

# **Disaster Management Manual**



**Department of Disaster Management**  
**Government of West Bengal**



## Foreword

The Government of West Bengal had published a **Manual for Relief of Distress** in the year 1959. That Manual was a significant step forward from the Bengal Famine Code, 1913 and the Bengal Famine Manual, 1941. Distress of the people arising out of scarcity of food was aimed to be reduced by application of new methodologies. It basically centered on crisis management by the State Government along with normal social welfare activities.

Time has changed, compelling the Government sector to switch over from crisis management attitude to both risk management and crisis management. The importance of risk management has been highlighted by events like Orissa Super Cyclone, 1999, Bhuj Earthquake, 2001 and Tsunami, 2004. Unless preparedness measures have been mainstreamed in development activities and everyday activities of the Government, natural calamities which have always been increasing in number and intensity, will destabilize the civilization.

The State Government has already finalized State Disaster Management Policy. It is necessary to provide a suitable handbook to the practitioners of disaster management in the public sector as guide within a set parameter. I am glad that the first Disaster Manual of a State Government is ready for publication to replace the previous Manual for Relief of Distress. I hope that it will be of great use to the managers of natural calamities at all levels in the State.



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# **AMENDED DISASTER MANAGEMENT MANUAL**

## **Introductory observation**

At present, in the process of administrative evolution, the emphasis is on a holistic view of the problem of Relief. The total approach is shifted to Disaster Management, relief being a part of the total cycle. But Normal Relief Assistance can not be ignored. The State Government constituted a committee comprising Sri Santanu Ghosh, Director of Disaster Management, Sri Debabrata Pal, Joint Secretary of the Department of Disaster Management, Sri Sudhir Dutta, Officer-on-Special Duty & Ex-officio Deputy Secretary of the same Department, Himadri Moitra & Pratik Banerjee, both Disaster Management Officers for proposing amendment to the existing Manual for Relief of Disaster.

## CHAPTER I

### **Observation:**

In last few decades administrative emphasis was given to land reforms and decentralization through Panchayat Raj Institution (PRI) for alleviation of poverty by active participation of the rural poor in the social and economic development programme. Not only social assistance to the people below poverty line at normal period and to the people affected in any emergency event is the responsibility of the Disaster Management Department, but an enhanced area of responsibility to include mitigation and preparedness has been entrusted upon the Department. The existing manual deals mainly with Relief of Distress usually caused by untimely or deficient rainfall, followed by drought. The provisions are designed primarily to deal with distress caused by such drought. In the present case, the manual would deal with the provision of social assistance for people in distress in general and management of natural disasters like flood, cyclone, earthquake, drought, fire, tsunami, pest attack, avalanche, cloud burst and landslide in particular. In last few decades, West Bengal has become a surplus state from a deficit state in agricultural products. The Human Development Report of Govt. of West Bengal also reflects this, "In the last two decades, the State has experienced relatively rapid economic growth.....while SDP (State Domestic Product) growth in West Bengal was below the national average over the 1960's and 1970's, it increased more rapidly than the national average in the last two subsequent decades. This tendency was even more marked in per capita terms..." "Employment patterns have a shift towards more casual and less protected work at margin and there is very little in the form of unemployment benefit." "..... on the whole, incidence of poverty in the West Bengal has come down." The Department of Panchayat and Rural Development is augmenting livelihood opportunities for the rural population, generation of self and wage employment for people below poverty line and providing social security to socially excluded, through the three tier Panchayati Raj institution.

The emphasis of Relief Administration may now be given on social assistance to the people below poverty line who are unable to secure food and have been facing or are likely to face starvation. The emphasis should also be given to mitigation and preparedness in case of disaster. The conviction behind this approach is that development cannot be sustainable unless disaster mitigation is built into the development process. The shift in emphasis originates from the belief that investments in mitigation are much more cost-effective than expenditure on relief and rehabilitation.

### **Relief Measures:**

A shift in emphasis and content of relief measures has taken place from the concept of administering relief as a measure of life saving to measure of social assistance with an awareness of social responsibility in this sphere. The "Gratuitous" concept of relief does not suit this concept. It has been replaced as 'Relief Assistance' in the form of cash and kind.



#### **4. Large-scale disasters to be treated differently:**

Administrative approach is changing from welfare mode to development mode. Moreover, mitigation has to be multi-disciplinary, spanning across all sectors of development. So, the treatment of large-scale disasters is undertaken as the general principle of relief activities.

#### **5. Scope and objects of Private Charity:**

In present socio-economic environment and administrative outlook, there exists no much scope for Private Charity. However, people's participation would be appreciated.

### **1.1. GENERAL PRINCIPLES OF ADMINISTRATION OF RELIEF**

#### **1.1.1 Normal Relief, Calamity Relief and Disaster Management:**

i) **Relief:** Incidence of poverty in West Bengal has come down. But people below poverty line who fall in distress due to different socio-economic reasons, in the event of natural or man-made calamity, due to social disturbances like riot, arson or otherwise and become unable to secure food and face or are likely to face starvation, are provided with relief. People below poverty line may be provided with Normal Relief Assistance, if they can not be provided with employment as there is very little in the form of employment benefit.

ii) **Disaster Management:** State Government is primarily responsible for disaster management. The Department of Disaster Management is the nodal department of the State Government for coordinating all activities relating to the whole cycle of Disaster Management - preparedness, mitigation, prevention, response, relief and rehabilitation. The objective is to integrate disaster mitigation into development planning.

#### **1.1.2. Responsibility of Government for combating distress:**

In the present context of things, government has accepted responsibility to provide Normal Relief Assistance to certain section of people of below poverty line during normal time and to provide relief to the people affected by any natural calamity in time of calamity. The government has also accepted the task of disaster management with a view to reducing risk of the people in time of disaster.

At the district, sub-division and block level, responsibility of such relief and disaster management rests with the District Magistrate, Sub-divisional Officer and Block Development Officer respectively.

#### **1.1.3. Relief Measures:**

The following measures are adopted for administering normal relief and disaster relief:

##### **1. Normal Relief**

- (i) Relief assistance in the form of cash and or kind,
- (ii) Special Relief Assistance (leprosy).

##### **2. Other Assistance**

Economic Rehabilitation Grant,

### **3. Risk Management**

(i) Preparedness: (a) Emergency Response Function (ERF) Planning, (b) Disaster Management Plan

(ii) Mitigation: Contingency Plan at Block and District level.

### **4. Crisis Management**

(i) Relief assistance in the form of kind (in case of natural calamity as well as man-made disaster), (ii) Distribution of Relief Materials, (iii) House Building Grant, (iv) Ex-Gratia Grant to the bereaved families of victim of natural / man-made disaster, (v) Financial Assistance from Prime Minister's National Relief Fund, (vi) Scheme for construction of (a) Relief Godown / Stores, (b) Flood / Cyclone Shelter.

#### **1.1.4. Large-scale disasters to be treated differently: Vide Chapter XIII**

#### **1.1.5. Scope and objects of Private Charity:**

The responsibility for relief operation now rests squarely on the State. To get the responsibility shared and community-based, endeavor should be made to integrate non-official relief with Government operations, wherever required and possible.

#### **1.1.6. Relief and danger of demoralization:**

Although the responsibility not only for preservation of life but also for maintenance of a certain economic standard of people rests with the State in the present context of things, the danger of demoralization should also be guarded against. The energy and initiative of the people themselves will no less count in helping them recover from economic distress. If the relief measures do not stimulate people to work hard to restore prosperity, if they encourage people only to remain passive and to depend unduly on the hope of Government help, the purpose of relief will be defeated. When demoralization sets in, normal economic conditions are difficult to restore. Therefore, only those genuinely impelled by want should be given relief. Great care must be taken to see that relief does not give a fillip to indolence.

## CHAPTER II

**Observation:** The provisions put down in existing manual mostly deal with measures and preparations in the context of combating distress arising out of famine as a consequence of drought. In the present economic scenario of the State, famine is a remote possibility. The present committee has already pointed out that the situation has been changed since then. The administrative emphasis is presently on 'Disaster Management'. 'Drought Management' comes under purview of 'Disaster Management', which is a holistic approach towards disasters. So, it is relevant to introduce 'Disaster Management' in the present state of condition.

## DISASTER MANAGEMENT

### 2.1 Introduction:

West Bengal is prone to different kinds of disasters. Floods are the most common and widespread of all natural disasters and can occur nearly anywhere in the State. Flooding along rivers is a natural and inevitable part of life. Cyclones have also wreaked substantial damage periodically. In addition, there have been other natural calamities, such as drought, earthquakes and landslides, etc.

West Bengal lies along the Bay of Bengal which is exposed to cyclone-related hazards. Among all calamities, the devastation caused by cyclones tends to be the most sudden and severe. However, the effects can be mitigated. Improved forecasting, better disaster preparedness in highly exposed regions and more systematic response by the administration tend to reduce the loss of lives, even if these have not managed to reduce the damage to property and real assets fully.

Districts on the western part of the State, especially Purulia, Bankura, parts of Paschim Medinipur and Birbhum, are drought-prone because of receipt of inadequate rainfall. There is scope to take effective measures through Drought Management activities to reduce the risk of famine.

Landslides are common disaster phenomena in the district of Darjeeling. It is primarily the way of nature to adjust slope stability. But the process has been intensified by human interference mainly through rapid deforestation, incorrect land-use process, etc.

Earthquakes are fairly common in most parts of the State but its frequency is relatively low. Northern districts of the State are affected by massive earthquakes occurring in the Sikkim and Nepal region. Earthquakes in Bangladesh and the Ganga delta in North Bihar have also shaken the State. Useful earthquake prediction not being available till now, earthquake disaster mitigation efforts and preparedness are the only recourse left towards minimizing the effects of earthquakes.

Natural disasters have number of adverse effects on human security. The most obvious immediate negative effect relates to destruction of life and property. There are also implications for livelihood and employment of people in the affected areas, and for the immediate viability of cultivation and other economic activities in the affected areas. Further, floods and cyclones, in particular, give rise to major health hazards, with the threat of

epidemic disease resulting from such calamities being ever present.

It is an accepted fact that occurrence of the natural disasters cannot be prevented altogether but their adverse impact can be reduced substantially by undertaking various preparedness and mitigation measures. When disaster strikes, the best protection is knowing what to do. The impact of disaster can only be combated effectively if we have a rational and objective understanding of them.

## **2.2 DISASTER LIMITS ECONOMIC DEVELOPMENT**

Disaster can wipe out the gains of economic development. Disasters result in the destruction of fixed assets and physical capital, interruption of production and trade, diversion and depletion of savings and public and private investment. At the local level, disaster can seriously impact household livelihoods and push already vulnerable groups into poverty. The loss of income earners, through death or injury, the interruption of production or access to markets and destruction of productive assets, are all examples of ways in which disasters affect local and household economies. The capacity of a household or local community to absorb the impact and recover from a major natural hazard will be seriously limited if already weakened over time by a series of smaller-scale losses.

## **2.3 DISASTER LIMITS SOCIAL DEVELOPMENT**

A population that has been weakened and depleted by natural disaster, particularly when it coincides with losses from malnutrition etc., will be less likely to have the organizational capacity to maintain irrigation works, bundhs in fields for water harvesting, hill slope terraces, shelter belts. Without these social assets, communities become more vulnerable. In addition to the loss of social assets themselves, there are many examples of disaster events destroying the gains of the health, sanitation, drinking water, housing and education sectors that underpin social development.

Women suffer additional stresses in disaster situations and also bear a disproportionate burden of the additional domestic & income-generating work necessary for survival following a disaster event. When women are exposed to additional stresses, the level of social development is reduced.

## **2.4. DEVELOPMENT REDUCES RISK OF DISASTER**

A growing recognition that natural disaster is not only an account of hazard themselves but also of socio-economic condition of societies that render them vulnerable to natural disasters is slowly gaining recognition. This strengthens the argument in favour of long term planning for disaster preparedness and response and its integration with development planning.

1. Development can reduce the vulnerability of disaster, so the development of an area should be according to the –

- Vulnerability of the place
- Ecology of the place
- Active participation of the people.

2. Vulnerability maps should be prepared on macro and micro basis, updated annually. Flood zone maps should be provided to all development authorities with full information of

upstream and downstream habitat.

3. All development projects including irrigation projects should be targeting towards disaster mitigation. They should have a very careful planning and consideration for –

- Ecology and environment,
- Disaster vulnerability,
- Displacement of people, flora and fauna,
- Careful study of upstream and downstream of river.

4. Development schemes should be linked with disaster mitigation. Rural Housing Schemes should be used for constructing earthquake proof and cyclone-resistant houses. Integrated Waste Land Development Projects should be introduced for drought mitigation.

5. The SGSY schemes should be used to create sustainable employment in disaster prone area. The SGRY Schemes should be used to create demand-driven village infrastructures (durable assets) based on the need of the place.

6. Multipurpose Community building that act as Cyclone/Flood shelters should be set up in development projects. The construction of roads, railways etc. should take care of proper drainage system.

## 2.5. Disaster Management

It is the range of activities designed to mitigate the effects of disaster and emergency situations and to provide a framework for helping people at risk to avoid or recover from the impact of disasters. Managing disasters includes steps to be taken prior to, during and after the disaster and involves preparedness, mitigation, response and recovery.

Preparedness for tackling natural disaster in a planned manner is the basic step under Risk Management of Disaster Management. Disaster Management concept virtually envisages integration of risk management and crisis management. Apart from Preparedness, other steps envisaged under Risk Management are Prevention and Mitigation. Crisis Management includes response and recovery. Mitigation includes any activity that prevents an emergency, reduces the chance of an emergency happening, or lessens the damaging effects of unavoidable emergencies. Investing in mitigation steps will help reduce the structural damage, financial loss and crop damage. Disaster Management conceive ignition of trigger mechanism to combat any situation. Trigger Mechanism is nothing but taking prompt action without any delay and taking decision on the spot.

