts in the household, health and food security.

2. About 70-75% of the total damages and losses were in the crop, livestock, fisheries and forestry sectors. People in general were aware of the floods, but they were caught unaware because of the sudden embankment breaching which claimed more lives (human and animal) and damages.
3. It was found that regular and routine maintenance activities of the embankments were not addressed for a long period. This increased the breaching of embankments. Additionally damages to embankments by dwellers and rats were identified as a major problem. Communities, department of agriculture, fisheries, livestock were not involved in embankment planning, implementation and monitoring process.
4. Critical infrastructures and means of communication were disrupted. People lost food grains, domestic animals, homesteads, and lives and options for livelihood were paralyzed. They remained marooned without food and drinking water until relief arrived.
5. The Jamuna River widened about 8 km to 12 km, other rivers showed the same tendency without stopping. Bangladesh lost more than 1,000 km² of land along the major rivers during the last 30 years. The land would have provided living space for about 1million people. Identification/investigation of the factors which contribute to these devastating floods. The major river-beds are rendered shallow by heavy deposits of alluvial soil each year and tend easily to cause inundations. (The quantum of silt carried by the river systems into Bangladesh is estimated to be 2.4×10^9 tones/yr).
6. The insufficient opening (bridge/culverts) interrupted the natural water flow resulted in disruption of roads and damage to the adjacent areas.
7. Many food surplus districts can not achieve the target because of the devastating flood which had severe impact on Aus, T. Aman and B. Aman. Less water outlet of small river and canals and poor drainage system is another cause of disrupting water flow which ultimately caused more extensive flooding. Improper water management causes the river erosion which increases in the vulnerability of the community; especially those are residing near in the Brahmaputra, Meghna and Jamuna basin.
8. Many of the roads, buildings (schools, health centre and others) have been designed and constructed without complying with building codes. Similarly many of the construction works were not completed prior to the floods which suggests that the planning of construction needs to consider the monsoon,
9. The roles and responsibilities outlined in the Standing Orders on Disasters (SOD) were not fully followed by concerned officials and lack of coordination among stakeholders and within the departments in the field level were observed. Despite this, District Disaster Management Committees (DDMC) or Upazila DMC held many meeting in the lead up to the floods and this enhance early warning and relief management operations. In many places, the under-utilization of the equipments (computer to use email transmission) were observed.

Key Recommendations

Priority reconstruction should be focused on addressing the direct impact areas such as embankments, roads and culverts. It is essential that this work be undertaken before the onset of the 2008 monsoon otherwise flooding will again be significant as will damage.

Work based safety-net programme including VGF, VGD, food for work, Test Relief, Gratuitous Relief should be used to establish/construct the embankment. Employment opportunities of the flood-affected people should be identified and introduced.

Risk analysis and risk mitigation should be a mandatory element of any new construction or replacement programme design. This should involve both single sector and cross sector risk analysis. If this is not undertaken there can be no guarantee that reconstruction work will survive the next wave of flooding.

There should be standard damage and loss assessment format along with the guidelines and capacity building to improve efficiencies and coordination between agencies, district administration, UN Agencies and NGOs.

Severely affected districts (by households, area and croplands) should be given immediate attention for risk reduction.

Contingency planning and capacity building is required at the field level to strengthen early warning, evacuation, rescue, relief management and damage assessment capabilities and interagency coordination.

