



## Disaster Mitigation On-going Practices in Bangladesh

### Introduction:

Bangladesh has unique geographical location in South Asia and geologically a part of the Bengal Basin, one of the largest geo-synclinals in the world. The country is well within the tropics, bounded between 20°34' to 26°03' N latitude and 88°01' to 92°04' E longitude having an area of 147,570 sq. km. approximately. It has 4,685 km. long boundary of which the coastline is 710 km. long, all are lying along the Bay of Bengal. The land is largest delta in the world. The delta is very active because of the process of its alluvial deposits, behaviour of the river system and the tectonic movements. In its unique location the delta is at the lower part of the basins of three mighty rivers, the Padma (known as the Ganges in India), the Brahmaputra and the Meghna. These mighty rivers converge and meet at a place within the country prior to their discharge into the Bay of Bengal. The country is characterized by the flat terrain of alluvial soil criss-crossed with an intricate system of over 230 rivers, canals and streams. It is also the very geographical location which places Bangladesh in such a way that the Himalayan range remains to its north and its southern coast is at the northern tip of the Bay of Bengal which converges near the coast like a funnel towards the Meghna estuary. Because of such location, Bangladesh is one of the most highly disaster prone countries of the world. The country, with its population of about 140 million and per capita GNP of US \$ 370 is visited frequently by various natural disasters such as cyclones and associated storm-surges, floods, droughts, tornadoes, river-bank erosions and earthquakes. These disasters, as happened in the past, continue to impact seriously on the society in terms of grievous human casualties, economic and social losses, disruption of livelihoods and degradation to environment.

### Evolving Disaster Mitigation Strategy in Bangladesh:

In the past, disasters in Bangladesh were largely considered to be the acts of God and thought to be beyond any human remedy. As such, necessity was not felt for undertaking coordinated activities to minimize risks and losses except temporary Government responses to distribute relief during post-disaster phase without taking into account the socio-economic implications of these events. Efforts had never been made to recognize dependence of development on proper handling of disasters. But over the years in the recent past, the Government of Bangladesh (GoB) has been giving increasingly more emphasis on ways and means to reduce human, economic and environmental costs of disasters in Bangladesh, through enhancing in particular the national capacity of disaster mitigation to address management of all related aspects in respect of planning for and responding to disasters. This changing concept for the whole process of risk minimization activities identifies crucially not only disaster mitigation, but also other elements of disaster management i.e. preparedness, response, recovery and development. This broad concept is relatively new in Bangladesh but now firmly rooted. GoB has perceived that disasters costing millions of dollars to the national economy can be alleviated on the basis of national and international experiences, modern technology and knowledge. The Government firmly believes that with some elementary preparedness and preventive measures such as hazard and risk analysis, land-use zoning, building codes, training and awareness build-up, basic institutional arrangements, field level action planning, etc. disaster mitigation can be highly cost effective.

### Current Disaster Mitigation Programmes:

Based on the new concept of disaster management, GoB has given equal importance to both structural as well as non-structural mitigation measures keeping in view the aspect of better coordination within overall disaster management system. It is rather strongly believed by the GoB that non-structural mitigation measures need to be complemented by structural mitigation measures in order to modify or reduce some disaster effects. The programmes on disaster management in Bangladesh focus equally on structural and non-structural practices meant for disaster mitigation :

- a. **Structural Mitigation:** As part of structural measures, the GoB with its own and external resources has so far constructed 1,841 cyclone shelters and 200 flood shelters for evacuation of people exposed to impending cyclone as well as flooding. In addition, during the last four decades 482 small, medium and large water and flood control projects have been implemented. Of these, more than 400 projects were implemented after liberation war in 1971. Through these projects, about 8,200 km. long flood protection embankment, drainage channels of total length 3,400 km. and 9,000 sluice gates and regulators on different rivers and canals as safety measures against inundation by tidal waves, storm-surges and flooding have been constructed.
- b. **Non-structural Mitigation:** Non-structural mitigation practices pursued by the GoB focus on i) preparedness and possibilities for action to reduce risks and losses, and ii) better coordination mechanisms between all actors involved (GO, NGO and community people at the grass-root level) during all phases of disaster. Such practicing measures under the just completed project : "Support to Disaster Management" involve :
  - i. Legislation, Policy and Plan
  - ii. Training and Public Awareness
  - iii. Institutional Arrangements
  - iv. Warning Systems
  - v. Local Disaster Action Plans
- i. **Legislation, Policy and Plan:** The Disaster Management Legislation (Act) has already been drafted and is now under consideration by the GoB. The Act is aimed at establishing a machinery working through the State and Local Governments and public corporations and clarification of where responsibilities lie, and providing for the formulation of disaster management plan and policy relating to preparedness and emergency measures and rehabilitation programmes to deal with disaster and thus ensuring an effective and organized administration of comprehensive and systematic disaster management with view to the preservation of social order and the security of public welfare.