### 2.5.1. Hazard and Disaster

The interface of hazard and vulnerability is disaster. Hazard has the potential to be a disaster.

Disaster = Hazard + Vulnerability

**a) Hazard:** It is defined as the physical event that pose a threat to people, structures or economic assets, geographic area and which may cause a disaster. These may be man-made or natural, occurring in our environment.

**b) Disaster:** “.....A serious disruption of the functioning of a society, causing widespread human, material or environmental losses which exceed the ability of the affected society to cope using its own resources.”

1) The extent of damage from a disaster depends on the impact, intensity and

characteristics of the phenomenon and

2) How people, environment and infrastructures are affected by that phenomenon.

Natural disasters are a potentially serious shock to an economy. Estimation of total cost of disasters are typically based on only the direct, visible, financial impact of a disaster such as damage to homes, hospitals, schools, factories, infrastructure and crops . The true cost of disasters, taking into account less quantifiable effects such as the loss of personal belongings or jobs, widening trade or government deficits, or the increasing scale & depth of poverty, are even higher.

### **2.5.2. Types of Hazards:**

#### **i) Natural Disaster:**

a) Flood, b) Cyclone, c) Earthquake, d) Hailstorm, e) Drought, f) Landslide, g) Erosion, h) Heat wave, i) Tornado, j) Tsunami, k) Avalanche.

#### **ii) Man-made Disaster:**

a) Air, Rail and Sea disaster, b) Fire/ Explosion, c) Building Collapse, d) Industrial Accident and f) Terrorism.

Hazard is also classified as follows:

i) Geological, ii) Biological and iii) Chemical.

i) Geological: a) Earthquake, b) Landslides and c) Dam Failure/Dam Burst.

ii) Biological: a) Bacteria Related, b) Food Contamination and c) Other Fungal.

iii) Chemical: a) Toxic Gases and Nuclear Radiation, b) Food Contamination, and c) Soil Contamination and Pesticides.

### **2.5.3. Vulnerability:**

It is defined as “the extent to which a community, structure, service and geographic area is likely to be damaged or disrupted by the impact of a particular hazard, on account of their nature, construction and proximity to hazardous terrain or a disaster prone area”.

Vulnerability to disasters is a function of human action and behaviour. It is determined by a combination of several factors, including awareness of hazards, the condition of human settlements and infrastructures, public policy and administration, the wealth of a given society and organized abilities in all fields of disaster and risk management.

There is a close correlation between the trends of increased demographic pressure, escalated environmental degradation, increased human vulnerability and the intensity of impact of hazards. Poverty and vulnerability is integrally linked and mutually reinforcing.

#### **Types of vulnerability:**

- i) **Physical Vulnerability:** It relates to the physical location of people and elements at risk i.e. buildings, infrastructure, etc. and proximity to hazard.
- ii) **Socio-economic vulnerability:** This relates to the degree to which a population is affected by the calamity in relation to the prevailing social and economic conditions. The impact of disaster is determined by the event, its effect on people and their environment, as well as the consequential effect on human activities within a given society. These include the size of the economy and its economic structure, and the sectors affected by the disaster.

Some sectors of economy are more vulnerable to hazards than others. Most obviously, the agricultural sector is potentially vulnerable, implying that the countries which rely heavily on agriculture may be particularly threatened by hazards. However, even here, the types of crops cultivated and techniques for growing them play a role in determining the scale of vulnerability.

iii) Psychological Vulnerability: This relates to hopelessness, helplessness, negative attitude towards change, unawareness, passivity, negative belief etc.

**Vulnerability Analysis:** It results in an understanding of the level of exposure to the various natural hazards identified. It is the process of estimating the susceptibility of 'element of risk' to various hazards by

- Identifying what elements are at risk according to hazard type, and
- Analyzing the root causes of why these elements are at risk.

It provides information on (i) sectors at risk-physical, social, economic and (ii) type of risk.

#### **2.5.4. Risk:**

Risk is a measure of expected losses (death, injuries, assets, economic activities etc.) due to a potential hazard (of a particular magnitude) occurring in a given area over a specific period of time. Risk analysis involves determining the probability of event happening and the level of vulnerability of the people that may be affected by the event. Disaster is the realisation of a risk.

### **2.6. New approach towards Disaster Management**

The administrative approach is shifted from post- calamity relief to a new approach towards Disaster Management with an enhanced area of responsibility to include preparedness, mitigation and prevention apart from the present responsibilities of relief, rehabilitation and reconstruction. Another corner-stone of the approach is that mitigation has to be multi-disciplinary, spanning across all sectors of development. Risk Management is incorporated with Crisis Management in the new approach. Risk Management can take place in two ways:

#### **i). Preparedness:**

Preparedness is the readiness of the society to combat a potential hazard. This protective process embraces a measure which enables administration, communities and individuals to respond rapidly to disaster situations to cope with them effectively. Preparedness includes the formulation of viable emergency plans, the development of warning systems, the maintenance of inventories and the training of personnel. It may also embrace search and rescue measures as well as evacuation plans for areas that may be at risk from a recurring disaster.

Preparedness encompasses those measures taken before a disaster event which are aimed at minimizing loss of life, disruption of critical services, and damage when the disaster occurs. All preparedness planning needs to be supported by appropriate legislation with clear allocation of responsibilities and budgetary provisions.

The phases of preparedness planning are ; (i) Risk Analysis, (ii) Capacity analysis and (iii) co-operation and participation.

**ii). Mitigation:**

Mitigation embraces all measures taken to reduce both the effect of the hazard itself and the vulnerability conditions to it in order to reduce the scale of a future disaster. Therefore mitigation activities can be focused on the hazard itself or the elements exposed to the threat. Mitigation, on the other hand, means capacity building of the community or individual vulnerable to hazards.

a) **Capacity Building:** Capacities are strengths and resources, which exist or are present in individuals, households and in the community and which enable them to cope with, withstand, prepare for, prevent, mitigate, or quickly recover from a disaster.

The capacity of a community to withstand disaster is a function of:

- Awareness of the risk associated with disasters,
- Understanding of appropriate responses to disasters,
- Possessing the capacity to respond (training, research, availability of resources, skilled cadres).
- Setting up emergency response mechanisms that mobilize and deploy these trained resources in quick, efficient and systematic manner.

Thus, with capacity building the disaster risk can be brought down.

b) **Assessment:** It is the process of determining the impact of a disaster on a society. It is interdisciplinary process undertaken in phases and involving on the spot surveys and collation, evaluation and interpretation of information from various sources. These surveys concern both direct and indirect losses as well as the short and long term effects.

c) **Awareness Campaign:** The community as an institution in itself is the most powerful in the entire mechanism of disaster administration. Awareness about vulnerabilities is a sine qua non for inducing a mindset of disaster prevention, mitigation and preparedness. In the event of actual disasters, the community, if well aware of the preventive actions it is required to take, can substantially reduce the damage caused by disaster. Awareness and training of the community is particularly useful in areas which are prone to frequent disasters.

d) **Training:** In an effort to sensitise the role players in disaster management, training is essential and inevitable. Functionaries of Government and elected representatives of three Panchayat Raj Institution should be trained and re-trained periodically.

**2.7. Budgetary Allocation for Disaster Mitigation in the Budget of Various Departments of State Governments:**

Each department of the State Government will set apart 10-15 % from its budget provision for specific schemes/projects addressing vulnerability reduction and preparedness. Where there is a self of projects, projects addressing mitigation will be given priority. Mitigation measures shall be built into the on-going schemes/projects.



## **CHAPTER III**

### **ORGANISATION FOR DISASTER MANAGEMENT**

#### **3.1. General**

With the change of time, the age old concept of Relief has been widened into the broader spectrum of Disaster Management. To implement the holistic approach of Disaster Management in our State, its organisational set up should be strengthened from the State level down to the Gram Sansad level.

After strengthening the Panchayat Raj Institutions, the role of Zilla Parishad, Panchayat Samity & Gram Panchayats have become very much important in the planning & implementation of Disaster Management policy.

#### **3.2. Relief Organisation**

Suitable organization has been evolved in this State at all appropriate level to draw up coordinated plans for setting up Disaster Management operations. The unit of Disaster Management organization should be the Gram Panchayats. The Gram Panchayats in an area should be formed into Block, each under a Block Development Officer (BDO). A Disaster Management Officer appointed by the Director of Disaster Management, W.B, is placed under the B.D.O. In the Sub Division, a Sub Divisional Disaster Management Officer (SDDMO) is placed under the Sub Divisional Officer (SDO) and a District Disaster Management Officer (DDMO) is placed under the District Magistrate. In the Directorate of Disaster Management W.B, Disaster Management Officers and Senior Disaster Management Officers are placed under Director of Disaster Management. The Disaster Management organization of this State is running under the Department of Disaster Management, Govt of W.B. The Secretary, Disaster Management Department, is the State Relief Commissioner. The Directorate of Disaster Management, headed by a Director, assists the Secretary of Disaster Management for execution of all Disaster Management Operations at the State level.

#### **3.3 Role of State Relief Commissioner**

The State Relief Commissioner through the office of the Department of Disaster Management plays a direct & active role in the Disaster Management programme of the State. For a disaster that impacts more than one district in the State, the State Relief Commissioner leads the Disaster Management measures using appropriate action plan. The State Relief Commissioner either directly or through District Magistrates, co-ordinates and monitors the disaster management measures using all the resources available with the State Government.

In this phase the State Relief Commissioner would:

- i) Recommend to the State government when disaster needs to be declared
- ii) Supervise and undertake Preparedness, Prevention and Mitigation measures, if necessary, where disaster is declared
- iii) Monitor such works in respective districts.

### **3.3.1. Relief Commissioner to satisfy himself about the preparation**

The State Relief Commissioner should satisfy himself that adequate preparations are being uniformly made in all districts in which distress is anticipated.

### **3.4. Role of District Magistrate**

The District Magistrate plays a co-ordinating role at the district level to ensure that the various Government functionaries in the district effectively carry out the Disaster Management activities in this phase working in close co-operation with Government Departments and local bodies. The role of the District Magistrate in this phase includes:

- i) Ensuring that preparedness, mitigation & prevention-activities are carried out in accordance with the appropriate guidelines,
  - ii) Ensuring that relevant officials in the district possess the knowledge to deal with disaster management issues,
  - iii) Developing an appropriate Disaster Management strategy for the district, taking into account the unique circumstances of the district and prevailing gaps in institutional capacity and resources of the district,
  - iv) Facilitating community training, awareness programmes and the installation of emergency facilities with the support of local administration, NGOs and the private sector,
  - v) Establishing adequate inter-department co-ordination issues related to disaster management,
  - vi) Reviewing emergency plans & guidelines,
  - vii) Involving the community in the planning & development process,
  - viii) Ensuring that local authorities in the district are involved in developing their own mitigation strategies,
  - ix) Ensuring appropriate linkage between Disaster Management activities and planning activities,
  - x) Revising/ Re-assessing contingency plans related to disaster management,
  - xi) Ensuring that proper communication systems are in place,
  - xii) Ensuring that equipments connected with Search & Rescue, especially fire fighting equipments are well maintained & ready to use
- and
- xiii) Contingency plans maximize the involvement of members of the community and NGOs.

### **3.5. Role of Zilla Parishad:**

Under present conditions, Government has accepted full responsibility for fighting different types of disasters and at the district level, responsibility for administration of Relief solely rests with the District Magistrate. Zilla Parishad here plays a pivotal role in every kind of crisis management operation. The services of different district level functionaries of different line departments can be utilised in the management of disasters.

### **3.6 District Disaster Management Officer**

As the representative of the Disaster Management Department, District Disaster Management Officer will assist the District Magistrate in every kind of Disaster Management operations, in the implementation of the policies & principles of the Department and the rules of the disaster management code within their jurisdiction.

### **3.7. Sub Divisional Officer**

The Sub Divisional Officer will supervise Disaster Management operations within his jurisdiction. The Sub Divisional Officer will be in charge of disaster management in the sub division concerned. He will see that relief is being efficiently and economically administered, orders are properly carried out, provisions for medical relief, hospitals & dispensaries are adequate, special precautions are taken to guard the drinking water supply from contamination & pollution, to guard against breaking out epidemics in the disaster affected areas, that the provisions of the disaster management codes and orders of the State government are being fulfilled and that the provisions for the future is being duly made and reports properly submitted.

### **3.8. Sub Divisional Disaster Management Officer**

As the representative of the Disaster Management Department, Sub Divisional Disaster Management Officer will assist Sub Divisional Officer in every kind of Disaster Management operations. He will function as the Secretary in the municipality level disaster management committees. He will assist S.D.O in the implementation of the policies & principles of the Disaster Management Department & the rules of the Disaster Management code within the respective jurisdiction.

### **3.9 Block Development Officer**

As the head of the Block administration, Block Development Officer plays a very significant role in the implementation of Disaster Management operations like Preparedness, Prevention and Mitigation. As the main functionary of the Block administration, he will act in the following sectors:

- i) Monitoring of functioning of all kinds of Disaster Management operations in his area and sending report to the Sub Divisional Officer and other higher authorities,
- ii) To monitor the functioning of all committees related to Disaster Management at the Panchayat Samity and Gram Panchayat level,
- iii) To visit every part of his area and to see that the social assistance measures are promptly, properly & effectively given to disaster victims whenever required and make periodical routine examination/assessment of the socio-economic status of his area,
- iv) To make assessment of fund required for infrastructural reconstruction after any disaster,
- v) Will maintain all the accounts of the Disaster Management operations that have to be started during any natural calamity,
- vi) He will prepare Block Disaster Management Plan every year and also revise it from year to year.

