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The Background Information: Bangladesh is a land of rivers. Padma, Meghna, Jamuna, Brahmaputra and hundreds of other rivers and their tributaries have crisscrossed the country and have formed its civilization, people's livelihood, culture, identity. The people of Bangladesh are traditionally peace-loving and moderate people, deeply rooted from their surrounded nature in their identity, their professions and livelihoods. Nature has blessed the country with its fertile landscape, beautiful hillocks, the wonder of the earth the Sundarbans, the longest unbroken sea-beach in the world Cox's Bazaar, among others. The country has an approximate area of 147,570 sq. km. bounded between 20°34' to 26°38'N latitude and 88°01' to 92°41'E longitude and has 4,685 km. long unique geographical location (MoFDM, Govt. of Bangladesh, 2008). It has around 133,910 sq. km. of land and 10,090 sq. km. of waterbodies of which 73% are arable fertile land. The physiography of Bangladesh is primarily of two types: a vast plain lands prone to frequent floods and smaller hillocks particularly in the Chittagong Hill Tract and Sylhet areas. It is surrounded by India from three sides with a long 2400 km. border and has a 193 km. border with Myanmar. The country is one of the most over-populated countries in the world with its 150 million (approximately) population and a density of population 950/ sq.km. and an annual growth rate of 1.8%. Bangladesh has a tropical monsoon-type climate. Three seasons are generally recognized: a hot, muggy summer from March to June; a hot, humid and rainy monsoon season from June to November; and a warm-hot, dry winter from December to February. In general, maximum summer temperatures range between 38 and 41 °C. April is the hottest month in most parts of the country. January is the coolest (but still hot) month, when the average temperature for most of the country is 16-20 °C during the day and around 10°C at night (Wikipedia, 2008). Heavy rainfalls are common during the summer/ rainy seasons which also causes frequent floods in the low-land districts. Bangladesh is primarily an agricultural country, although the service sector is currently contributing more than 50% of the country's GDP growth. According to the World Bank, Bangladesh's GDP was US\$ 62.00 billion with a 6.7% annual growth rate in the year 2006. More than 52 % of the GDP is contributed by the service sector, mostly from the garments and ready-made clothes, along with 28% GDP by the industry and a moderate 20% by the agriculture. It has a negative trade balance and the country is heavily dependent on the imports of petroleum products, heavy-industrial goods, machineries, etc. India is the largest formal and informal trading partner. Currently the country is facing a high inflation rate and the local currency rate is continuously falling against US\$. Bangladesh has done considerably better among the developing countries in the front of primary education, enrolment of girls, immunization of the children, infant mortality, birth control, control of many severe diseases like polio, cholera, etc. The country is one of least affected countries in terms of incidence of HIV/AIDS.

The country is highly vulnerable to floods, tropical storms/cyclones with tidal surges, coastal and river bank erosion, water logging, tsunami, earthquake, soil salinity,

landslide, contamination of water by arsenic, etc and these disasters take a heavy toll every year in terms of human lives, animals and poultry, agricultural produces, properties and houses, etc. It is one of the most affected countries of the world in terms of various disasters. The agriculture of country is also badly affected by the natural disasters. The following table will help us to understand the disasters in the last decade in Bangladesh and their severity:

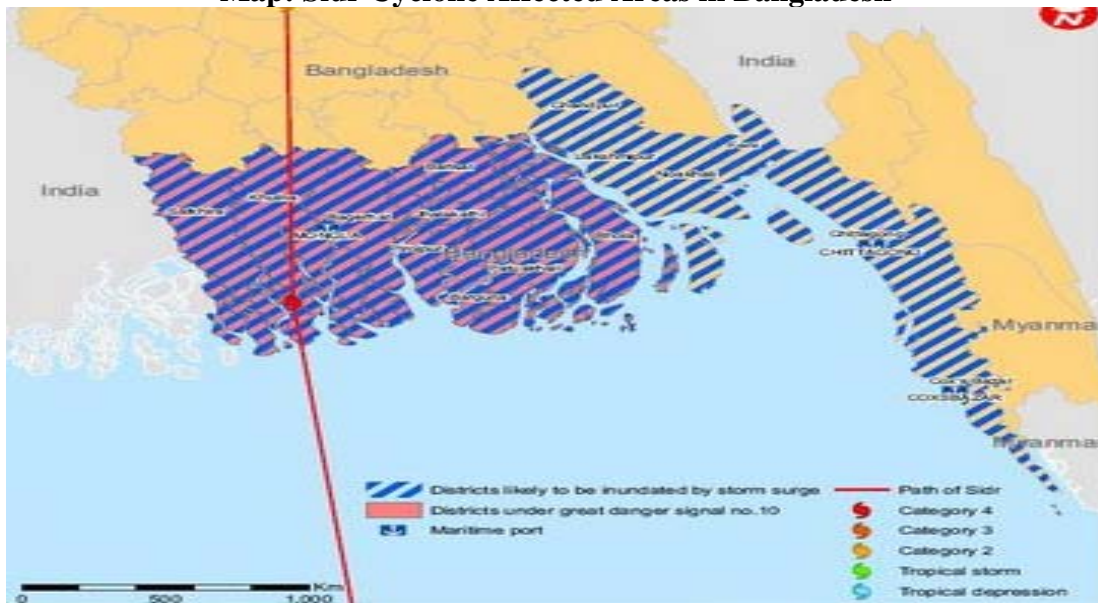
Table-1: Disasters in the Last Decade in Bangladesh

Disaster	Date	Killed (Human Toll)
Wind Storm	15/11/2007	4234
Flood	21/07/2007	1110
Flood	20/06/2004	730
Extreme Temperature	15/12/2002	700
Wind Storm	1/4/2001	193
Flood	11/6/2003	187
Extreme Temperature	15/12/2003	153
Wind Storm	12/6/2004	153
Extreme Temperature	Jan-07	130
Flood	11/6/2007	120

Source: <http://www.emdat.be>

The Description of the Selected Disaster Event: Tropical cyclone ‘SIDR’ stormed Bangladesh in 15th November 2007 and not only damaged thousands of houses, properties and destroyed agricultural produces but also took a heavy human toll. It killed over three thousand innocent human-beings, besides thousands of animals, cattle, livestock and heavy environmental a heavy environmental damage. According to UN nine million people were affected by this powerful cyclone which affected and damaged lives, properties and assets in 30 districts of Bangladesh. According to the Government of Bangladesh, the heavy storm of about 150 km/h with a 20 feet tidal wave affected about 6851147 people from 1611139 families in 200 upzillas /sub-districts by the Sird cyclone where 3292 people, 467469 livestock were killed and more than 35000 people were injured. It also fully damaged about 461819 acres and partially damaged 1027399 acres of crops, 365670 houses were fully damaged and 842657 houses were partially damaged. There were more than 800 educational institutes, hundreds of kilometers of the rural roads and culverts were damaged and thousands of fisheries were destroyed causing millions. The forest department of the government estimated that the cyclone caused severe damage to a vast 1528 sq.km. of forests in the Sundarbans which may take another 40 years to recover, according to the experts. According to the Centre for Policy Dialogue (CPD), Dhaka the cyclone caused property loss worth of US\$ 929 million, the loss of paddy at about US\$ 500 million, roads and bridges at about US\$ 157 million, houses at about US\$ 107 million, and trees at about US\$ 71.4 million.