Clear and Comprehensive National Policy on Disaster Management and National Disaster Management Plan have been designed in draft form under the project completed in June, 2002. Both the drafts are also under consideration of the GoB at present. The policy involves accurate definition of disaster threat, organizational arrangements which are required to prepare for, responding to and recover from disaster events, assessment of resources available to deal with threat and how national disaster policy interlocks with other national policies of development. The aim of the draft disaster management plan has been spelt out to anticipate future situations and requirements, thus ensuring the application of effective and coordinated counter-disaster measures. The plan also covers both planning at normal times for aspects like prevention / mitigation, preparedness, response and recovery, and also planning for operational activities concerning mobilization and deployment of national resources, requests for international assistance and so on immediately before, during and immediately after the disaster.

- ii. **Training and Public Awareness:** Disaster Management Bureau (DMB) established in April, 1993 as a dynamic professional centre of excellence under the administrative control of the Ministry of Disaster Management & Relief (MDMR), Government of Bangladesh (GoB) has conducted 447 training courses / workshops / seminars. About 35,000 participants attended the programme covering government and semi-government officials of different levels, elected public representatives, NGO officials, representatives of mass media, teachers, religious leaders and members of fishermen community. Besides, DMB has developed and tested Disaster Management (DM) training modules and has been supporting holding of disaster management training workshops in the regular courses of 25 national training institutes like BPATC, BCS Admin Academy, BARD, NAEM, IUBAT, etc.

As part of public awareness activities booklets containing public information about cyclone, flood, earthquake, etc. calendar, poster depicting disaster points are regularly printed and distributed upto grass-root levels by DMB. The GoB has already declared last working day of March every year as National Disaster Preparedness Day (NDPD) as part of public awareness build-up programme and the country has been observing the Day from national down to the union levels since 1998. On the basis of acquired experiences in facing disasters, DMB at the guidance of MDMR has also published both in Bengali and English a guidebook entitled 'Standing Orders on Disaster' (SOD) for use by all actors involved in disaster mitigation. The SOD has been distributed upto all disaster prone unions, upazillas and districts, and it clearly defines the functions of different line ministries, departments and agencies at the time of disaster and post-disaster phases. To raise awareness among the students on various common hazards / disaster management issues, a chapter on disaster management and concept of disasters affecting Bangladesh have been included in National Curriculum for the children aged 08-17 years (classes V - XII).

- iii. **Institutional Arrangements:** The GoB has taken a number of significant steps during the last few years for building up institutional arrangements from national to the union levels for effective and systematic disaster management facilitating mitigation to the sufferings of disaster victims in Bangladesh. These are :

1. Naming of the Ministry of Relief and Rehabilitation as the Ministry of Disaster Management & Relief (MDMR).
2. Establishment of a disaster management organization named Disaster Management Bureau (DMB) in 1993.
3. Establishment of Council and Committees at the national, district, upazilla and union levels.
4. Establishment of Emergency Operations Centre (EOC) at the MDMR for information exchange during emergency period related to impending disaster.

### The Council and the Committees:

#### At National Level

- i. National Disaster Management Council (NDMC); headed by the Prime Minister to formulate and review the disaster management policies and issue directives to all concerned.
- ii. Inter-Ministerial Disaster Management Coordination Committee (IMDMCC); headed by the Minister in-charge of the Ministry of Disaster Management & Relief (MDMR) to implement disaster management policies and decisions of NDMC / Government.
- iii. National Disaster Management Advisory Committee (NDMAC); to be headed by an experienced person having been nominated by the Prime Minister.
- iv. Disaster Management Training and Public Awareness Building Task Force (DMTATF); headed by the Director General of Disaster Management Bureau (DMB) to coordinate the disaster related training and public awareness activities of the GO, NGO and other organizations.
- v. Focal Point Operational Coordination Group on Disaster Management (FPOCG); headed by the Director General of DMB to review and coordinate the activities of various departments / agencies related to disaster management and also review the Contingency Plan prepared by concerned departments.
- vi. NGO Coordination Committee on Disaster Management (NGOCC); headed by the Director General of DMB to review and coordinate the activities of concerned NGOs in the country.
- vii. Committee for Speedy Dissemination of Disaster Related Warning Signals (CSDDWS): headed by the Director General of DMB to examine, ensure and find out the ways and means for speedy dissemination of warning / signals among the people.