- vii) He will undertake preparedness, mitigation and rehabilitation measures every year.
- viii) He will keep the Block level India Disaster Resource Network updated every year.
- ix) After every calamity, he will prepare and send preliminary report in CA II form to the Sub Divisional Officer at once.

### **3.10. Block Disaster Management Officer:**

As the representative of the Department of Disaster Management at the Block level, Block Disaster Management Officers play an important role in the evaluation, assessment and management of block level disaster management operations. The services of Block Disaster Management Officers are placed at the disposal of respective Panchayat Samities. They will discharge their responsibility with regard to the Panchayat Samity in addition to their normal duties for execution or implementation of schemes already assigned to the Gram Panchayats and Panchayat Samities by the Department of Disaster Management.

Block Disaster Management Officers are one of the members of the Nari-Sishu Unnayan-Janakalyan-O-Tran Sthayee Samity. As per clause (b) of Section 125 (3) of West Bengal Panchayat Act, 1973, the official members of the said Sthayee Samity shall select in such manner as may be determined by the Karmadhyaksha, one of such members to act as Secretary to the Sthayee Samity. The main duties of the Block Disaster Management Officer in the Block level Disaster Management operation are mentioned below:

- a) To assist the Block Development Officer in every kind of decision-making in connection with Disaster management operations,
- b) Helping in sending periodical reports and returns in the implementation of various programmes related to disaster management to the appropriate authority,
- c) To organize Gram Sansad, Gram Panchayat & Panchayat Samity level Disaster Management related meeting,
- d) To check the priority lists prepared for distribution of Relief Assistance (both normal & special) and cause any enquiry in this regard if any discrepancy arises or if found inadequate,
- e) To remain present at least once a month at the time and place of distribution of Relief Assistance and also to check whether the muster-rolls are being properly maintained,
- f) To inform Block Development Officer regarding the socio-economic condition of different poverty-stricken areas within the jurisdiction and advise Block Development Officer regarding combating any kind of disaster in these areas well in advance,
- g) To cause enquiries into application for Economic Rehabilitation Grants, Special Relief Assistance and distribution Relief materials,
- h) To help in proper maintenance of accounts in respect of Relief matters and also in clearing outstanding Audit objections in the Block offices and the Sub Division offices, Specific assistance as sought for by the Chief Accounts officer and the Director of Disaster Management should be given,
- i) To make detailed estimate of loss and damage during and after any disaster and prepare the reports,
- j) To monitor the working and distribution of Relief articles by N.G.Os in their area and to furnish regular reports,

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- k) To help in implementation of Rehabilitation programme for Repatriates from Burma, living in registered co-operative societies, monitoring and follow-up actions connected therewith,
- l) To keep contact with the Prodhans of the Gram Panchayats (GP) and advise them in the preparation of Gram Panchayat Disaster Management Plan,
- m) To obtain utilization certificate from Prodhans of GPs in respect of Relief assistance distributed through Prodhans from the Block,
- n) To keep constant contacts with members of the Gram Panchayats, Panchayat Samity, extension officers of all Line Departments, Non Governmental Organizations/ CBO.

### 3.11. Advisory Committees at different levels :

#### A) State Disaster Management Committee

1. Chief Secretary, West Bengal	Chairman
2. Pr. Secretary/Secretary, Department of Disaster Management	Convener/Member
3. Pr. Secretary/Secretary, Department of Home	Member
4. Pr. Secretary/Secretary, Department of Transport	Member
5. Pr. Secretary/Secretary, Department of Health & Family Welfare	Member
6. Pr. Secretary/Secretary, Department of Agriculture	Member
7. Pr. Secretary/Secretary, Department of Food & Supplies	Member
8. Pr. Secretary/Secretary, Department of Science & Technology	Member
9. Pr. Secretary to Chief Minister	Member
10. Pr. Secretary/Secretary, Department of Irrigation & Waterways	Member
11. Pr. Secretary/Secretary, Department of P.W.D.	Member
12. Pr. Secretary/Secretary, Department of Municipal Affairs	Member
13. Pr. Secretary/Secretary, Department of Urban Development	Member
14. Pr. Secretary/Secretary, Department of PHE	Member
15. Pr. Secretary/Secretary, Department of ARD	Member
16. Pr. Secretary/ Secretary, Department of Power	Member
17. Pr. Secretary/ Secretary, Department of W.I&D	Member
18. Pr. Secretary/ Secretary, Department of Fisheries	Member
19. Pr. Secretary/Secretary, Department of Forest	Member
20. Pr. Secretary/Secretary Department of Finance	Member
21. Pr. Secretary/Secretary, Department of Panchayet & Rural Development	Member
22. Pr. Secretary/Secretary, Department of Environmental & Pollution Control	Member
23. Pr. Secretary/Secretary, Department of Housing	Member
24. Pr. Secretary/Secretary, Department of Women & Child Development & Social Welfare Department	Member
25. Commissioner, Kolkata Municipal Corporation	Member

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26. D.G & I.G of Police, West Bengal	Member
27. Commissioner of Police, Kolkata.	Member
28. Regional Director, R.M.C, Kolkata	Member
29. General Manager, Eastern Railways, Kolkata	Member
30. General Manager, South Eastern Railways	Member
31. General Manager, Metro Railway	Member
32. General Manager, North-East Frontier Railways (Assam)	Member
33. Chief General Manager, Calcutta Telephones,	Member
34. General Manager, Telecom Circle, W.B.	Member
35. General Officer Commanding, Bengal Area, Fort William,	Member
36. Director General, Geological Survey of India	Member
37. Air Officer Commanding, Advance Air Headquarters Eastern Air Command, I. A. F., Fort William, Kolkata.	Member
38. Commander, Kolkata Sub Area. Mukhyalaya, Alipore, Kolkata	Member
39. General Manager, Indian Oil Corporation, Kolkata	Member
40. Inspector General, B.S.F, West Bengal	Member

**B) State Disaster Management Group**

1. Hon'ble Chief Minister, West Bengal	Chairman
2. Minister of Disaster Management, W. B.	Executive Chairman
3. Minister-in-Charge of Finance Deptt.	Member
4. Minister-in-Charge of Health & Family Welfare Deptt.	Member
5. Minister-in-Charge Civil Defence Deptt	Member
6. Chief Secretary, West Bengal	Member
7. Principal Secretary, C. M's. Secretariat	Member
8. Principal Secretary, Department of Disaster Management	Convener/ Member
9. Principal Secretary, Department of Food & Supplies	Member
10. Principal Secretary, Department of Water Investigation	Member
11. Principal Secretary, Department of Public Works	Member
12. Principal Secretary, Department of Public Health Engg.	Member
13. Principal Secretary, Department of Health & Family Welfare	Member
14. Principal Secretary, Department of Irrigation & Waterways	Member
15. Principal Secretary, Department of Power	Member
16. Principal Secretary, Department of Agriculture	Member
17. Principal Secretary, Department of Panchayat & Rural Development	Member
18. Principal Secretary, Municipal Affairs Department	Member

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19. Principal Secretary, Cottage & Small Scale Industries Deptt	Member
20. Commissioner, K. M. C., Kolkata	Member
21. D. G. P. & I. G., West Bengal	Member
22. Commissioner of Police, Kolkata	Member

**C) District Disaster Management Committee**

1. Sabhadhipati, Zilla Parishad	Chairperson
2. District Magistrate	Executive Chairperson
3. Additional District Magistrate (D M)	Member
4. Additional District Magistrate (General)	Member
5. Additional District Magistrate (Zilla Parishad)	Member)
6. Superintendent of Police	Member
7. Chief Medical Officer of Health	Member
8. Superintending/Executive Engineer, P.W.D/P.H.E I&W.D/Minor Irrigation Deptt	Member
9. Principal Agricultural Officer	Member
10. Divisional Engineer, WBSEB	Member
11. District Food & Supply Officer	Member
12. Deputy Director, Animal Husbandary	Member
13. Engineer, Pollution Control Board	Member
14. Factory Inspector	Member
15. District Level Officer, Forest Deptt/Fisheries Deptt/ Animal Resources Development Deptt.	Member
16. District Level Authority of Railway Ministry	Member
17. District Level Authority of Army/ Airforce/ Navy/B.S.F/Coast Guard	Member
18. District Level Representative of Indian Oil Corporation	Member
19. District Telecom Officer	Member
20. District Disaster Management Officer/Officer in Charge of Disaster Management	Convener /Member
21. Chairperson of Municipal Body	Member
22. Chairperson, Development Authority	Member
23. Members of Legislative Assembly	Member

**D) Sub Divisional Disaster Management Committee**

1. Sub divisional Officer	Chairperson
2. Sub Divisional Disaster Management Officer	Convener /Member
3. Subdivisional Controller of Food & Suppliers	Member
4. Subdivisional Police Officer	Member

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5. Subdivisional Officer (Irrigation)	Member
6. Secretary, Red Cross Society	Member
7. Subdivisional Agriculture Officer	Member
8. Assistant Engineer ( PWD )	Member
9. Do (PWD Roads)	Member
10. Assistant Chief Medical Officer of Health	Member
11. O/C Civil Defence	Member
12. Members of Legislative Assembly	Member
13. Chairperson of all municipality	Member
14. All B.D.Os & All Sabhapaties	Member

### **E) Block level Disaster Management Committee**

1. Sabhapati, Panchayat Samity	Chairperson
2. Block Development Officer	Secretary
3. Block Disaster Management Officer	Member
4. Agriculture Development Officer	Member
5. Block Medical Officer of Health	Member
6. O/C of Police Station	Member
7. Karmadhakshya of Tran Styaae Samity	Member
8. All Pradhans	Member
9. All M.L.A in the block area	Member
10. All block level officers of line departments	Members

### **F) State Disaster Management Authority**

The 'State Disaster Management Authority' has been constituted as per provision of the Disaster Management Act, 2005. with the following members:

i) the Chief Minister of the State, who shall be the chairperson, ex officio,	
ii) Minister-in-Charge, Dept. of Disaster Management	Vice Chairperson
iii) Minister-in-Charge, Dept. of Health & Family Welfare	Member
iv) Minister-in-Charge, Dept. of Finance	Member
v) Minister-in-Charge, Dept. of Agriculture	Member
vi) Minister-in-Charge, Dept. of Public Works	Member
vii) Minister-in-Charge, Dept. of Fire & Emergency Services	Member
viii) Minister-in-Charge, Dept. of Irrigation and Waterways	Member
ix) Minister-of-State, Dept. of Civil Defence	Member

Chief Secretary is the Ex-officio Chief Executive Officer of the Authority.



### **G) District Disaster Management Authority**

District Disaster Management Authority has been constituted vide provision of the Disaster Management Act, 2005 with the following members:

- |                                   |                |
|-----------------------------------|----------------|
| 1. Collector of the District      | Chairperson    |
| 2. Sabhadhipati of Zilla Parishad | Co-Chairperson |

(Provided that in the tribal area, as referred to in the Sixth Schedule to the Constitution, the Chief Executive member of the district council of autonomous district, shall be the co-chairperson, ex officio)

- |   |            |
|---|------------|
| 3. Chief Executive Officer of the District Authority,                                       | ex officio |
| 4. Superintendent of Police,  | ex officio |
| 5. Chief Medical Officer of Health,   | ex officio |
| 6. Not exceeding two other district level officers, to be appointed by the State Government |            |

#### **3.12. Power and function of the State Disaster Management Authority**

The State Authority shall have the responsibility for laying down the policies and plans for disaster management in the State as provided in Section 18 of the Disaster Management Act, 2005.

#### **3.13. Powers and functions of the District Disaster Management authority**

As provided under Section 30 of the Disaster Management Act, 2005, the District Disaster Management Authority shall act as the district planning, coordinating and implementing body for disaster management and take all measures for the purposes of disaster management in the district in accordance with the guidelines laid down by the National Authority and State Authority.

#### **3.14. Powers and functions of the Sub-divisional level advisory committee**

This Committee shall formulate general principles in regard to execution of the policies and plans as laid down by the SDMA and co-ordinate relief activities of the different agencies within the Sub-Division and shall adopt resolutions of an advisory nature on all matters as coming within its purview, and forward the same to the different organs for implementation within the framework of respective constitutions, rules, laws and byelaws.

#### **3.15. District Magistrate's responsibility does not cease**

The formation of the above Committees does not, however, absolve the District Magistrate from his responsibility of administration of relief.

## **CHAPTER IV**

### **RISK MANAGEMENT**

#### **4.1. General**

The unique geo-morphological, climatic and seismic conditions of India make this region particularly vulnerable to natural disasters. Disasters occur with unfailing regularity and the economic and social costs on account of losses caused by the natural disasters continue to increased year after year. West Bengal has a history of recurring natural disasters. Its unique weather and climate system stems from the State's peculiar geography. West Bengal is situated between latitudes 21° 31' N & 27° 13' N and longitudes 85° 45' 20" E and 89° 53' E. While the coastal districts of West Bengal are exposed to flood and cyclones, part of south-western West Bengal is prone to drought. Northern part of this State is exposed to flash flood and landslide. A large section of the State is also prone to earthquakes. In addition, the State is also affected by disasters like heat waves, road accidents, rail accidents etc. The vulnerability to disaster necessitates the preparation of comprehensive Disaster Management Plan. In this chapter the Risk Management which is a part of Disaster Management Cycle i.e. Provisions for Preparedness, Prevention and Mitigation (Risk Assessment / Prevention) is discussed.