Map: Sidr Cyclone Affected Areas in Bangladesh



Source: <http://stategis.blogspot.com/2007/11/bangladesh-braces-for-cyclone-sidr.html>

The Government of Bangladesh played its usual key role as the most important institution in the Sidr affected areas in terms of search, recovery, relief, rehabilitation programmes. It also provided warnings of Sidr cyclone but due to remoteness of the affected areas and natural-economic disadvantages the losses couldn't be minimized. The Ministry of Food & Disaster Management, along with district and Upazilla administrations were the main institutions for deliberation, monitoring & evaluation of relief and other works. According to the UN Office, Dhaka the Government of Bangladesh took emergency pre-disaster response to evacuate over 3 million people and used over 2000 cyclone shelter houses and stockpiled foods, medicines, and other required relief items and made strong warnings which helped to reduce the overall human loss. It also expanded the existing 'Vulnerable Group Feeding Programme' to 2.6 million households in 30 districts after the disaster. They also assessed the various losses to undertake recovery measures along with International Organization, NGOs, Private bodies and communities. The overwhelming supports from international bodies like the UNDP, USAID/OFDA, DFID, Red Cross and Red Crescent, Bangladesh etc really very important in post-disaster management in the Sidr affected areas of Bangladesh. The UNDP offered emergency response by providing food items, medicines, cash money, drinking water and water purification power, and temporary shelter like tent, blankets, etc through its local partner organizations. USAID/OFDA provided an immediate assistance of \$ 2.3 million and a total humanitarian assistance by US \$ 14526587 through Red Cross, Red Crescent, Save the Children (USA) and Care. The US Department of Defense/ Air force provided emergency relief operations. It provided 1500 blankets, 2500 hygiene kits, and 4900 water containers to the affected areas. Other international organizations and governmental bodies (UK, Canada, Australia, India, Pakistan, etc.) came up with relief and logistic supports.

Table-2: International Help for ‘Sidr Cyclone’ to Bangladesh

Country	Donation in US \$
Saudi Arabia:	100000000
Japan:	14000000
CERF	9003400
DFID:	5000000
United States	2100000
European Union	2100000
Australia	2000000
India:	1000000
China	1000000
France	735000
Germany	293000
Switzerland	160000
Spain	73500

Source: www.lcbangladesh.org

Many international and local NGOs like Jagrata Juba Sangha (JJS), Social Assistance and Rehabilitation for Physically Vulnerable People (SARPV), Shishu Shurakkha Kendra, Save the Children USA, etc. played very important role in relief, recovery, rehabilitation works. This devastating cyclone can be reminder of the need for a better and improved comprehensive disaster risk management system in Bangladesh. The needs for pre-disaster measures which may reduce various losses are also urgent in Bangladesh. The international community should come ahead to support the Bangladesh for initiating afforestation programmes and preservation of mangroves in the coastal areas.

National Disaster Management System, Bangladesh: In Bangladesh the Government of Bangladesh along with the NGOs/International Organizations and civil societies are working together in disaster management. The main institutions and their respective roles are listed below:

(a) Government of Bangladesh: The prime governmental institution is the Ministry of Food and Disaster Management. The strategic goals of the National Plan for Disaster Management, which aims to materialize the Government’s vision to reduce the vulnerability of the poor to the effects of natural, environmental and human induced hazards to a manageable and acceptable humanitarian level as well as to put in place an efficient disaster management system capable of managing large-scale disasters, are drawn from the SAARC Disaster Management Framework. It constitutes three agencies:

Disaster Management Bureau (DMB): The Disaster Management Bureau (DMB) was created as a professional unit at national level back in 1992 under the then Ministry of Disaster Management and Relief (presently Ministry of Food and Disaster Management). It was assigned to perform specialist support functions working in close collaboration with District and Thana/Upazilla level; authorities and the concerned line ministries under the overall authority of high level Inter-Ministerial Committee (IMDMCC). The DMB also has the responsibility to create public awareness on the severity and risks associated with natural and human-induced hazards and to formulate programs and

projects that will better prepare at-risk communities and public officials to mitigate their consequences. The main duty of this agency is to mitigate disaster risks and manage disaster. The Comprehensive Disaster Management Programme (CDMP) was launched in November 2003 under the Ministry of Food and Disaster Management and funded by the UNDP and DFID, UK. Activities of CDMP have been designed to be implemented in two phases. The first phase of CDMP is a five-year programme comprising of 5 broad components being implemented by different Sub Implementing Agencies (SIAs). The first phase will lay the foundation of the proposed shift as well as undertake design, formulate and mobilize resource of the components under phase – II.