#### At Field Level

- i. District Disaster Management Committee (DDMC): headed by the Deputy Commissioner (DC) to coordinate and review the disaster management activities at the district level.
- ii. Upazilla Disaster Management Committee (UZDMC): headed by the Upazilla Nirbahi Officer (UNO) to coordinate and review the disaster management activities at the upazilla level.
- iii. Union Disaster Management Committee (UDMC): headed by the Chairman of the Union Parishad (UP) to coordinate, review and implement the disaster management activities of the union.

- iv. **Warning Systems:** In Bangladesh there are two warning systems : one is the flood warning and other one is the cyclone warning system. Both these warning systems are of great concern to the decision makers as well as the general public.
  - a. **Flood Warning System:** Flood warning has been in the state of continuous development since 1972 when Flood Forecasting and Warning Centre (FFWC) was established under the Bangladesh Water Development Board (BWDB). The flood warning system in its evolution has passed through two stages and entered into the third stage in January, 2000 under a project which will continue till December, 2004. During second stage of evolution under a project ending December, 1998 there has been significant improvement in flood Forecasting and Warning system (FFWS) with the introduction hydrodynamic super model MIKE 11 and real time monitoring stations having been increased to 30. With such modernization, FFWS yielded a very productive and successful result during the devastating flood of 1998.
  - b. **Cyclone Warning System:** The existing cyclone warning in Bangladesh has signal numbers inherited from British India. The warning signals have two sets: one for sea-ports and the other is for river-ports. Experiences show that these two types of signal numbers are confusing to the common people. Moreover, the contents of the cyclone warning known as Special Weather Bulletin are not specific for easy understanding by elites, decision makers and general public. Because of these anomalies, growing need was felt from all sections of the society for simplification of the warning signals on the basis of cyclone intensity and less signal numbers, and improvements in the contents of the cyclone warning by making it precise, easy to understand and oriented as per people's requirements. Under the project completed in June, 2002 the cyclone warning signals have been simplified, made specific and easily understandable. The modified cyclone warning is under consideration by the GoB.

- v. **Local Disaster Action Plan:** For coordinated and effective efforts to cope with disaster situation, a well thought, carefully designed and action oriented detailed disaster action plan is of paramount importance to Bangladesh, both at national and local levels. Guided by this realization the DMB under the project 'Support to Disaster Management' completed in June, 2002 made all out efforts to establish Disaster Action Plan at local levels. An elaborate procedure was strictly followed for the preparation of Disaster Action Plans. The draft model action plan was prepared by the DMB and put to debate at a workshop held in July, 1998 and attended by a good number of eminent experts of the country involved in disaster related activities. Based on the outcomes of the workshop, the draft model action plan was modified and finalized. On the basis of the final 'model', the DMB with the help of national consultants has been able, by the end of the project 'Support to Disaster Management' to prepare Local Disaster Action Plan (LDAP) for most disaster prone 29 districts, 84 upazillas, 776 unions and 24 pauroshavas.

The LDAP basically contains three parts. First part deals with union profile both narrative and simple sketch alongwith hazard and vulnerability maps. Second part contains formation of Disaster Management Committee (DMC) and its responsibilities. Final part has all the details of action plan including various volunteer groups (VG) and sub-committees for undertaking responsibilities like :

- a. warning dissemination and precautionary response;
- b. arrangements for evacuation;
- c. arrangements for rescue and casualty care;
- d. arrangements for burial;
- e. control room;
- f. restoration of essential services;
- g. security and protection of property;
- h. damage and needs assessment;
- i. coordination of assistance;
- j. management of relief supplies;
- k. support to rehabilitation;
- l. logistics;
- m. training and awareness build-up; and
- n. testing and updating the plan.

Final part of the LDAP also includes lists for all locally available resources with particulars of owners (if applicable) for use during emergency situation. At the time of preparation, the LDAP has full participation of the local people and the communities. The main purpose of the LDAP is to mobilize local communities in the most disaster-prone areas to prepare and protect themselves, and to increase their own capacities to cope with and recover from disaster without waiting for outside assistance.

### Co-ordination Mechanisms:

To maintain proper coordination amongst the concerned Ministries, departments, line agencies, Local Government Body (LGD) and community people, and also to ensure their proper functioning to mitigate sufferings of the people, the GoB has formulated a set of mechanisms for Council and Committees from national down to the grass-root levels. For the mechanisms to be best operative, the SOD acts as a guidebook.