#### **4.2. District Magistrate's acquaintances with the conditions and problems of the District**

It is always incumbent upon the District Magistrate (DM) to be acquainted with the conditions and problems of his district but this is more specially the case if his district is one which is susceptible to distress due to disasters. It is upon the District Magistrate that the Government relies to give warning beforehand and to suggest and initiate measures which must be taken in order to prevent distress conditions from developing or if they have developed, to combat them. Statements of areas vulnerable shall be periodically submitted to the Government. These statements shall be accompanied by vulnerability maps of the district.

##### **4.2.1. Agencies through whom reports to be collected**

There is broad based staff of the Directorate of Disaster Management throughout the State. District Disaster Management Officers in the districts, Sub Divisional Disaster Management Officers in the subdivisions and Block Disaster Management Officers in the blocks are placed under District Magistrates, Sub Divisional Officers and Block Development Officers respectively to coordinate all the matters relating to Disaster Management in their respective areas of operations. There are also officers of Local Self-Government under Panchayat Raj System upto the Gram Panchayat level and officers and staff of other related Government Departments functioning throughout the State.

#### **4.3. Measures to be adopted**

##### **4.3.1. Emergency Support Function**

The relevant departments/ agencies should draw up Emergency Support Function

(ESF) Plans, constitute response teams and locate resources in advance so that response is not delayed. Emergency Support Function (ESF) Plan should be prepared regularly in a format as in Annexure-I and submitted to District Magistrate by relevant line departments at the District level and subsequently incorporated with the District Disaster Management Plan. The relevant departments should finalize pre-contract agreement for all relief items so as to avoid delays in procuring relief items during disaster situations.

#### **4.3.2. India Disaster Resource Network**

A web-enabled centralised data base named India Disaster Resource Network (IDRN) has been operationalized by the Ministry of Home Affairs, Government of India. The IDRN is a nation-wide electronic inventory of essential and specialist resources for disaster response : both specialist equipment and specialist manpower resources. It lists out the equipments and the resources by type and by the functions these perform and it gives the contact address and telephone numbers of the controlling officers in-charge of the said resources. The IDRN is a live system providing for updation of inventory once in every quarter. Entries into the inventory are made at district and State level. The network ensures quick access to resources to minimise response time in emergencies. The list of resources to be updated in the system has been finalized. It has 226 items. The data collection format should be filled up by the resource departments and the whole exercise will be coordinated by the District Magistrate.

#### **4.3.3. Disaster Management Plan**

Gram Sansad (GS) is the lowest unit of the Disaster Management set up. Gram Sansad Disaster Management Plan (GDMP) should be prepared. The next higher strata is the Gram Panchayat (GP) where the Gram Panchayat Disaster Management Plan should be prepared in the following format:

##### **i) G.P. Profile:**

This profile should contain the data in respect of the following:

- Demographic detail
- Household detail
- Population detail

##### **ii) Topographical Detail:**

- Area
- Land holding / Cropping pattern
- Livelihood pattern
- Literacy rate
- Drinking water sources
- Irrigation facilities and sources
- Minor irrigation project
- Non-irrigation rainfall land
- Infrastructure
- Communication facilities
- Financial institution

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- Availability of highland
- Resource inventory
- Identified safe shelter places
- Storing / Godown facilities
- Industries
- NGO profile
- Volunteer profile
- Private professionals
- Alternative and safe route
- Climate and rainfall
- Rain recording system
- Rivers and Creeks
- List of embankments
- River carrying capacity

### **iii) Vulnerability Analysis:**

- History of Disaster
- Seasonality of Hazard
- Inhabitants
- Distance of village from Risk points

### **iv) Risk Analysis:**

- Risk and Vulnerable group
- Risk prone infrastructures and assets

### **v) Mitigation strategy:**

- Short term
- Long term

### **vi) G.P. Response Plan:**

- Flood / Cyclone
- Earthquake
- Fire
- Drought
- Accidents

### **vii) Standard Operating Procedure for G.P. Control Room.**

**Block Disaster Management Plan** should incorporate and consolidate the **GPDMP**. Block/ Panchayat Samity is the next higher set up than Gram Panchayat.

**District Disaster Management Plan (DDMP)** should be also prepared after holding District Disaster Management committee meeting.

**The State Level Disaster Management Committee will hold the following three meetings:**

- (i) Pre-monsoon, (ii) Monsoon and (iii) Post-monsoon.**

#### 4.3.4. District Action Plan:

**DDMP** is an elaborate preparedness and mitigation plan. But at the time of impact, the District Magistrate should have an action plan of each line department ready in hand to act upon immediately.

##### (i) Police Department- Headed by Superintendent of Police

**Preparation checklist should contain the following information:-**

- Preparedness plan for establishing warning system,
- Plan for establishing radio communications with,
  - Emergency Operating Center,
  - District Control Room,
  - Other Police Headquarter,
- Plan for confidence building among vulnerable community by checking rumours, arresting anti-social elements etc.
- Plan for arranging emergency transport of seriously injured to medical treatment centers,
- Plan for diverting passenger trains and buses passing through district from disaster zone,
- Plan for providing security in transit camps, feeding centers, relief camps, cattle sheds and affected areas,
- Plan for providing security to visiting VIPs / VVIPs,
- Plan for immediate inquiry into and record of deaths,
- Plan for activating Public Information Center,
- Plan for coordinating with military personnel,
- Misc.

##### (ii) Health & Family Welfare Department – Headed by Chief Medical Officer of Health

- Plan for detailing Medical team at vulnerable areas – G.P. wise,
- Determination of injuries and illness expected during a particular calamity, assessment of required drugs and plan for making stock of such drugs,
- Emergency medical equipment which may be required after a disaster,
- Plan for training of hospital staff on disasters, likely damages and effects, and for protecting life, equipment and property,
- Plan for protecting medical equipments, immovable equipments in remote health centers situated within hazard-prone areas,
- Plan for evacuation of Hospital equipments at the order of the District Magistrate,
- Plan for arrangement of emergency generators in all Block Primary Health Centers, Rural Health Centers, Sub-divisional Hospitals, District Hospitals during disaster events,
- Arrangement for receiving large number of casualties,
- Arrangement for adequate staff in Sub-divisional and District Hospitals to handle emergency casualties,
- Plan for keeping Blood Bank open and ready round the clock,
- Plan for keeping ambulances and other vehicles in function,
- Plan for making services of all doctors, nurses and other staff available to the District Magistrate at the time of emergency disaster event.

**(iii) Agriculture Department:**

- Plan for determining the nature of damage, pests or diseases in the advent of a natural hazard, assessment of drugs and other insecticides as will be required to contain those diseases / pests / damage and issuing extra supplies to Agriculture Development Officers (ADO) as quickly as possible,
- Plan for providing information to all farmers through K.P.S. / N.G.O.s about disasters, likely damages to crops and plantations and information about ways to protect the same,
- Plan for setting up teams of extension officers and assistants for visiting disaster sites,
- Plan for assessing the extent of damages to soil, crop, plantation, micro-irrigation systems and storage facilities and the requirement of salvage or re-plantation,
- Plan for estimating requirement of seeds, fertilizers, pesticides and labours,
- Plan for preparing reports immediately,
- Plan for arranging transport, storage, and distribution of the above with adequate record keeping procedures,
- Plan for assisting farmers to reestablish their contacts with agriculture produce market and to ensure that appropriate price be offered to them,
- Plan for post-disaster cropping pattern,
- Plan for developing pests and diseases monitoring system,
- Plan for establishment of a public information center at the Block, Subdivision and District levels for providing all kinds of information.

**(iv) Irrigation & Waterways Department**

- Plan for establishing quick communication with Emergency Operation Centres, District Control Room, District Magistrate, departmental officers within the district,
- Plan for keeping the personnel at all strategic points readily available with full knowledge of the District Collector,
- Plan for round the clock inspection and repair of
  - Embankments of dams,
  - Irrigation channels,
  - Bridges, Culverts, control gates and overflow channels,
- Plan for providing the following emergency tools to all technical assistants in vulnerable areas, namely – Ropes, Gunny Bags, Cement in bags, Concrete poles, Jungle Knives, cane baskets,
- Plan for Dam water level management – if heavy rains are expected, lowering of dam water level should be made hours after issuing clear, documented forewarning to the Collectors of Districts where evacuation will be required.

**(v) Department of Animal Health and Animal Resources Development :**

- Advance planning to keep all the departmental staff alert before the onset of the season and their subsequent deployment in the eventuality through deployment planning,
- Planning for opening of control room at Block, Subdivision and District level,

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- Assessment of need-based requirement of essential inputs like medicines, vaccines, feed, fodder, disinfectants, water purifier etc. for livestock and communication of the same to the Government,
- Arrangement for procurement and storage of input materials to save the affected livestock,
- Director of Agriculture Department / Principal Agricultural Officer of the district to be requested to keep the paddy straw in the stock for the anticipated calamity,
- Managing Director of DAIRPOUL / HIMUL / BIMUL to be requested to keep reserve the concentrate cattle feed,
- Plan for procurement of feed from DAIRPOUL / HIMUL / BIMUL, fodder from local market, medicine and vaccine and distribution of the same,
- Plan for ensuring vaccination in endemic zone,
- Plan for opening of Health camp at affected area,
- Plan for initiation of carcass removal,
- Plan for revaccination of animals in endemic zones against different bacterial and viral diseases as the case may be,
- Plan for wide cultivation of fodder through supplying of large number of different fodder seeds, minikits to the farmers in post-disaster period,
- Plan for Economic Rehabilitation of affected livestock farmers providing with small units of Poultry, Piggery, Goatery and Dairy etc.

### **(vi) Food & Supply Department**

- Plan for keeping food grains available for the Collector against Delivery Order,
- Plan for easy availability of dry food throughout the districts,
- Plan for keeping fuel available in the market,
- Plan for making personnel available at all Blocks, Subdivisions and District,
- Plan for containing price of baby food.

### **(vii) Department of School Education (Primary & Secondary)**

- Plan for providing emergency shelter in school building,

### **(viii) Civil Defence Department**

- Plan for rescue operation,
- Plan for supply of boats/ launches for rescue and relief operation,
- Plan for deployment of MCFF Personnel, Home Guards.

### **(ix) Transport Department**

- Plan for arrangement of vehicles for relief operations.

### **(x) P.W.D. Departments**

- Plan for taking protective measures for maintenance of road communications, bridges, culverts etc. to facilitate transport of vehicles and particularly of foodgrains relief materials,
- Plan for arranging stock of materials for necessary repairs on emergency basis when and where necessary.

**(xi) Public Health Engineering Department**

- Plan for supply of drinking water, where necessary,
- Plan for sinking / re-sinking of tube wells in high land / rescue centers, on emergency basis,
- Plan for arranging stock of materials for emergency supply of water, installation of special pumping stations to combat flood situations.

**(xii) W.B.S.E.B.**

- Plan for restoring the over-head lines and towers on emergency basis for smooth power supply during flood and cyclone,
- Plan for maintenance of steady supply of electricity in the affected areas and in the relief centers and switching it off whenever required for saving the life of people from electrocution,
- Plan for mass-awareness campaign for not touching the snapped electric wires,
- Plan for stock of materials for emergency.

**(xiii) Disaster Management Department**

- Storing of Relief Materials,
- Plan for procurement, receipt and supply of Relief Materials,
- Plan for running District Control Room, receiving and instant dissemination of warning messages,
- Plan for maintaining liaisons with related line departments,
- Plan for running gruel kitchens at the rescue centers, plan for immediate preparation and dispatch of reports to the State Government.

**4.5 Inter-departmental coordination:**

Disaster Management is a multi-disciplinary activity involving a number of departments across all sectors of development. Successful preparedness and mitigation requires a quick and organized response. The active participation of affected communities and various Government departments is thus critical to risk management.

**4.6. Different types of disasters and special measures taken thereof:**

Disasters caused by different types of calamities such as floods, cyclones, storms, earthquakes etc. have to be tackled differently. Special measures, referred to in the following chapters, should be taken according to the nature of impact of a particular calamity.



## CHAPTER V

### FLOODS

#### 5.1. General

It is a temporary inundation of large regions as a result of an increase in reservoir, or of rivers, flooding their banks because of heavy rains, high winds, cyclones, storm surge along coast, tsunami, melting snow or dam bursts.

#### 5.2. Types of Flood

**1. Flash floods:** - It is defined as floods which occur within six hours of the beginning of heavy rainfall, and are usually associated with cloud bursts, storms and cyclones requiring rapid localized warning and immediate response if damage is to be mitigated. In case of flash floods, warning for timely evacuation may not always be possible.

**2. River floods:** - Such floods are caused by precipitation over large catchment areas. These floods normally build up slowly or seasonally and may continue for days or weeks as compared to flash floods.

**3. Coastal floods:** - Some floods are associated with the cyclonic activities like hurricanes, tropical cyclone etc. Catastrophic flooding is often aggravated by wind-induced storm surges along the coast.

#### 5.2.1. River System in West Bengal

The Ganga-Padma river artery divides the State into two parts, north and south. Being a part of Ganga-Bhramhaputra-Meghna basin, North Bengal is extremely flood prone. The rivers like Teesta, Torsa, Jaldhaka, Raidak-I, Raidak-II and their numerous tributaries belonging to the Brammhaputra basin and flowing through a part of Darjeeling, Jalpaiguri and Coochbehar originate in the Himalayas of Sikkim and Bhutan and flow south-east to Bangladesh. A part of Darjeeling and the districts of Uttar Dinajpur, Dakshin Dinajpur and Malda are drained by the rivers of Mahananda, Dauk, Tangon, Nagar, Atreyee, Punarbhaba and their tributaries. These are part of the Ganga basin. Except the Mahananda, all other rivers originate in the plains of West Bengal and Bangladesh and join the Ganga-Padma at downstream of Farakka in Bangladesh. The Mahananda emerges from the Himalayas of Nepal. The Ganges which enters the State of West Bengal in the district of Malda receives its flood water from about eleven States and inflicts damage by the run-off flow generated from this vast hinterland.