Directorate of Relief and Rehabilitation (DRR): This agency is responsible for post-disaster emergency relief and rehabilitations for the affected people. Its main duty is to plan and execute relief and rehabilitation programmes, direct Disaster Management Committees at the district, upazilla, city, municipal and union levels. Country’s overall relief programmes and emergency responses are carried out by this department.

Directorate General of Food (DGF): The main responsibility of the DGF is to manage and ensure emergency food items for the affected people. The functions allocated to the Directorates of Food are: management and operation of country’s overall food system; implementation of national food policy strategies; establishment of dependable national food security system; to establish uninterrupted supply of food rains, preparation and execution of various development projects in the Food sector; watch over food supply position in the country, procurement and distribution of food grains and other food item including sugar, edible oil, salt etc; to ensure supply of food-stuffs through rationing and other, distribution channel; to ensure stability of the market prices of foodstuffs, to ensure preservation of the adequate food reserve and quality of the stock; matters relating to food budget, accounts and finance, food planning research and monitoring; to ensure minimum price of the produce to the growers of food grains and inquiries and statistics on any of the subjects allotted to this Directorate.

Figure: Institutional Framework for Disaster Management in Bangladesh

Technical Monitoring	Capacity Building	Preparedness & Response
1. Bangladesh Met Department 2. Disaster Management Bureau 3. Bangladesh Water Development Board 4. Flood Forecasting and Warning Center 5. SPARRSO 6. GSB 7. Institute of Water Modeling 8. Soil Research 9. Development Institute	1. Disaster Management Bureau Comprehensive 2. Disaster Management Programme (CDMP) 3. BRAC University 4. Disaster Management Programme 5. Water Resources Planning Organizations 6. Bangladesh University of Engineering & Technology Dhaka University	1. Ministry of Food and Disaster Management 2. Disaster Management Bureau 3. Directorate of Relief and Rehabilitation 4. Fire Services and Civil Defense Department 5. Disaster Emergency Centre of Armed Forces Division 6. Bangladesh Red Crescent Society 7. Cyclone Preparedness Programme 8. Specialized NGOs

Source: Ministry of Food & Disaster Management, GoB

(b) NGOs/International Organizations: International bodies like the UNDP, Bangladesh Red Cross and Red Crescent Society, USAID, ActionAids, Care, Oxfam, DFID and many local NGOs and micro-credit institutions are playing a great role in financing, advising, capacity building, etc. for disaster management in Bangladesh.

Strengths and Weaknesses of the National Disaster Management System:

The Government of Bangladesh is commitment towards the reduction of human, economic and environmental costs of disasters by enhancing overall disaster management capacity. Ministry of Food & Disaster Management is the apex body for disaster management in Bangladesh. The plan and conduct of disaster management by the government involve preparedness, response, recovery and mitigation as key notes for building up self-reliance of the community people. Community participation is considered as a critical input of disaster management by the newly adopted comprehensive disaster management plan. The government has so far constructed 2,023 cyclone shelters and 200 flood shelters and trained 50,000 people through 500 courses/ workshops/ seminars for capacity building. It has formulated a set of mechanisms to maintain proper co-ordination amongst the concerned Ministries, organizations and line agencies and also to ensure their effective functioning during emergency (MoFDM, 2008).

The strengths of the disaster management policy of the Government of Bangladesh can be briefly identified as:

- (i) The government has adopted a comprehensive disaster management mechanism (CDM) rather than a traditional approach of post-disaster management. The main motive behind the paradigm shift of the governmental policy is to minimize the overall casualties of lives, properties and protect environmental degradation;
- (ii) Integration of all stakeholders: government and its central, regional and local bodies, civil societies, educational institutions, NGOs, and other important parties are a real strength of the policy which will make a significant difference in overall disaster management in Bangladesh;
- (iii) International bodies/organizations like the UNDP, USAID, DFID, Oxfam, Care, Red Cross & Red Crescent Society, Save the Children, etc. and their relief and rehabilitation services in Bangladesh along with the government are really playing a great role in saving thousands of affected/vulnerable people in the disaster affected/ prone areas;
- (iv) Decentralization of the governmental agencies/departments is a right step towards a better management;
- (v) Government of Bangladesh has rightly highlighted the importance of setting up mechanisms to maintain proper co-ordination amongst the concerned Ministries, organizations and line agencies and also to ensure their effective functioning during emergency which is essential for maintaining understanding, joint management and co-ordination;