The high powered NDMC and IMDMCC, developed as effective bodies to promote and coordinate risk-reduction, preparedness activities and mitigation measures, meet twice and four times a year respectively. While NDMC formulates and reviews disaster management policies and issues directives to all concerned, the IMDMCC plays key role in implementing the directives maintaining inter-Ministerial coordination, supervising the services of the Armed Forces as well as NGOs working in the field of disaster management in the country. Under the mechanism there exists a well established organization named Directorate of Relief and Rehabilitation (DRR) within the administrative control of the MDMR wherein EOC is located. The DRR acts during post-disaster emergency situation and operates relief activities for distribution to remote field levels under the supervision and guidance of the Ministry of Disaster Management & Relief (MDMR) / IMDMCC. The MDMR has a small dynamic professional unit known as DMB to perform specialist functions and ensure coordination with line departments/agencies and NGOs by convening meetings of DMTATF, FPOCG, NGOCC and CSDDWS every three months regularly.

The DMB also helps EOC by extending technical support services through MIS/GIS for information exchange. In addition, the Cyclone Preparedness Programme (CPP) also plays very important role during and immediately before cyclone disaster by maintaining coordination with EOC, Bangladesh Meteorological Department (BMD), DMB, NGOs and others and extending direct help to the community people.

The entire mechanism thus meets the requirements of clear policies, provides scope for implementation of NDMC directives and decisions by the high-level IMDMCC on an inter-Ministerial basis, incorporates the role of the MDMR as the responsible line Ministry, provides for the integration of Armed Forces and reflects the crucial role of the DDMCs, UZDMCs and UDMCs.

## **CDMP : A Vision in the future**

Based on the existing achievements and focuses on the 'gaps' in current disaster related project interventions, there has been a growing recognition in Bangladesh that renewed efforts should be directed toward more comprehensive programming that contextualises all elements of disaster handling within a broader risk management framework and in so doing creates a more coordinated programming environment. Accordingly, in mid 1999 the GoB together with UNDP and other development partners agreed to address the issue of risk reduction in a more comprehensive programmatic approach. Hence with the initiative taken in October, 1999 in the direction as agreed upon, Comprehensive Disaster Management Programme (CDMP) is at present nearly in its final stage through long painstaking processes to prepare concept paper, develop framework and formulate programme support document.

CDMP has been designed to adopt an umbrella programme approach that encompasses all aspects of risk management and in so doing facilitates to move from a single agency response and relief strategy to a whole of government holistic strategy that addresses the issue of community vulnerability. CDMP is thus a business strategy. It is a strategic institutional and programming framework that is meant to optimise the reduction of long-term risk and the operational capacities for responding to emergencies and disaster situations related to each of the major hazards or potential emergency situations and action to mitigate sufferings and improve recovery from these events. CDMP is, therefore, a realistic strategy consistent with the GoB's vision for a more comprehensive approach to addressing the issues of risk and vulnerability. CDMP has then the main focus on capacity building, partnership development, community empowerment, research information management and response management.

## **Conclusion**

Bangladesh has an elaborate, established and experienced disaster management system from national down to the union level to mitigate the effects of disaster. As comprehensive control on the natural hazards most frequent to Bangladesh is not possible, Bangladesh will have to live with natural disasters. Living in such condition, the GoB has been continuously making endeavour to make preparedness and mitigation measures under the total disaster management programme (like CDMP) as sufficient as possible so as to ensure sustainable development of the country as a whole. GoB recognises that building of greater self reliance, awareness and empowerment of the people must be a corner stone of policy and strategies related to mitigation measures within the generic term 'disaster management'. Based on this realization, GoB strongly believes that it is now time, at the very beginning of this 21st century, to take pragmatic approach to the whole issue of coordination amongst training, research and management centres so as to reap maximum mutual benefit for the people in distress out of frequent sharing of expertise, experience, knowledge and information. We should put up our best in this logical approach to prepare ourselves for major growth and development in Asia with minimum risk involved from disasters, and make our communities and our nationals safer than ever before.