In central and southern part of this State, there are certain distinctive features of drainage condition which gives rise to flood situation. Basin-wise there are a number of rivers on the right bank of the Bhagirathi-Hoogly. These are Pagla-Bansloi, the Dwarka-Bramhani, the Mayurakshi-Babla-Uttarasan, the Bakreswar-Kuye and also the Ajoy. They emerge from the Jharkhand Plateau and flow southeast to meet Bhagirathi-Hoogly. These rivers drain an area of 17,684 km. spread over the State of Jharkhand and West Bengal districts of Birbhum, western part of Murshidabad and Burdwan. Originating from the Ganga-Padma, the Bhairab-Jalangi-Sealmari system of rivers drains the eastern part of Murshidabad and meets the Bhagirathi at Swarupnagar in Nadia. Nadia is drained partly

by Jalangi and partly by the Churni which is a part of Mathabhanga-Churni-Ichamati system, taking off from the Ganga-Padma flowing southwest, to meet the Bhagirathi on the east bank at Ranaghat. The other part viz. the Ichamati flows east through Bangladesh, enters the district of North 24 Parganas and flows in the south direction to fall into the tidal creek of the Raimangal. Parts of Howrah, North and South 24 Parganas are drained mainly by the Hoogly and its tidal creeks and other internal drainage canals. Burdwan, Howrah and Hoogly districts are mainly drained by the Damodar and Bhagirathi-Hoogly Rivers. In the Damodar-Barakar basin system, the rivers originate at Chotanagpur plateau and flow down the plains of West Bengal to meet the Bhagirathi. The Ajoy forms the border between Birbhum and Burdwan. Purulia and Bankura are drained by the rivers Kangsabati, Kumari, Shilabati, Keleghai, Dwarakeswar and their tributaries. The Keleghai drains Paschim Medinipur and part of Purba Medinipur. These rivers originate from the western highland of the State and flow towards southeast direction to form the tidal rivers i.e., Rupnarayan and Haldi to meet the Hoogly on the west bank. The Rupnarayan forms the boundary between Hoogly and Purba Medinipur. A part of Purba Medinipur is drained by the river Subarnarekha originating from the Jharkhand Plateau and flowing in southwest direction to meet the Bay of Bengal in Orissa.

### 5.2.2 Causes of Flood

- (i) Excessive rainfall in river catchments or concentration of runoff from the tributaries and river carrying flows in excess of their capacities,
- (ii) Back movement of water in tributaries at their confluence with the main river,
- (iii) Synchronization of flood peaks of the main rivers and tributaries,
- (iv) Landslides causing obstruction to flow and change in the river course,
- (v) Poor natural drainage,
- (vi) Cyclone and very intense rainfall,
- (vii) Intense rainfall when river is flowing full.

The floods of West Bengal have special characteristics. Heavy rainfall at origin or catchment areas of main flooding rivers of this State cause flood, but these areas are mainly lying outside this State. West Bengal is flooded by water from adjoining States or countries.

Major contributing factors to flood in North Bengal are the run-off because of heavy local rainfall, discharge of upper basin areas and also out-fall condition in the neighbouring countries. The Mahananda and most of the rivers of Uttar and Dakshin Dinajpur districts get stagnated when the Ganga upstream and downstream of Farakka Barrage rules high thereby not allowing draining of flood discharge during that period. Flooding of Malda is caused by rivers like Fulhar-Mahananda-and Ganga. The Ganga, forming the southern boundary of the district, brings flood water from eleven States and Nepal. The Fulhar meets the Ganga upstream of Farakka.

The rivers of Bhagirathi-Hoogly basin generate flood because of high rainfall and limited carrying capacity of the river Bhagirathi from Jangipur in Murshidabad to Kalna in Burdwan. In this stretch, the Bhagirathi has discharge carrying capacity of maximum 1.3

lakh cusec. But if all these rivers receive rainfall simultaneously in their catchment areas, they can generate run-off volume of any amount between 4-6 lakh cusec. In this vast tract of land there is only the Massanjore dam to interfere with the natural flow of flood water.

The basic reason of flood in this zone is the shape of the catchment area, its steep slope from a high level plateau area sloping sharply down to a flat terrain near the outfall and also adverse outfall condition because of its limited intake capacity. This feature is again adversely affected by the tidal condition as is generally noticed in the month of September, when the Hooghly is in high tide condition. Delay in drainage causes more accumulation resulting in spread of flood in the upstream of the river system in the west and beyond Berhampur. Generally, part of Murshidabad and Nadia suffer from flood because of three reasons - (1) high intensity rainfall in the basin area of Bhairab-Jalangi-Sealmari itself, (2) inflow of flood water from Ganga-Padma at its high spate and (3) drainage congestion at its outfall because of the high stage of Bhagirathi. Traditionally, Damodar basin has been known to be a curse. The basin of river Damodar has a very special shape and this influences its flood pattern. The river has about 70% of its basin just upstream of Durgapur town. These upper catchments of Jharkhand plateau, above Durgapur, generate heavy run-off during high rainfall and is carried to Durgapur in a short time. From here, this discharge travels through the river, bifurcating at Beguahana. One branch, the lower Damodar with very small capacity, reaches the Hoogly on the west bank. The major discharge passes through the Mundeswari to meet the Rupnarayan. Any major discharge along the downstream of Durgapur Barrage may cause flood depending upon the outfall condition of the Mundeswari at Harinkhola. In Kangsabati river system, the Kangsabati Dam has a limited flood storage capacity which is very nominal. Any major spillway discharge from Kangsabati Dam may cause flood at lower areas downstream of Medinipur town depending on tide and downstream rainfall.

### **5.3. Study Of History of Flood**

District Magistrates, Sub Divisional Officers and Block Development Officers should be conversant with the history, causes and effects of floods in their districts and subdivisions respectively. The average annual high flood level in the area should be ascertained from the nearest offices of Irrigation and Waterways Department. As the monsoon approaches, reports regarding rainfall and rise of rivers should be examined at regular intervals. When flood is likely to be caused by the great rivers, notice will have to be taken of officials or other reliable reports of floods higher up these rivers, or of heavy rains near their sources. In this way, several days' notice of a heavy flood may be obtained, and timely warning may be sent to the villagers in the danger zone.

District Magistrates, Sub Divisional and Block Development Officer should take special care to make themselves acquainted with the low lying areas which are liable to suffer most in case of flood, with the waterways and passages through which water from waterlogged areas may drain if the existing obstructions are removed. They should also acquaint themselves with the conditions of important embankments so that the embankments may be strengthened as necessary and guarded where necessary. In dealing with the relieving of water logged areas, they should work in collaboration with the local officers of the Irrigation and Waterways Department and there tier Panchyaet Raj system.

#### **5.4. Elements at Risk**

Anything in the flood plains will get inundated. Houses built of earth, and with soluble materials will collapse endangering humans and their property. Basements of buildings are under risk. Utilities such as sewerage, water supply, communication lines, and power are put at risk. Food stock in the godowns, agricultural fields, livestock, vehicles, machinery and equipments mounted on the ground, fishing boats are also put at risk.

#### **5.5. Early Warning System**

Preparedness and early warning have become two major non-structural components of flood management. With the advancement of technology such as satellite and remote-sensing equipments, flood waves can be tracked as they move downwards. Except for flash floods there is usually a reasonable warning period. Heavy precipitation will give sufficient warning of the advent of river flood. High tides and high winds may indicate flooding in the coastal areas. Evacuation is possible with suitable monitoring and warning. Warning is issued by the Central Water Commission (CWC) of Government of India (GOI), Irrigation and Waterways Department (GOWB), India Meteorological Department (IMD) of GOI and Damodar Valley Reservoir Regulation Committee (DVRCC) of GOI. These bodies are technically competent and responsible for flood forecasting to different Govt. agencies. The weather forecast as received by the Superintendent Engineers / Executive Engineers are transmitted to all concerned on top priority basis. The field data including gauge/discharge and other information like rainfall, inundation and damages to engineering structure, if any, are transmitted either by daily radiogram messages or by Fax to the Central Control Room at Jalasampad Bhawan and State Relief Commissioner at Writers' Buildings. The report is subsequently transmitted down to the District Magistrates (DM) by the Disaster Management Department. On receiving the warning, the District Magistrate will communicate it to the Superintendent of Police (SP), Sub Divisional Officers and Block Development Officers. The S.P should in turn disseminate it to the Officer-in-Charge of local Police Stations. The BDO will receive this warning simultaneously from SDO and local Police Station. He should immediately communicate it to the Savapati of the concerned Panchayat Samity and Prodhans of the Gram Panchayats which will be affected.

In North Bengal, the vulnerable areas are divided into protected and unprotected areas which mean areas protected by embankments and unprotected where flood is allowed to expand and spread. In North Bengal, the rivers being flashy and duration of flood at best being for four to five days, the signaling system that has been adopted gives people comparatively lesser time to move to safer places to avoid any loss of life. With long association with the signaling system, the people of a particular area and also the administration have a nearly concrete idea as to their expected level of response and preparedness against this warning system.

In Central and South Bengal, the river flows for a long stretch in flat terrain and their outfall is linked to the Bay of Bengal. The draining time and total drainage capacity of these rivers are influenced by different outfall conditions which have marked tidal influence. River gauge data should be generated daily, especially in the rainy season, and should be

compared with the average annual high flood level of the river. River levels are compared with preliminary danger levels, danger levels and extreme danger levels of the corresponding river in the gauge meter. All these levels have a relation in respect of the place where the gauge station is situated. Reports regarding rainfall data and rise of rivers should be examined regularly and communicated to district authorities through R.T. system and also through telephone. In case any flood-like situation is apprehended, the warning should be disseminated to the concerned Gram Panchayats and Gram Sansads. The communities in vulnerable areas receive the information from three sources; (i) Block Administration or Gram Panchayat Office, (ii) Nearest Police Station and (iii) Radio and Television.

### **5.6. Main Mitigation Strategies**

Mapping of flood prone areas is a primary step involved in reducing the risk of the region. In Gram Sansad area, this will be undertaken by the Gram Sansad Disaster Management Committee under chairpersonship of the elected member of Gram Panchayat from the Sansad area. Historical records give the indication of flood inundation areas and the period of occurrence and the extent of the coverage. The basic map is combined with other maps and data to form a complete image of the flood-plain. Warning can be issued looking into the earlier marked heights of the water levels in case of potential threat. In the coastal areas, the tide levels and land characteristics will determine areas liable to inundation. Flood hazard mapping will give the proper indication of water flow during floods.

### **5.7. Approach to Flood Management**

#### **(i) Structural measures:**

Attempts to Modify Flood

- (a) Dams and Reservoirs
- (b) Embankment
- (c) Drainage Improvements
- (d) Channel Improvements
- (e) Diversion of Flood Waters
- (f) Using Natural Detention Basin.

North Bengal districts are more flood prone for having an average rainfall of 3000 + mm. annually. In last few decades, floods have actually become a routine in many southern districts as well. As it stands now, 42% of the land area of this State is known to be flood prone. Historically, reducing the impact of floods depends on structural measures. In West Bengal it started with Zamindari embankment, followed by retired embankment, dams and barrages. More than 16000 km. of river embankments and eight dam systems exist in the State apparently to reduce flood impact and improve irrigation.

Over the years, limitations of structural measures have surfaced and the emphasis began to shift to strengthening non-structural measures. In particular, the emphasis is now on disaster preparedness, and linking preparedness to long-term development.

**(ii) Non- Structural Measures:**

(a) Attempts to modify susceptibility of Flood.

- Flood plain zoning:** - It aims to regulate the developments in the flood plains, so that it is compatible with 'Flood Risk'. It recognises the basic fact that the flood plains are essentially the domain of the river, and as such all developmental activities must be compatible with the flood risk involved.

**Steps:**

- 1) Demarcate area liable to floods of different frequency,
- 2) Prepare detailed maps,
- 3) Detail out the use to which the flood zones can be put,

- Flood forecasting :-** Involves observing and collecting hydrological and meteorological data, transmission and then processing the data with a view to work out the likely level to be achieved at a particular site, i.e. to give advance warning (vide para 5.5).

- Flood proofing( including disaster preparedness):-**

The objectives and scope:

- (i) Flood proofing of civic amenities
- (ii) Relieve drainage congestion.

It is essentially a combination of structural change and emergency action without evacuation. A programme of the flood proofing provides the raised platforms for flood shelter for men and cattle and raising the public utility installations above flood levels.

(b) Attempts to modify loss burden (crisis management-vide chapter XIII) by way of

- Disaster relief
- Flood fighting
- Flood insurance

(c) Living with flood.

- Encourage ancient wisdom

**5.8. Measures to be adopted at Block Level:**

Following measures should be taken at Block level by the BDO on whom the implementation of Block Disaster Management Plan rests. Action plan of relevant Line Departments should be put into order.

- Convening a meeting of Block Disaster Management Committee before the onset of monsoon in the month of March/early April,
- Arrangement for functioning of control room. Specific charge should be given at Block level to listen to weather bulletins from radio and television to monitor the warning relevant to the Block,
- A joint inspection team at block level will inspect river embankments in the month of March and April. A summary report will be sent to the Sub Division and district accordingly,

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- When monsoon sets in, BDO will send daily report regularly on the basis of the reports received from villages and gram panchayats in Form C-A/II to the Sub Divisional Officer and District Magistrate,
- Dissemination of weather report and flood bulletins to lower level,
- Installation of temporary police wireless stations and temporary telephones in flood-prone areas,
- Identification of the owners of country and mechanised boats with address and contact numbers,
- Storage of food in interior, vulnerable, strategic and key areas,
- Arrangement of dry foodstuff and other necessities of life,
- Arrangement for keeping the drainage system desilted and properly maintained by Gram Panchayats and the Dept. of Irrigation & Waterways,
- Health measures,
- Veterinary measures,
- Selection and maintenance of flood shelters,
- Alternative drinking water supplies arrangements and
- Other precautionary measures.