Flood Affected Area and Population

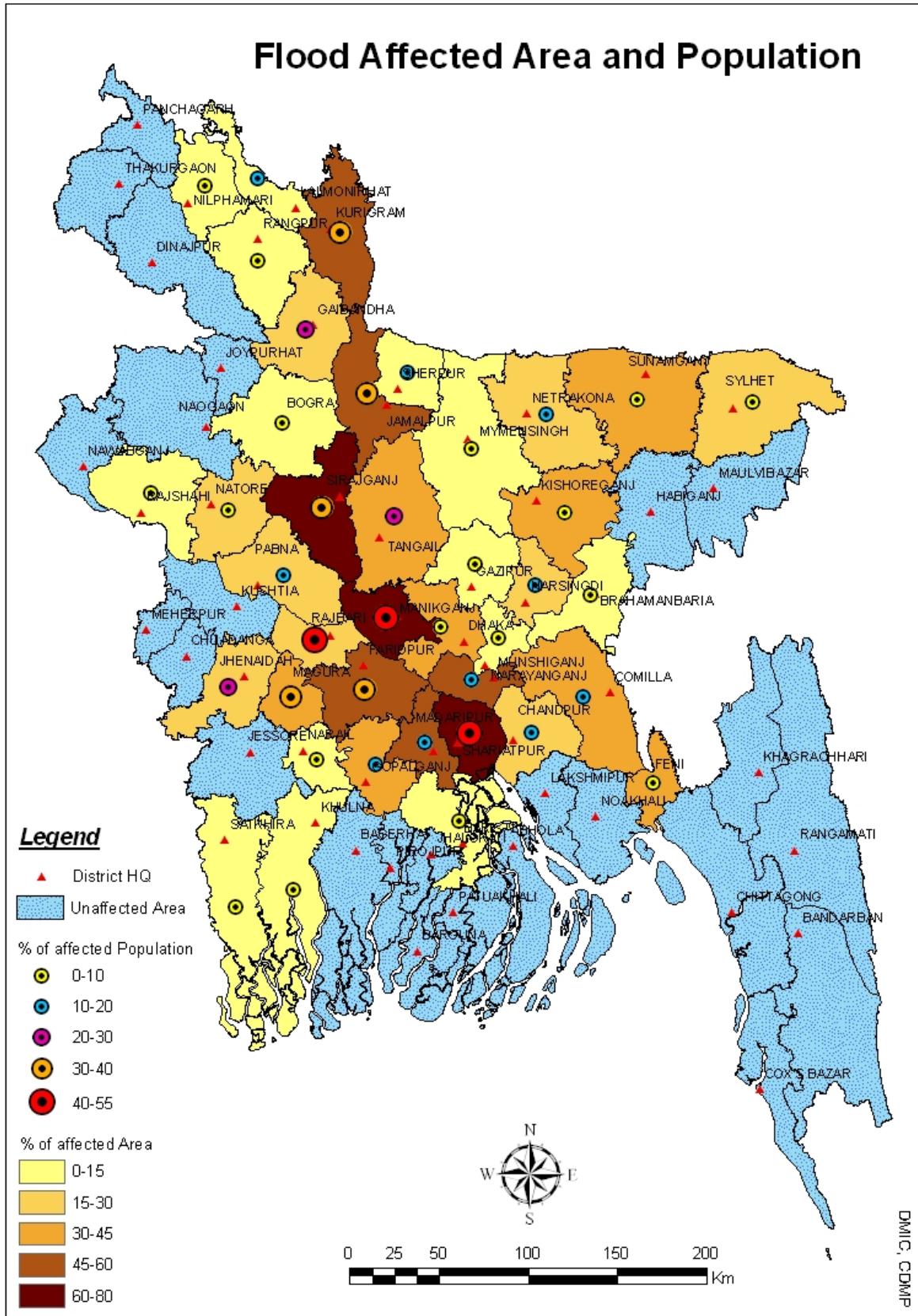


Table1: Primary critical infrastructure damages in Flood 2007 identified by Review Team

Districts	Structure and area
Kurigram	Nageswari Kaligonj road, and bridge; Kurigram Ulipur embankment and road
Gaibandha	Breaching of WBD, bramaputra right embankment (BRE) at Ratanpur of Fulchari Upazila; Road maintenance & breached portion of 40 meter in the road from Gaibandha to Blashi ghat; Road maintenance work from Gaibandha to Kamarjani; Regular routine maintenance of Gaibandha Town protection embankment.
Rangpur	Rangpur Town protection and Teesta flood protection embankment in Gangachara and BRE in Kaunia;
Bogra	Routine maintenance of BRE in Bogra; Sarikandi hard point of BRE;
Sirajgonj	Khokshabari Flood protection embankment; Bramaputra Right embankment, River bank protection embankment; Nailchapari to Bhanga orad
Jamalpur	Tarakandi-Bhuapur road protection embankment
Netrokona	Gaokandi Bazar East Side Embankment - About 500m; From Teribazar ferryghat up to newly constructed bridge-approach road with block/protection wall-about 1.5km; From Shibganj bazar to Kullagara –paved road-about 3.0km; Primary School at Killagara UP/Bill Kakarakanda vill, could be used as flood Shelter; From Birishiri -Shibganj ferry ghat to Gaokandi paved- About 4km.
Manikgonj	Damages of Dhaka-Aricha road
Faridpur	Mirakanda Bridge in Nagarkanda upazila I; part of the embankment ; Chagaldi Bridge in Nagarkanda was totally abolished along with embankment. Now the gap is more that 3 times of the actual bridge. Embankment near Charchagoldi is washed away nearly 100 yards of the embankment; Boutipara bridge damaged and replaced by baboo bridge by the local authority to cross the river; Road near Benokdia-Laskerdia under Nagarkanda is totally damaged, more than 200 feets; Bhawakdia-Mia Bari bridge in Nagarkanda bridge damaged.
Shariatpur	Dularchar-Shakhipur road and three bridges.
Comilla	Gumti river embankment; Batakandi jahapur road
Chandpur	Partially damaged Meghna-dhangoda Irrigation project;
Sylhet	Road between Sylhet and Golabganj; Damage of Dyke by the bank of river Kushiara river right embank and road; Damage of Embankment at Dakkhin Chara of Shaola Union under Biani Bazar Upazila of Sylhet district;
Sunamgonj	Waiskhali of Sunamgonj road