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**Disaster Management in Bangladesh****Introduction**

Bangladesh is a disaster-prone country of an area of about 1,47,570 sq. km. with population nearing 140 million. The country is well within the tropics and is the largest delta in the world formed by the mighty rivers namely the Ganges, the Brahmaputra and the Meghna. Bangladesh has special geographical feature. It has the Himalayan range to the north. The Bay of Bengal to the south with its funneling towards Meghna estuary and the vast stretch of Indian land to the west. The combined affects of the role played by this special geographical features have significant bearing on weather system of Bangladesh. The weather system are not always favourable. Due to this weather system, Bangladesh becomes the worst victim of natural calamities causing colossal loss of lives and properties. Most of the people of this country are very poor. It is predominantly an agricultural country. The economy largely depends on weather. Major disasters that occur in Bangladesh are : tropical cyclone, tidal bore, flood, tornado, river bank erosion, earthquake etc. A large number of poor people are to live in vulnerable areas of the southern part of Bangladesh. The vulnerability is so miserable that they have to go and settle in the newly accreted land in Bay of Bengal and its surrounding areas which is occasionally hit by tidal bore or devastating cyclone. The adverse impacts of all the natural hazards affecting socio-economic condition need to be reduced for sustainable development. Realization of this reality, the Government of Bangladesh has undertaken a lot of plans and programs for disaster reduction through disaster management.

**Major Disasters in Bangladesh**

Major disasters that occur in Bangladesh are : Tropical cyclone, Tidal bore, Flood, Tornado, River bank erosion, Earthquake etc.

**Outline of Most Severe Disasters**

## I. Cyclone:

- Cyclones are the worst killer;
- The severe cyclone of 12 November 1970 took a toll of 0.3 million human lives in Bangladesh and put property damages to more than one billion US dollars;
- Yet another worst cyclone which hit Bangladesh coast on April 1991 killed 0.14 million people and property damages were more than two billion US dollars;
- The cyclone of 1876, 1919, 1961, 1963, 1965, 1985 and 1988 were also of severe nature.

## II. Floods:

- Floods are another devastating recurring phenomena in Bangladesh;
- The flood of 1988 during August-September inundated 89,000 sq. Km. Areas of 52 districts of the country and caused loss of 1517 human lives;
- The 1998 flood in Bangladesh with unprecedented duration of 65 days inundated 53 districts covering about 100,000 sq. Km. Areas and it took lives of 918 people;
- The severe floods of 1922, 1954, 1955, 1974, 1984 and 1987 are worth mentioning.

## III. Droughts:

- Drought is another severe natural phenomenon which at some intervals visits Bangladesh and causes disastrous crop failures.
- In 1979 the country was hit by a severe drought, which was termed by many as the worst in the recent past.
- Droughts of 1957 and 1972 were of severe nature.

## IV. Tornado:

- Tornadoes during pre-monsoon period hit Bangladesh and cause localized devastation, both in terms of lives and properties.
- Tornadoes of 14 April, 1969; 11 April, 1974; 01 April, 1977 and 26 April, 1989 are noteworthy.

**Disasters over last 15 years in Bangladesh**

Year	Disaster	Death
1987	Flood	1657
1988	Flood	1517
1988	Cyclone	5704
1989	Drought	800
1991	Cyclone	138,868
1994	Cyclone	-
1996	Tornado	545
1997	Cyclone	550
1998	Flood	918
1999	Flood	15
2000	Flood	36
2002	Flood	-
2003	Flood	104

## Earthquake: Potential Threat

The historical seismic data of Bangladesh and adjoining areas indicate that Bangladesh is vulnerable to earthquake hazard. Bangladesh, as a whole, lies in the earthquake zone of which two-third comes under major and moderate fault. In fact, highly seismic belts and fault zones border Bangladesh to its east, northeast and north. These fault zones were instrumental to cause some of the world's severest earthquake in the past. The record of approximately 150 years shows that Bangladesh and the surrounding region experienced seven major earthquakes (with  $M > 7$ ). In the recent past, a number of tremors of moderate to severe intensity had already taken place in and around Bangladesh. As examples, the Chittagong earthquake of 21 November, 1997 ( $M = 6.1$ ), the Bhuj earthquake of 26 January, 2001 ( $M = 7.9$ ) and the Chittagong -Rangamati earthquakes of 27 July, 2003 ( $M = 5.9$ ,  $M = 3.69$  and  $M = 4.79$ ) may be cited. All these indicate, as also apprehended by the geophysicist Roger Bilham, that 'major earthquakes in the Himalayan region may place at risk the capital cities of Bangladesh, India, Nepal and Pakistan as well as numerous other small cities. In Bangladesh a good number of cities and towns with construction boom of high rise building and infrastructural facilities are at high vulnerability due to earthquake hazard. This vulnerability has become all the more alarming because of the existing dense population in urban as well as rural areas. These factors call for critical evaluation of seismic hazard involving major cities in Bangladesh so that proper mitigation measures (both structural and non-structural) may be undertaken before it is too late.