### **5.9. During Emergency conditions**

When emergency condition develops following a disaster, the situations are to be tackled under the provisions of the Crisis Management and Relief Organisation (vide Chapter XIII).

## **CHAPTER VI**

### **CYCLONES**

#### **6.1. General**

It is an intense vortex or a whirl in the atmosphere, characterized by high winds rotating about a calm center of low atmospheric pressure in anti-clockwise direction in the Northern Hemisphere and in clockwise direction in the southern Hemisphere. This center moves onwards and pressure increases outwards. The force of the pressure in the center and the rate at which it increases outwards gives the intensity of the cyclone and the strength of winds.

Cyclones are formed in certain favourable atmospheric and oceanic conditions. There are marked seasonal variations in their places of origin, tracks and attainment of intensities. These behaviours help in predicting their movements. Pre and Post monsoon storms are generally more violent than the storms of the monsoon season.

The coastal stretch of West Bengal is highly vulnerable to cyclone. The phenomenal storm surge in coastal West Bengal is due to its peculiar bathymetry and nature of coastal belt. The northern part of the Bay of Bengal is very shallow. The coast is also landlocked on three sides. As a result, when a very severe cyclonic storm or a hurricane approaches the coast, the enormous storm surge generated by the wind pressure submerges the coastal belt at the time the storm crosses the belt. The frequency of cyclones crossing this belt is also high. Another peculiar characteristic of this coast is that it is crisscrossed by innumerable rivers and rivulets, with the elevation of the islands about 4 to 5 meters. The sea dykes and embankments are not strong enough to resist strong wind-driven waves and naturally cave in during depression / cyclonic situation.

#### **6.1.2. Onset Type**

They strike suddenly although it takes time to build up. Intensification can be tracked by IMD over the days but accurate landfall is predictable barely within few hours. The onset is extensive and often very destructive.

#### **6.1.3. Cyclone accompanied by sea wave**

Historical records make a mention of the Great Bay of Bengal - October 1737 cyclone which crossed West Bengal coast with a pressure defect of 100 hPa and associated maximum wind speed of 263 kmph. The Bukherkanj cyclone of 1876 had a pressure drop of 80 hPa and associated maximum wind speed of 220–235 kmph. During the period 1971-2005, West Bengal had been crossed by 7 severe cyclone storm and the severest one was in December 1981 storm with associated wind speed of 167 kmph. Taking all these into consideration, an extreme wind speed of 250 kmph appears reasonable for computation of Probable Maximum Storm Surge for West Bengal. A heavy cyclone accompanied by a sea wave, is the worst kind of disaster which may occur in this delta. Disasters of this kind had caused appalling mortality in the past and will possibly do so again as on 25.05.2009 by 'AILA'. Practically, nothing can be done to avoid them but fortunately they are not frequent. For West Bengal, the pressure defect derived is 90 hPa



(250 kmph). The PMSS values vary between 13-14m atl and 20m asl. The maximum tide height is 6-7m for this coast. This together with shallow bathymetry and possibility of landfall of cyclones of high intensity make this coast prone to high surges.

They are most likely to occur at the beginning or at the end of rains, i.e., either before the winter paddy is planted or at a time when it is almost ripe. Under such circumstances the damage to crops may be small in comparison with the mortality among men and cattle which may be enormous. The maritime districts of West Bengal are liable to storm waves but the districts of 24 Parganas have suffered most severely.

#### **6.1.4. Elements at Risk**

All lightweight structures and those built of mud, wood, older buildings with weak walls and structures without proper anchorage to the foundations will be at great risk. Settlements located in low lying coastal areas will be vulnerable to the direct effects of the cyclones such as wind, rain and storm surge. Settlements in adjacent areas will be vulnerable to floods, mud-slides or landslides due to heavy rains. Other elements at risk are fences, telephone and electricity poles, cables, light elements of structures – roofs, signboards, hoardings, coconut crowns, fishing boats and large trees.

#### **6.1.5. Typical Effects**

First, in a sudden, brief onslaught, high winds cause major damage to infrastructure and housing, in particular fragile constructions. They are generally followed by heavy rains and floods and in flat coastal areas by storm surge riding on tidal waves and inundating the land over long distances of even upto 15km inland.

*Physical damage* - Structures will be damaged or destroyed by the wind force, flooding and storm surge. Light-pitched roofs of most structures especially the ones fitted on to industrial buildings will suffer severe damage.

*Casualties and public health* – Caused by flooding and flying elements, contamination of water supplies may lead to viral outbreaks, diarrhea and malaria.

*Water supplies* – Ground and piped water supply may get contaminated by flood waters.

*Crops and food supplies* – High winds and rains will ruin the standing crop and food stock lying in low lying areas. Plantation type crops such as banana and coconut are extremely vulnerable. Salt from the sea water maybe deposited on the agricultural land and increase the salinity. The loss of the crop may lead to acute food shortage.

*Communication* – Severe disruption in the communication links as the wind may bring down the electricity and communication towers, electricity and telephone poles, telephone lines, antennas and satellite disk and broadcasting services. Transport lines (road and rail) may be curtailed. Relief materials may not reach the affected site.

### **6.2. Mitigation Strategy**

- a) Measures for more efficient storm tracking,
- b) Measures for rapid dissemination of warnings issued by the Area Cyclone Warning Center, Kolkata,
- c) Emergency measures like evacuation from threatened areas during cyclone situation,

- d) Post disaster measures,
- e) Long term measures for preparedness to combat cyclone in general and
- f) Community preparedness programme.

### **6.2.1. Warning System**

Cyclones have the best predictability among all disaster phenomena. Low pressure and the development can be detected hours or days before its damage effects start. Satellite tracking can track the movement since the build up and the likely path is projected. Warning and evacuation is done along the projected path. The magnitude of the accompanying hazard of storm surge is also predictable through techniques which take into account the parameters of the approaching cyclone as well as the physical and oceanographic characteristics of the coast in the area of anticipated landfall i.e., the place where the cyclone is expected to hit the coast.

It is difficult to predict the accuracy. Accurate landfall predictions can give only a few hours' notice to threatened populations. In addition, people generally opt to wait until the very last minute before abandoning their home and possessions. Deaths from drowning in the high tides and sudden flooding and material losses are therefore often very high.

Forecasting is the next step in disaster reduction. But forecasting should be based on sound scientific principles and operationally proven techniques. Forecasting should be done by an authorized agency that, besides being competent, experienced, responsible and accountable, is conscious of the end use of the forecast, its implications, and the dependence of the success of disaster reduction on the forecast.

Once a forecast is available regarding an anticipated disaster event, it should be converted quickly into an area-specific and time-specific warning. Furthermore, the warning should be user-specific because the capacity of different user to withstand the onslaught of disaster is different.

Cyclone forecasting and warning services are the responsibility of the India Meteorological Department (IMD). IMD issues warning against severe weather phenomena like tropical cyclones, heavy rains and snow, cold and heat waves, etc., which cause destruction of life and property.

Cyclone warning is disseminated by several means such as satellite based disaster warning systems, radio, television, telephone, fax, high priority telegram, public announcements and bulletins in press. Advancement in Information Technology in the form of Internet, Geographical Information System (GIS), Remote Sensing, Satellite communication, etc. can help a great deal in planning and implementation of hazards reduction schemes. Once the current status of a cyclone and its forecast behaviour are available, the next is to formulate the area-specific cyclone warnings which are sent to the State Relief Commissioner and other relevant departments. Immediately on receipt of the first information regarding a cyclone, the State Disaster Management Authority, the State Disaster Management Authority Executive Committee and Emergency Operation Centre should be informed and activated through State Relief Commissioner.

Two stages warning system: IMD issues cyclone warning in two stages-

1. Cyclone Alert : It is issued by Area Cyclone Warning Center (ACWC), Kolkata to State Relief Commissioner and the District Magistrates of coastal districts by high priority

telegrams or over phone or by Fax messages as far as possible 48 hours before the commencement of apprehended cyclone. These are also sent over police wireless.

2. Cyclone Warning: These are issued 24 hours before commencement of adverse weather. However, on the occasions of sudden development, the first stage is skipped.

These bulletins and all other subsequent bulletins are also broadcast through All India Radio. These are continued till the storm crosses coast and weaken or the districts are no longer likely to experience adverse weather.

In addition to the above available channels, the India Meteorological Department has introduced a satellite communication link with the lowest level. The system is known as "Cyclone Warning Dissemination System (CWDS)". The dish antenna, battery packed receiver and siren is placed in a local police station/ B.D.O. Office/a sensitive place. The receiver is energized by a signal issued from Cyclone Warning Center via INSAT. This communication system is not disturbed by cyclonic winds or heavy rains and the warning and de-warning messages are disseminated without the threat of any disruption. The siren is heard for three minutes. The duty officer disseminates the warning immediately to concerned B.D.O., Savapati, and O.C. of Police Station.

#### **6.2.2. Vulnerability Assessment**

Meteorological records of the wind speed and the directions give the probability of the wind in the region. Past records and paths can give the pattern of occurrence for particular wind speed. A hazard map will illustrate the areas vulnerable to the cyclone in any given year. It will be useful to estimate the severity of the cyclone and various damage intensities in the region. The map is prepared with data inputs of past climatological records, history of wind speed, frequency of flooding etc. List of most vulnerable villages based on past disasters and rainfall position should be prepared and kept with the BDO.

#### **6.2.3. Land use control**

It is designed so that least critical activities are placed in vulnerable areas. Location of settlements in the flood plains is utmost risky, localities of key facilities must be marked in the land use.

#### **6.2.4. Engineered Structures**

Structures need to be built to withstand wind forces. Good site selection is also important. Majority of buildings in coastal areas are built with locally available materials and have no engineering inputs. Good construction practice should be adopted.

#### **6.2.5. Community Based Mitigation**

Construction of cyclone resistant houses and strengthening of existing houses should be done through community participation. Local engineers and masons can take part in the construction of the buildings in their area and demonstrate to the people about disaster resistant construction methods. Multipurpose cyclone shelters should be used as schools or community centers in normal times. In case of cyclone or flood, community should take shelter in these designed buildings. The local communities will be responsible for the maintenance and management of these community shelters. A village level Maintenance Committee per rescue shelter has to be formed for maintenance and use throughout the year

with local fund to ensure community ownership. Protection measures should be taken for the livestock, boats, fishing nets, household items and other possessions.

### **6.3. Measures To Be Adopted at Block level**

Similar remarks apply to cyclone as in floods. In addition to that, the BDO should ensure that action is taken for opening of cyclone stores for providing following materials:

1. Hooks of the type available with the Fire Service Department for cleaning debris,
2. Rubber tires and tubes for use as floats in water,
3. Tents,
4. Kerosene Lanterns,
5. Large cooking vessels for use in relief camps, copies of Maps etc.,
6. Ropes, wires, chains, lights with wire fittings, torches etc.,
7. Double handle saws (for cutting trees), shovels, candles, land hammers, hose pipes, first aid kits, empty drums, gunny bags and sand bags, polythene bags (for dropping supplies), buckets,
8. Fodders, pumps etc.

### **6.3. During Emergency conditions:**

Where emergency condition develops following large scale disaster, the situations are to be tackled under the provisions of the Crisis Management and Relief Organisation (vide Chapter XIII).

## **CHAPTER VII**

### **DROUGHT**

#### **7.1. General**

Drought is an insidious natural hazard that results from a departure of precipitation from expected or normal level that, when a season or longer period of time extended over, is insufficient to meet the demands of human, plant and animal activities.

Agricultural statistics play a vital part in combating distress arisen out of drought. For the last few decades this State becomes a food surplus one. So famine does not follow drought as immediate consequence. But statistics collected on a scientific basis and at regular intervals are all the more vital. They will serve as a safe guide to the District Magistrate in formulating his policies for tackling the problems of relief in his district. They give timely warning of climatic danger, prevent surprise and provide information for plan, draw attention, in ordinary times, to weak points in the conditions of a district, thereby preparing the way for timely improvements, which will fortify the people against times of pressure.

##### **7.1.1. Onset type and warning**

Drought is a slow-onset disaster and as such, it is difficult to demarcate the time of its onset and end. Falling rainfall levels, falling groundwater levels, drying wells, rivers and reservoirs, and poor agricultural production warn the onset of drought. According to the India Meteorological Department, the country is said to be drought affected when the overall rainfall deficiency is more than 10 per cent of the long period average and more than 20 per cent of the country area is affected by such drought conditions.

##### **7.1.2. Elements at risk**

Drought impacts mostly rainfed crops to start with and subsequently the irrigated crops. Areas with minimum of alternative water sources to rainfall (ground and canal water supplies), areas subjected to drastic environmental degradation such as denuded forest lands and altered ecosystems, and areas where livelihoods as alternative to agriculture are least developed, are most vulnerable to drought. The herdsman, landless labourers, subsistence farmers, the women, children, and farm animals are the most vulnerable groups affected by the drought conditions.

##### **7.1.3. Typical Effects**

Drought, different from other natural disasters, does not cause any structural damages. The typical effects include loss of crop, dairy, timber (forest fires), and fishery production; increase in energy demand for pumping water, reduced energy production, increased unemployment, loss of biodiversity, reduced water, air and landscape quality, groundwater depletion, food shortage, health reduction and loss of life, increased poverty, reduced quality of life, and social unrest leading to migration.