- (vi) It has given a huge importance on food security for a better disaster management as for the affected people the most important and primary need is ensuring food relief;
- (vii) The country has also given huge importance of a common South Asian Disaster Mechanism which will ensure a better disaster management in the region by appropriate research, publication, data sharing, joint action and co-operation;
- (viii) The setting up a separate ministry for disaster and food security is also considered as very important initiative for this disaster prone country helps to take quick and timely actions to mitigate hazards, initiate appropriate preparedness policies and post-disaster operations;
- (ix) The government has also taken initiatives for awareness programmes through education, media and seminars/conferences/ workshops, etc;
- (x) It has also given importance of the use of modern science and technology for hazards mapping, identification, preparedness, disaster warning, etc;
- (xi) The government has also taken initiatives for various assessment programmes which are very crucial in comprehensive disaster management.

After all these initiatives and strategies still Bangladesh is one of the most disaster affected countries in the world. The statistics of casualties of lives, resources, environmental degradation are huge and they cost a sizeable percentage of the country's GDP growth every year. Although the country has taken many important steps towards a comprehensive disaster management but still it needs to go a long way for their proper implementations. The following weaknesses are worth-mentioning about the present disaster management practices in Bangladesh;

- (i) There is much bureaucracy and red-tapism in relief and rehabilitation programmes which is a major obstacle in proper disaster management;
- (ii) The administration and politicians are highly corrupted and thus the affected /targeted people are often left without any relief, benefits;
- (iii) The rural communication facilities are not much improved. Lack of appropriate transport facilities caused unwanted delay in post-disaster relief, search and rehabilitation facilities (in the recent Sird Cyclone the rescue teams, NGO workers and food, medicine items were delayed due to this problem);
- (iv) Lack of electrification is the main reason for lesser awareness among the vulnerable people;
- (v) More shelter-houses and safety nets are needed in the disaster prone areas which may save thousands of children, women, elderly people;
- (vi) Regional warning systems can significantly reduce the casualties;
- (vii) Introduction of local / regional level Information Technology and GIS facilities may improve the overall disaster management system of the country;
- (viii) There is no appropriate mechanism for compensation of the affected people;
- (ix) More initiatives like the large-scale afforestation programme, conservation of mangroves, projects to stop river-bank erosion, etc. can make a significant difference in disaster management

Recommendations for Improvement: The following recommendations can make a difference in the country's disaster management system:

Recommendation-I: Identifying and categorizing disaster prone zones/regions on the basis of severity, vulnerability and types of disasters;

Recommendation-II: Improve the communication and electrification facilities in the vulnerable areas which will facilitate quick and hassle-free relief and rescue operations;

Recommendation-III: Initiate massive disaster awareness through course curricula, seminars, conferences, radio, TV, newspapers, etc;

Recommendation-IV: Ensure corruption and bureaucracy free relief facilities;

Recommendation-V: Take expert opinions and guidance in designing important projects for hazards and risk identification, mitigation, preparedness and post-disaster management;

Recommendation-VI: More co-operations and collaborations with the donor agencies but encourage more of local resource creation and resource generation;

Recommendation-VII: Integration of local bodies, private organizations, schools/colleges, religious institutions and services of religious leaders to make awareness of disaster management and participate in post-disaster management;

Recommendation-VIII: Encourage private sectors to participate in disaster management system through disaster insurance, raising resources;

Recommendation-XI: Make appropriate urban planning for cities like Dhaka, Chittagong which can cause a huge human and resource toll in disasters like earthquakes.

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