## Disaster Management a general scenario

A large number of poor people are to live in vulnerable areas of the southern part of Bangladesh. The vulnerability is so miserable that they have to go and settle in the newly accreted land in Bay of Bengal and its surrounding areas which is occasionally hit by tidal bore or devastating cyclone. The adverse impacts of all the natural hazards affecting socio-economic condition need to be reduced for sustainable development. On realization of this reality, the Government of Bangladesh has undertaken a lot of plans and programs for disaster reduction through disaster management. Realizing that the sustainable development is hinged with disaster management vis-a-vis risk management, the Government of Bangladesh initiated a project "Support to Comprehensive Disaster Management" in 1993 with overall goal to reduce the human, economic and environmental costs of disaster in Bangladesh. One of the main elements for the development objective of the project was to increase the capacities of the households and local communities in the highly disaster prone areas through establishment of Local Disaster Action Plans (LDAPs) to cope with cyclones, floods and other potentially disaster situations. Training and awareness raising was another main element of the development objective under the project. The project has been completed on 30 June, 2001, making scope for the formulation of Comprehensive Disaster Management Programme (CDMP) for more holistic approach to risk management with support from development partners and international agencies. The present Government of Begum Khaleda Zia attaches importance to CDMP in the context of poverty alleviation and sustainable development.

## Structural and Non- Structural Mitigation

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As part of structural measures, the GoB with its own and external resources has so far constructed 1,841 cyclone shelters and 200 flood shelters for evacuation of people exposed to impending cyclone as well as flood. In addition, during the last four decades 482 small, medium and large water and flood control projects have been implemented. Of these, more than 400 projects were implemented after liberation war in 1971. Through these projects, about 8,200 km. long flood protection embankment, drainage channels of total length 3,400 km. and 9,000 sluice gates and regulators on different rivers and canals as safety measures against inundation by tidal waves, storm-surges and flooding have been constructed.

## Institutional arrangement

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## Community-Based Disaster Management

With the emergent of changing role of the Government and with the increasing participation of public in socio-political activities of the Government, the increasing unusual trend of various natural disasters are posing a fundamental question as to the role of government and how it would manage the disaster and what would be the more rationale and effective way of management. A common consensus is emerging amongst the policy makers, experts and professionals that the Government alone can not and will not properly manage and handle all types of disasters with its machinery which require active participation by the people in any region of a country. In line with this philosophy, involving local level people, leaders and community to provide necessary services and logistics to their victims during and after disaster has been encouraged both in the developed and developing countries. And in recognition to this philosophy a new approach of managing disasters has been evolved known as Community-Based Approach (CBA) which emphasises the total participation of all people facing any hazard or disaster and makes sure to render all possible services to the community. This approach in Bangladesh is being popularized gradually.

## Community-Based Disaster Management Practices in Bangladesh

The existing system for disaster management in the country covers activities at normal times for important disaster management aspects like mitigation /prevention, preparedness, response and recovery. Disaster management has become an event rather than process of development. Linkage in ongoing development program and participation from the community in planning and executing the programs will improve the local capacity and preparedness measures.

### Community Program by the Government:

The Government of Bangladesh under the project "Support to Comprehensive Disaster Management" took a number of initiative for community based disaster management. The program includes development of Local Disaster Action Plan (LDAP), organize quite good number of training and awareness campaign at local level to sensitize and mobilize community people in the overall risk management system. Total 900 numbers of LDAPs had been developed as of today. A good number of training programs were organized by DMB at local level for different disaster management committees. However, sustainable mechanism is being developed for continuation of the training and examining the impact.

### Community coping system:

Many individual communities have their own coping system to face the disasters. Disaster Management Bureau conducted a research on the issue. This is the first milestone in this regard. In the year 2003, DMB organized 06(six) workshops for Community Leaders on disaster preparedness & indigenous knowledge on coping mechanism.

## Programmes and activities for disaster preparedness

Government of Bangladesh has initiated a good number of programmes and activities for disaster preparedness. Under the project "The Rights-based Planning & Monitoring: Disaster Preparedness" 112 training programmes have been completed in 2002 and 119 training programmes have been completed in 2003 covering the disaster-prone districts and sub-districts. The main components of the project are awareness raising, capacity building, community mobilization, etc. This project will continue till 2006. Government & NGO officials, public representatives, community leaders and concerned people are being trained to combat disasters by enlightening themselves on the process of successful integration of risk reduction initiatives.