##### **7.1.4. Main Mitigation Strategies**

**Drought monitoring** is continuous observation of rainfall situation, water availability in reservoirs, lakes, rivers and comparing with the existing water needs of various sectors

of the society. **Water supply augmentation and conservation** through rainwater harvesting in houses and farmers' fields increase the content of water availability. Water harvesting by either allowing the runoff water from all the fields to a common point (e.g. Farm ponds) or allowing it to infiltrate into the soil where it has fallen (e.g. contour bunds, contour cultivation, raised bed planting etc.) helps increase water availability for sustained agricultural production.

Expansion of **irrigation** facilities reduces the drought vulnerability.

**Land use** based on its capability helps in optimum use of land and water and can avoid the undue demand created due to their misuse.

**Livelihood planning** identifies those livelihoods which are least affected by drought. Some of such livelihoods include increased off-farm employment opportunities, collection of non-timber forest produce from the community forests, raising goats and carpentry etc.

**Drought planning:** The basic goal of drought planning is to improve the effectiveness of preparedness and response efforts by enhancing monitoring, mitigation and response measures. Planning would help in effective coordination among State and national agencies in dealing with the drought. Components of drought plan include establishing drought taskforce which is a team of specialists who can advise the government in taking decision to deal with drought situation, establishing coordination mechanism among various agencies which deal with the droughts, providing crop insurance schemes to the farmers to cope with the drought related crop losses, and public awareness generation.

## 7.2 Study of Agricultural Operation

The District Magistrate should know what is the amount of rain that is necessary and the periods within which the rainfall should occur in order that the main crops of his district may be secured. He should also know how much the main crops depend on rainfall and how much on irrigation. He must keep in touch with the progress of agricultural operations, and the condition of standing crops. This will help in regulating the distribution of water in his district. Statistical graphs for the whole district would be useful.

## 7.3. Study of the normal economic condition of the people

The District Magistrate should make a special study of the normal condition of the people of his district. A Gram Panchayat wise study with reference to the figures on agricultural statistics would be more useful. He should ascertain which classes, if any, live from hand to mouth and which, on the other hand, are prosperous and well-fed, or seem to possess accumulated wealth. The District BPL List, the District Settlement Report and the Census figures will help him to estimate the number of persons in each of the classes indicated. He should study the histories of previous crop failures and distress, if any, with the object of ascertaining the extent of the loss of crops, and the amount of help that had to be given on these occasions. He should investigate the changes in the general conditions of his district, whether for better or worse, which have taken place in recent years. He should also note (1) how far people derive support from sources which are not purely agricultural, (2) whether there are any special industries or specially productive crops (whether food or other crops) and (3) whether ordinarily, large number of people leave the district for a portion of the year in order to obtain service in other districts. In short, every

consideration bearing on the economic conditions of his district should receive his careful attention.

#### **7.4. Measures To Be Adopted**

Following measures should be adopted by Line Departments and incorporated in the action plan at Block level. BDO should prepare a consolidated action plan in the apprehension of any drought condition on the following items :

- Early Warning System
- Contingency Planning For Agriculture
  - i. Crop saving measures,
  - ii. Alternative cropping strategy,
  - iii. Compensatory Cropping Programme,
  - iv. Supply of Inputs,
  - v. Provision for Irrigation,
  - vi. Supply of Power.
- Drinking Water
  - i. A detailed contingency plan for supply of drinking water in rural areas to be formulated
  - ii. Make adequate plans to supply drinking water in urban areas
- Water Resources
  - i. Prepare a water budget for each irrigation reservoir covering drinking water, kharif and rabi requirements and evaporation losses, after working out a trade off between kharif and rabi benefits from the available water
  - ii. Plan for undertaking repairs of tube wells to make all tube wells operational and install additional tube wells taking care at the same time to prevent over exploitation of and damage to ground water regime
  - iii. Plan for regulating supply to water-intensive industries, if necessary
- Employment Generation
  - Plan for adequate Employment Generation Works by deviating funds available under schemes like S.G.R. Y.:
  - i. Shelf of project should be kept ready to be taken up for Employment Generation during drought,
  - ii. Drought proofing schemes to be identified and to be given high priority.
- Public Health
  - i. Plan for disinfecting drinking water sources
  - ii. Draw up plans to cope with likely epidemics
  - iii. Plan for constant surveillance of public health measures including immunization

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- Women And Children
  - i. Plan for nutritional requirements of all children, expectant mothers and nursing mothers
- Fodder
  - i. Plan for assessing fodder requirement and arranging supply from outside
  - ii. Plan for monitoring the prices of fodder
  - iii. Plan for procurement of fodder

### **7.5 During Emergency conditions**

When emergency condition develops following large scale disaster, the situations are to be tackled under the provisions of the Crisis Management and Relief Organisation (vide Chapter XIII).



## CHAPTER VIII

# EARTHQUAKE

### 8.1 General

- An earthquake is a major demonstration of the power of the tectonic forces caused by endogenic thermal conditions of the interior of the earth.
- An Earthquake is a series of underground shock waves and movements on the earth's surface caused by natural processes writhing the earth's crust.
- An earthquake is a motion of the ground surface, ranging from a faint tremor to a wild motion capable of shaking buildings apart and causing gaping fissures to open in the ground.
- The earthquake is a form of energy of wave motion transmitted through the surface layer of the earth in widening circles from a point of sudden energy releases called 'the focus'.

An earthquake becomes a disaster only when it strikes the populated areas. Sometimes the moderate earthquakes on Richter scale inflict great damages by stimulating and augmenting other natural physical processes such as landslides, tsunamis, floods and fire. Thus it is obvious that it is not necessary that an earthquake creates havoc itself but it also becomes disastrous indirectly.

#### 8.1.1 Types of earthquake

Most of the earthquakes in the world occur along the boundaries of the tectonic plates and are known as INTERPLATE EARTHQUAKES. A number of earthquakes also occur within the plates itself. These are called INTRAPLATE EARTHQUAKES.

#### 8.1.2 Measurement

Magnitude is quantitative measure of the actual size of the earthquake. An increase in magnitude by 1(one) implies ten times higher energy released. Magnitude is measured in **Richter scale**. The number indicating on this scale ranges between 0 to 9 but in fact the scale has no upper limit of number because it is a logarithmic scale. Magnitude and energy released during an earthquake is generally related to the effects of earthquake in terms of human beings and his habitat.

Intensity is qualitative measure of actual shaking at location during an earthquake and is assigned as roman capital numerals. It is an indicator of the severity of shaking at a given location. Two commonly used measurement scales are **modified mercalli intensity scale** and the Medvedev-Sponheuer-Karnik (**MSK**) **scale**. Both scales are quite similar and range from I (Least perceptible) to XII (Most severe).

The intensity of an earthquake depends on variety of factors:

- Magnitude
- Distance from epicenter
- Acceleration
- Duration amplitude of waves
- Types of ground
- Water table

- Nature of geo-materials of the region concerned and the nature and type of constructions affected by an earthquake.

### 8.1.3 Important Terminology

Earth is divided into four main layers: the INNER CORE, the OUTER CORE, MANTLE and the CRUST. Being relatively cold, the crust is rocky and brittle, so it can fracture in earthquakes.

The term 'PLATE' refers to large rigid blocks of earth's lithosphere, the solid outer(100 km.) crust of the earth, that appears to move as unit. Whenever these plates interact along their margins, important geological processes take place such as formation of mountain belts, earthquakes and volcanoes.

The place of the origin of an earthquake is called 'FOCUS' or 'HYPOCENTER' which is always hidden inside the earth but the depth of which varies from place to place.

The place on the ground surface which is perpendicular to the focus is called 'EPICENTER'.

SEISMIC WAVES are the waves of energy caused by the sudden breaking of rock within the earth or an explosion. They are the energy that travels through the earth's layer reflecting and refracting at each interface and recorded on SEISMOGRAPHS.

### 8.1.4 Onset Type and Warning

Earthquake is a sudden onset hazard. They occur at any time of year, day or night, with sudden impact and without any warning sign. Extensive research has been conducted in recent decades but there is no accepted method of earthquake prediction as on date.

## 8.2 Causes of Earthquake

Earthquake is caused due to disequilibrium in the earth's crust such as

- Volcanic eruptions,
- Faulting and folding,
- Upwarping and downwarping,
- Hydrostatic pressure of man-made water bodies like reservoirs and lakes and
- The plate movements.

## 8.3. Seismic Profile of West Bengal

The seismic zonation map (2002) as prepared by Bureau of Indian Standard shows:

- Eastern section of northern districts of Jalpaiguri and Coochbehar lies in Zone –V
- The remaining part of these two districts, along with the districts of Darjeeling, Uttar Dinajpur, Dakshin Dinajpur, and major portion of Malda & 24 Parganas (South & North) lies in Zone – IV
- Rest of the State along with Kolkata lies in Zone – III except some portions of Purulia, Bankura and Paschim Medinipur.
- Small part of Purulia, Bankura and Medinipur lies in Zone – II.
- There is no Zone – I.

## 8.4 Elements at Risk

Several key factors that contribute to vulnerability of human populations to earthquakes are:

- Location of settlements in an earthquake prone area, especially on soft ground, on area prone to landslides or along fault lines,
- Dense collection of weak buildings with high occupancy,
- Non-engineered building constructed by earth, rubble, buildings with heavy roofs (more vulnerable than light weight structures), poor quality and maintenance of buildings,
- Weak or flexible storey intending for parking purposes.

## 8.5 Typical Effects

*Physical Damage* – Damage or loss of buildings and service structures, disturbances in ground water conditions. Fire, floods due to dam failures, slope instability and failures, tsunamis and landslides can occur.

*Casualties* – Often high near the epicenter and in places where the population density is high (say, multistoried buildings) and structures which are not resistant to earthquake forces.

*Public Health* – Multiple fracture injuries, moderately and severely injured is the most widespread problem, breakdown in sanitary conditions and large number of casualties can lead to epidemics.

*Water supply* – Severe problems due to failure of the water supply distribution network and storage reservoirs. Fire hydrants supply lines, if vulnerable, can hamper fire service operations.

*Transport network* – Severely affected due to failure of roads and bridges, railway tracks, failure of airport runways and related infrastructure.

*Electricity and Communication* – All links affected. Transmission towers, transponders, transformers collapse.

## 8.6 Mitigation Strategy

**1. Engineered Structure:** The West Bengal Municipal (Building) Rules 1996 has been amended. A special change was made in cases of urbanized municipal areas of hill region.

The strategy should consider

- Structure of the building
- Empanelment of structural engineers
- Listing of insecure building
- Incorporation of BIS code
- Guideline for height restriction
- Demolition policy
- Setting up a technical cell in the government
- Setting up of seismological stations etc.

**2. Capacity Building:** Earthquake is a natural event which may cause tremendous loss of life and property damages. One of the major challenges is to reduce the vulnerability to this uncontrollable and unpredictable hazard by having a greater understanding about its causes and effects. Strengthening capacities of the engineers/architects, communities, urban local bodies and the administration in mitigation, preparedness and response through training in earthquake risk management and preparing a suitable model for mainstreaming of earthquake risk management initiative at all levels would help reduce seismic risk of earthquake-prone areas.

**3. Seismic Hazard Assessment:** Under this study, attempts are made to forecast the size and effects of earthquakes in years to come. In seismically active regions any decision-making for urban and regional planning should be based on probable characteristics of earthquakes expected in future. The primary objective of SHA is to construct seismic zoning maps. The main outcome of seismic zoning is that it displays a quantity related to assessed frequency and severity of shaking due to expected future earthquake.

**4. Community Based Mitigation:** Community preparedness along with public education is vital for mitigating the earthquake impact. Community based Earthquake Risk Management Project should be developed by District Disaster Management Authority. Retrofitting of schools and important building, purchase of emergency response equipment and facilities, establishing proper insurance can be the programmes under Earthquake Risk Management Project. A large number of local masons and engineers will be trained in disaster resistant construction techniques. A large number of masons, engineers and architects can get trained in this process.

#### **8.7. Measures To Be Adopted**

- Preparation of Earthquake Disaster Management plan
- Training of personnel
- Establishment of alternative means of tele-communication
- Mobilization of Fire Services including auxiliary fireman
- Plans of rescue of casualties trapped under debris
- Provision of hospital, medical and nursing staff
- Medical plans for improvised first aid posts and emergency hospitals
- Removal of debris
- Emergency sanitation, alternative supply of water, salvage and custody of valuables, care of animals etc.
- Provision for care of homeless, establishment of camps, distribution of essential commodities including clothing and shelter
- Disposal of dead and their identification
- Mobilization of transport
- Requisition of vehicles and issue of petrol, oil, lubricant, spare parts and repair facilities
- Special measures for the protection/repair/restoration of essential service communications, industrial and vital plants
- protection of property including objects of art and things of cultural importance
- Publicity
- Prevention of panic and upkeep of morality of the people
- Restoration of communications
- Rehearsal without causing alarm or despondency.

#### **8.7. During Emergency conditions**

When emergency condition develops following large scale disaster, the situations are to be tackled under the provisions of the Crisis Management and Relief Organisation (vide Chapter XIII).

## **CHATER IX**

### **LANDSLIDES AND EROSION**

#### **9.1 Landslides**

These are slippery masses of rock, earth or debris which move by force of their own weight down mountain slopes or river banks. Landslides are common disaster phenomena in the district of Darjeeling. Landslide is primarily nature's way of adjustment to slope stability. Here the process has been intensified by human interference, mainly through rapid deforestation, incorrect construction procedure and unplanned tapping of natural resources. The nature of landslides varies in proportion in various localities in Darjeeling depending on the intensity of rainfall coupled with the extent of deforestation and the vulnerable geological structures.

The most common occurrence in different parts of Darjeeling is:

- a) Along the springs which invariably cut across the roads,
- b) At coal mining sites,
- c) In tea gardens and
- d) At urban agglomeration.