Table 2: Summary of Initial Flood Damage Estimates of Flood 2007

SI No	Sector	Department/Agency, Ministry (Data Source)	Damage elements	Damage cost (Million BDT)	remarks
Food and Agriculture					
1.	Agriculture (crop)	Department of Agricultural Extension (DAE), Ministry of Agriculture	Crop (Transplanting aman seedlings, jute, vegetables, T aman, B. Aman and other crops)	42165.44	Private land and farms. BD 22270.63 in 1 st spell flood and 19895.25 in 2 nd spell flood. These losses are from rehabilitation budget 1064.8 .
2.	Livestock	Department of Livestock Services, (DLS) , Ministry of Fisheries and Livestock	Cattle, buffaloes, sheep, goats, chicken, ducks, forages and straw	608.55	Included housing damages of 2794 farms of large ruminants and 5412 poultry firms. Rehab budget 643.55 .
3.	Fisheries	Department of Fisheries (DoF), Ministry of Fisheries and Livestock	Fish fingerlings, freshwater fishes, shrimps/prawns, pond embankments	1964.95	This data included 7 govt. fish farms
4.	Deep and Shallow tube well	Barind Multipurpose Development Authority (BMDA), Ministry of Agriculture	Pump house and Deep tube-well machineries and irrigation canals	509.40	While visiting field the damage of Deep Tube-wells were observed and reported but no data.
5.	Seeds & irrigation	Bangladesh Agriculture Development corporation (BADC), Ministry of Agriculture	Pump house, underground pipe line, water pump, control structure and connecting roads	10.00	BADC Faridpur-Gopalgonj-Rajbari irrigation area development project (II phase)
6.	Forest	Forests Department, Ministry of Forest and Environment	Forests, nursery, roads and buildings in forests	37.80	Office of the Chief Conservator of Forest
Infrastructures- Health					
7.	Public health	Department of Public Health Engineering (DPHE), Ministry of Local Government and Cooperatives	Tube-wells (TW) and platforms	137.22	70,367 TWs contaminated and damaged (Tk @ 1950) was calculation factor collected from field (Gaibandha)
8.		Department of Health, Ministry of Health and Family Planning	Health infrastructures (Health Centers, clinics, medicine and other items damages)	344.40	Rehabilitation budget considering the damages
9.		Department of Family Planning, Ministry of Health and Family Planning	Health sub-centers, community clinics	34.42	Director General, Department of Family Planning
Transport, Communication and public works					
10.		Local Government and Engineering Division (LGED), Ministry of Local Government and Cooperatives (MOLGRD)	Roads, bridges and culverts and other infrastructures, approach roads, drain, UP Building, growth centre, embankments	11425.35	The value is for rehabilitation plan of the damaged structures and estimated value for reconstruction.
11.		LGED, MoLGRD	Flood Shelters	45.00	Cost for reconstruction, repair and maintenance of the damaged shelters
12.		Departments Roads and Highways, Ministry of communication	Highway, Roads, bridges and other infrastructures	6904.90	Estimated value of damage element.
13.		Bangladesh Water Development Board, Ministry of Water resources	Embankment, bridge culvert, roads and building, sluice gate, regulator, inlet, outlet etc.	5549.74	Chief, Monitoring Bangladesh Water Development Board

14.		Bangladesh Handloom Board, Ministry of	Handloom	282.26	No damage data, but a rehabilitation plan
15.		Bangladesh Small and Cottage Industries (BSCIC)	Building, roads, culverts and drain	17.00	No damage data, but a rehabilitation plan
16.		Telephone and Telegraph T&T	Infrastructures (Cabinet, telephone pole, cables, Offices)	6.15	The amount was spent already to repair.
17.		Power Development Boards (PDB)	Infrastructures (meters, polls, and transmitter)	94.05	Rehabilitation plan considering damage element
18.		Rural Electrification Board (REB)	Electricity related infrastructures	29.13	Rehabilitation plan considering damage element
19.		Directorate of Relief and Rehabilitation (DRR), Ministry of Food and Disaster Management	Disaster Shelters	73.00	DRR; Cost estimates to reconstruction and repair of the shelters
20.		Directorate of Relief and Rehabilitation (DRR), Ministry of Food and Disaster Management	Bridges/Culverts	13.20	DRR; cost for reconstruction
21.		Bangladesh Railway	Railway infrastructures (rail line and bridges,	370.97	Rehabilitation plan considering damage element
22.		Bangladesh Inland water transport authority, Ministry of Shipping	Infrastructures like Pontoon	367.38	Rehabilitation plan considering damaged element
Education					
23.	Primary Education	Directorate of Primary Education	Primary School buildings and other related offices/infrastructures books and furniture	1114.20	Rehabilitation plan. 8668 primary schools were damaged. 205 new schools were planned
24.	Secondary and higher	Directorate of Education Engineering	Schools, colleges and Madrashes buildings and other related offices/infrastructure, books, laboratory and furniture	430.23	15 fully and 3659 partially damaged (non-govt. and govt.) school, college and Madrasha.
Total BDT				72,534.74	
Total USD (1 USD=68 BDT) million				1,066.69	