### DMB's Activities relating to Earthquake

Very recently there has been noticeable attitudinal change amongst the policy makers and disaster managers. While implementing the project 'Support to Disaster Management: BGD/92/002' DMB was assigned by IMDMCC in its meeting on 29 January, 2001 to prepare inventory of available rescue equipment in the municipal cities and towns to be used in the event of possible earthquake and promote earthquake awareness programmes as part of public motivation. In fact, DMB because of its inner quest to prepare people against earthquake threats initiated some awareness programmes earlier in the form of workshop/seminar and publication of booklets. As such, DMB has so far carried out the following activities particularly relating to earthquake hazard:

- Organized two national level workshops on earthquake on 23 December, 1997 and 18 May, 2000 participated by the experts in the field and representatives of different Ministries, departments/agencies and NGOs.
- Arranged a meeting of the representatives of City Corporations and Pauroshavas of high vulnerable areas on 20 August, 2000.
- Prepared a voluminous inventory of equipment and machineries available in different organizations/agencies, which could be used for disaster response and rescue operations in the event of an earthquake emergency.
- Prepared a comprehensive training module on earthquake.
- Prepared and published a Handbook on Earthquake for public awareness with UNICEF assistance.
- Published and distributed Bengali Calendar and leaflets depicting points for public awareness about earthquake risk.
- Sought the list of volunteers of relevant City Corporations and Pauroshavas with proposal to train their leaders on earthquake preparedness.

It is time now to look at disaster management and sustainable development closely not as two discrete items but as inseparable binding issues. Bangladesh peruses the policy of going ahead with mainstreaming of disaster management in all areas of development planning. The pre-requisite to do this, is to re-shape the thinking of the people from top down to the community level. Based on this realization 'gaps' and 'weakness' in the existing systems in Bangladesh. The Comprehensive Disaster Management Programme (CDMP) has now been initiated with the support of UNDP and other development partners. CDMP has been designed to adopt an umbrella programme approach that encompasses all aspects of risk management extending facilitates to move from a single agency response and relief strategy to a whole of government holistic strategy that addresses the issue of community vulnerability.

## Disaster Management Strategy

- After the floods of late 1980s and the devastating cyclone of 1991, the concept of acting only after the occurrence of disaster has been replaced by the concept of total disaster management involving prevention / mitigation, preparedness, response, recovery and development.
- The GoB has, therefore, total commitment towards reduction of human, economic and environmental coasts of disasters by enhancing overall disaster management capacity.
- Efforts have been continuing for optimum coordination and best utilization of resources along-with ensuring community involvement so that they are aware of what they can do for protecting their lives and properties against disasters.
- The plan and conduct of disaster management by GoB involves preparedness, response, recovery and mitigation as key notes for building up self-reliance of the community people.
- For proper handling of disasters, GoB maintains it s efforts in their different directions i.e.

### Disaster Management Practice:

- The existing system for disaster management in the country covers activities at normal times for important disaster management aspects like mitigation/prevention, preparedness, response and recovery.
- Government as part of disaster management have been trying to develop its scientific networking in respect of disaster forecasting and early warning.
- With grant of Japan Government, replacement of radar at Agargaon, Dhaka, establishment of a new radar at Rangpur and a satellite ground receiving station at SWC, Dhaka have been completed last year to enhance the capability SWC of Bangladesh Meteorological Department.

- Substantial progress in the expansion of flood forecasting and warning services (FAP-10) in the country has been made with the help of Danish Hydraulic Institute.

#### Disaster Mitigation:

- GoB gives equal importance to both structural as well as non-structural mitigation measures.
- Structural Mitigation.
  - As part of structural mitigation measures, GoB has so far constructed 2085 cyclone shelters and 200 flood shelters.
  - About 3,931 km. long coastal embankment to protect coastal land from inundation by tidal waves and storm-surges, and drainage channels of total length 4,774 km. have so far been constructed.
- Non-Structural Mitigation.
  - For non-structural mitigation GoB has given emphasis on
    - Legislation & Policy
    - Training and Public Awareness
  - Disaster Management Legislation has been drafted with the purpose of providing for the formulation of disaster management policy relating to preparedness and emergency measures, and rehabilitation program to deal with disaster.
  - As part of training and public awareness nearly 45000 people related to disaster have been trained through 721 courses / workshops / seminars.
  - As part of public awareness activities, booklets containing information about cyclone, flood etc. and calendar, posters depicting disaster points have been regularly printed and distributed up to the grass-root levels.
  - To raise awareness among the students on various hazards/disaster management, a chapter on disaster management has been included in the educational curricula from classes V to XII.
  - GoB has decided to make compulsory a session of at least 02 hours on disaster management in the training curricula of all types of Training Institutes to train officials and non officials.

## Emergency preparedness

During the last few years, GoB has taken a number of significant steps to build up institutional arrangement from national to the union levels for effective and systematic disaster preparedness in Bangladesh. These are:

- i. Establishment of a disaster management organization named Disaster Management Bureau (DMB) in 1993.
- ii. Naming of the Ministry of Relief and Rehabilitation as the Ministry of Disaster Management and Relief (MDMR).
- iii. Establishment of Council and Committees at the national, district, thana and union levels for overall disaster management.

## Emergency Response

- For the purpose of emergency information exchange and relief management, an Emergency Operations Center (EOC) has been established at the MDMR as operational unit.
- EOC gets activated with the first information of the disaster emergency situation and works on the overall direction from IMDMCC/MDMR for handling all aspects of emergency situation.
- The emergency and relief management system during disasters recognizes the key role of the cabinet Secretary in the Inter-Ministerial Co-ordination and in supervising the district administration and ensures the services of the Armed Forces as well as NGOs working in the country.
- Under the system, Directorate of Relief and Rehabilitation (DRR) within the administrative control of the MDMR acts during emergency situation and operates relief activities for distribution to the remote field levels.
- A small dynamic professional unit known as Disaster Management Bureau (DMB) under the administrative control of MDMR performs specialist functions at the time of emergency to help EOC by extending technical support services through MIS/GIS for information exchange.
- In addition, there exists Cyclone Preparedness Program (CPP) which plays very useful role during cyclone.

## Disaster Management Mechanism

- GoB 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.
- For the mechanisms to be operative, a guidebook named `Standing Orders on Disaster` has been published as a basic tool.
- The Standing Orders outline the activities of each Ministry, major Agencies / Departments so as to handle emergency situations efficiently.
- In the efforts of making the mechanisms clear and comprehensive, National Policy on Disaster Management has been designed in draft form for consideration of GoB.
- The initial operational direction and co-ordination for any disaster situation come from the highest level of institutional arrangement (I.e.; NDMC) through second highest authority IMDMCC for overall disaster management in the country.
- The same starts following down through other various levels up-to field levels (i.e. DDMC, UzDMC and UDMC) under the framework of disaster management guidebook i.e. Standing Orders on Disaster.
- The Disaster Action Plans for DDMCs, UzDMCs and UDMCs are aimed at preparing and protecting people at grass root levels and increasing their capacities to cope with and recover from disasters.

## Early Recovery and Immediate Rehabilitation

- GoB has an elaborate system for need assessment at the grass-root levels in which UDMCs and UzDMCs play important etc.

- For quick assessment for both immediate and long-term needs, the pre-designed demand forms are made available to the management committees at the field levels to be filled in and sent to the DDMCs for onward transmission to MDMR/IMDMCC.

## **Comprehensive Disaster Management Program (CDMP)**

### **A Vision in the future**

Based on the existing achievements and focuses on the 'gaps' in current disaster related project interventions, there has been a growing recognition in Bangladesh that renewed efforts should be directed toward more comprehensive programming that contextualises all elements of disaster handling within a broader risk management framework and in so doing creates a more coordinated programming environment. Accordingly, in mid 1999 the GoB together with UNDP and other development partners agreed to address the issue of risk reduction in a more comprehensive programmatic approach. Hence with the initiative taken in October, 1999 in the direction as agreed upon, Comprehensive Disaster Management Programme (CDMP) is about to start functioning.

CDMP has been designed to adopt an umbrella programme approach that encompasses all aspects of risk management and in so doing facilitates to move from a single agency response and relief strategy to a whole of government holistic strategy that addresses the issue of community vulnerability. CDMP is thus a business strategy. It is a strategic institutional and programming framework that is meant to optimise the reduction of long-term risk and the operational capacities for responding to emergencies and disaster situations related to each of the major hazards or potential emergency situations and action to mitigate sufferings and improve recovery from these events. CDMP is, therefore, a realistic strategy consistent with the GoB's vision for a more comprehensive approach to addressing the issues of risk and vulnerability. CDMP has the main focus on Capacity Building, Partnership Development, Community Empowerment, Research & Information Management and Response Management.

## **Conclusion**

Bangladesh is one of the disaster prone countries of the world, with extremely limited resources, its real development is not possible without the integration of disaster mitigation programmes. Our planning thrust is therefore diverted towards disaster management as a major consideration in regional development planning. Bangladesh is striving hard to establish an elaborate and experienced disaster management system from national down to community level to mitigate the effects of disasters. Being aware of the limitations and the vulnerability of the country to natural disaster, the GoB has been making continuous efforts to make Bangladesh a part of safer world in the 21st century and seek help of development partners.

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