#### **9.2 Soil erosion**

The removal of soil is caused by the action of water or wind, compounded by poor agricultural practices, deforestation, overgrazing, and desertification. Mainly three types of erosion make this State vulnerable:

- i. Erosion in hill areas of North Bengal,
- ii. Erosion in banks of Ganga at Malda,
- iii. Erosion in coastal region.

#### **9.3. ONSET TYPE AND WARNING**

Though they occur gradually, however, sudden failure (sliding) can occur without warning. They may take place in combination with earthquakes, floods and volcanoes. There are no clearly established warnings in place indicating occurrence of landslide and hence difficult to predict the actual occurrence. Areas of high risk can be determined by use of information on geology, hydrology, vegetation cover, past occurrence and consequences in region.

#### **9.4 CAUSES OF LANDSLIDES**

##### **9.4.1 Geological Weak Material**

Weathered materials, jointed or fissured materials, contrast in permeability and contrast in stiffness (stiff, dense material over plastic materials).

##### **9.4.2 Erosion**

Wave erosion of slope toe, glacial erosion of slope toe, subterranean erosion (Deposition loading slope or its crest, Vegetation removal).

### **9.4.3 Intense Rainfall**

Storms that produce intense rainfall for periods as short as several hours or have a more moderate intensity lasting several days have triggered abundant landslides.

### **9.4.4 Human Excavation**

Human Excavation of slope and its toe, loading of slope/ toe, draw down in reservoir, mining, deforestation, irrigation, vibration/ blast, water leakage from services.

### **9.4.5 Earthquake shaking**

Earthquake shaking has triggered landslides in many different topographic and geologic settings. Rock falls, soil slides and rockslides from steep slopes involving relatively thin or shallow disaggregated soils or rock. Or both have been the most abundant types of landslides triggered by historical earthquakes.

### **9.4.6 Volcanic eruption**

Deposition of loose volcanic ash on hillsides commonly is followed by accelerated erosion and frequent mud or debris flows triggered by intense rainfall.

## **9.5 Elements at Risk**

The most common elements at risk are the settlements built on the steep slopes, built at the toe and those built at the mouth of the streams emerging from the mountain valley. All those buildings constructed without appropriate foundation for a given soil and in sloppy areas are also at risk. Roads, communication line and buried utilities are vulnerable.

### **9.5.1 Typical Effects**

*Physical Damage:* Landslides destroy anything that comes in their way. They block or bury roads, lines of communication, settlements, river flow, agricultural land, etc. It also includes loss to agricultural production and land area. In addition, physical effects such as flooding may also occur.

*Casualties:* They cause maximum fatalities depending on the place and time of occurrence. Catastrophic landslides may kill thousands of persons.

## **9.6 Main Mitigation Strategies**

*Hazard mapping* will locate areas prone to slope failures. This will permit to identify avoidance of areas for building settlements. These maps will serve as a tool for mitigation planning.

*Land use* practices such as:

- Areas covered by degraded natural vegetation in upper slopes are to be afforested with suitable species. Existing patches of natural vegetation (forest and natural grass land) in good condition should be preserved
- Any developmental activity initiated in the area should be taken up only after a detailed study of the region and slope protection should be carried out, if necessary
- In construction of roads, irrigation canals etc. proper care is to be taken to avoid blockage of natural drainage

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- Total avoidance of settlement in the risk zone should be made mandatory
- Relocate settlements and infrastructure that fall in the possible path of the landslide
- No construction of buildings in areas beyond a certain degree of slope

*Retaining Walls* can be built to stop land from slipping (these walls are commonly seen along roads in hill stations). It is constructed to prevent smaller sized and secondary landslides that often occur along the toe portion of the larger landslides.

*Surface Drainage Control Works*: The surface drainage control works are implemented to control the movement of landslides accompanied by infiltration of rain water and spring flows.

*Engineered structures* with strong foundations can withstand or take the ground movement forces. Underground installations (pipes, cables, etc) should be made flexible to move in order to withstand forces caused by the landslide.

*Increasing vegetation cover* is the cheapest and most effective way of arresting landslides. This helps to bind the top layer of the soil with layers below, while preventing excessive run-off and soil erosion. Moreover, the revetment wall and its surroundings should carefully be afforested preferably with local varieties of grass, bamboo or wild fern, which can protect better from the splashing of rain.

*Insurance* will assist individuals whose homes are likely to be damaged by landslides or by any other natural hazards. For new construction it should include standards for selection of the site as well as construction technique.

### **9.7 Community Based Mitigation**

The most damaging landslides are often related to human intervention such as construction of roads, housing and other infrastructure in vulnerable slopes and regions. Other community based activities that can mitigate landslides are education and awareness generation among the communities, establishing community based monitoring, timely warning and evacuation system.

Communities can play a vital role in identifying the areas where there is land instability. Compacting ground locally, slope stabilization (procedures such as terracing and tree planting may reduce damages to some extent), and avoiding construction of houses in hazardous locations are something that the community has to agree and adhere to avoid damage from the possible landslides. This would also reduce the burden of shifting of settlements from hazardous slopes and rebuild in safe site as it is less practical to do in large scale.

### **9.8 During Emergency conditions:**

Where emergency condition develops following large scale disaster, the situations are to be tackled under the provisions of the Crisis Management and Relief Organisation (vide Chapter XIII).

## **CHAPTER X**

# **ACCIDENTAL FIRES**

### **10.1 General**

Fire is very dangerous and often destructive taking up toll of life and property. The most common human-caused fire is fire in large occupied buildings and in slums built in combustible materials. Causes can be accidental or deliberate, but unless structures are built to safe fire standards as mentioned in the Building Codes, and sound emergency procedures are used, heavy loss of life can result.

There are numerous causes of fire. It could be -

1. Heating sources are often causes of fire,
2. Cooking accidents are a major cause of home fires and cause us a lot of concern. Fire can result due to unattended cooking or due to mechanical failure of the stove or any cooking equipment,
3. Electrical wiring can cause a fire if it is not large enough to carry the load being supplied,
4. Rubbish and Waste materials that are left to accumulate can easily contribute to the spread of fire; they are also a place for malicious fire to be started,
5. Combustible Materials such as packing materials, glues, solvents, flammable liquids or gases stored in workplace can be extremely dangerous,
6. Arson or deliberate fire setting is also a cause,
7. Smoking is also a cause of fire.

### **10.2 During Emergency conditions**

Where emergency condition develops following large scale disaster, the situations are to be tackled under the provisions of the Crisis Management and Relief Organisation (vide Chapter XIII).



## **CHAPTER XI**

### **HEAT WAVES**

#### **11.1 General**

A Heat wave is a complex phenomenon resulting from a certain combination of temperature, humidity, air movement and duration. Simply stated, a heat wave is an extended period of very high summer temperatures with the potential to adversely affect communities.

#### **11.2 Heatwave Dangers and Effects**

##### **11.2.1 Human Effects**

In many parts of the State, during every summer thousands of people suffer from heat stress when the bodies absorb more heat than they can dispel. Unless prompt preventive measure/treatment is received, they suffer the serious or even fatal consequences of heat stroke. Regardless of these statistics, heat wave is probably the most under-rated of all natural hazards.

The body responds to this stress progressively through three stages:

- Heat cramps
- Heat exhaustion and
- Heat stroke

##### **11.2.3 Animals & Agriculture**

Animals suffer the same way as humans do, particularly when left without shade and adequate water. During heat waves, especially in times of drought, livestock losses can be very high. Plants, crops and vegetables are also subject to the effects of the heat. The damage to the standing crops is a common feature during such events.

##### **11.2.4 Utilities & Services:**

Water and electricity consumption services increase rapidly during severe heat conditions, often causing shortages. This causes extra demands on electricity and water supplies.

##### **11.2.5. Community Awareness**

There appears to be significant lack of community awareness of the risks associated with heat wave, even though several parts of the country experience such events with some regularity. It is a widely overlooked, even unknown, killer. It is ideal to create awareness among the communities and ask them to take suitable precautionary steps during the peak summer months. Media and Community education can be launched prior to the onset of the heat wave conditions.

#### **11.3 During Emergency conditions:**

Where emergency condition develops following large scale disaster, the situations are to be tackled under the provisions of the Crisis Management and Relief Organisation (vide Chapter XIII).

## CHAPTER XII

# TSUNAMI HAZARDS AND DISASTERS

### 12.1. General

TSUNAMI is a Japanese word meaning “harbour wave”. These waves, which often affect distant shores, originate from undersea or coastal seismic activity, landslides and volcanic eruptions. Whatever the cause, sea water is displaced with a violent motion and swells up, ultimately surging over land with great destructive power.

### 12.2 ONSET TYPE and CAUSES

If the earthquake or under water land movement is near the coast, then tsunami may strike suddenly and if the earth movement is far in the sea then it may take few minutes to hours before striking the coast. The onset is extensive and often very destructive. The general causes of Tsunami are geological movements. It is produced in three major ways. The most common of these is fault movement on the sea floor, accompanied by an earthquake. To say that an **earthquake** causes a tsunami is not completely correct. Rather, both earthquakes and tsunamis result from fault movements. Probably the second most common cause of tsunamis is a **landslide** either occurring underwater or originating above the sea and then plunging into the water. The third major cause of tsunamis is **volcanic activity**. The flank of a volcano, located near the shore or underwater, may be uplifted or depressed similar to the action of a fault. Or, the volcano may actually explode. In 1883, the violent explosion of the famous volcano, Krakatoa in Indonesia, produced tsunamis measuring 40 meters which crashed upon Java and Sumatra. Over 36,000 people lost their lives as a result of tsunami waves from Krakatoa. The giant tsunamis that are capable of crossing oceans are nearly always created by movement of the sea floor associated with earthquakes which occur beneath the sea floor or near the ocean.

### 12.3 WARNING

Tsunami is not a single giant wave. It consists of ten or more waves which are termed as a “tsunami wave train”. Since scientist cannot predict when earthquakes will occur, they cannot predict exactly when a tsunami will be generated. Studies of past historical tsunamis indicate where tsunamis are most likely to be generated, their potential heights, and flooding limits at specific coastal locations. With use of satellite technology it is possible to provide nearly immediate warnings of potentially tsunamigenic earthquakes. Warning time depends upon the distance of the epicenter from the coast line. The warning includes predicted times at selected coastal communities where the tsunami could travel in a few hours. In case of tsunamigenic earthquakes or any other geological activity people near to the coastal areas may get very little time to evacuate on receiving of warning.

### 12.4 ELEMENTS AT RISK

All structures located within 200 m of the low lying coastal area are most vulnerable to the direct impact of the tsunami waves as well as the impact of debris & boulders brought by

it. Settlements in adjacent areas will be vulnerable to floods & scour. Structures constructed of wood, mud, thatch, sheets and structures without proper anchorage to foundations are liable to be damaged by tsunami waves & flooding. Other elements at risk are infrastructure facilities like ports & harbours, telephone and electricity poles, cables. Ships & fishing boats/nets near the coast also add to the destruction caused by tsunami waves.

## 12.5 TYPICAL EFFECTS

**Physical damage :** Local tsunami events or those less than 30 minutes from the source cause the majority of damage. The force of tsunami can raze everything in its path. It is the flooding effect of a tsunami, however, that most greatly effects human settlements by water damage to homes and businesses, roads, bridges and other infrastructure. Ships, port facilities, boats/ trawlers, fishing nets also get damaged.

**Environmental damage :** There is evidence of ever increasing impact upon the environment on account of the effects of tsunamis. The range varies from generation of tones of debris on account of structural collapse of weaker buildings, release of toxic chemicals into the environment on account of chemical leak/ spillage/ process failure/ utility breakages/ collateral hazards and negative impact on the already fragile ecosystems.

**Casualties and public health :** Deaths occur principally from drowning as water inundates homes or neighborhoods. Many people may be washed out to sea or crushed by the giant waves. There may be some injuries from battering by debris and wounds may become contaminated.

**Water supply :** Sewage pipes may be damaged causing major sewage disposal problems. Drinking water shortage arises due to breakage of water mains and contamination. Open wells and ground water may become unfit for drinking due to contamination of salt water and debris.

**Standing Crops and food supplies :** Flooding by tsunami causes damage to the standing crops and also to the food supplies in the storage facilities. The land may be rendered infertile due to salt water incursion from the sea.

## 12.6 SPECIFIC PREPAREDNESS MEASURES

**Hazard mapping :** A hazard map should be prepared with designated areas expected to be damaged by flooding by tsunami waves. Historical data could be of help in showing areas inundated in the past. Keeping in mind the vulnerable areas, evacuation routes should be constructed and mapped. The plan should be followed by evacuation drill.

**Early warning systems :** A well networked system in place can warn the communities of the coastal areas when the threat is perceived. Tsunami warning should be disseminated to local, state, national as well as the international community so as to be prepared as they are capable of crossing across continents. The information can be broadcasted to the local emergency officers and the general public. On receiving of the warning the action should be to evacuate the place as decided in the evacuation plan.

**Community Preparedness :** Communities in the coastal areas face the wrath of cyclones, storm surge and tsunami waves. It is important that the community is better prepared to take suitable actions on receiving early warning, because to ignore early warning will severely affect if they are not prepared to take immediate measures.

## 12.7 MAIN MITIGATION STRATEGIES

**Site Planning & Land Management :** Within the broader framework of a comprehensive plan, site planning determines the location, configuration, and density of development on particular sites and is, therefore, an important tool in reducing tsunami risk.

- The designation and zoning of tsunami hazard areas for such open-space uses as agriculture, parks and recreation, or natural hazard areas is recommended as the first land use planning strategy. This strategy is designed to keep development at a minimum in hazard areas.
- In areas where it is not feasible to restrict land to open-space uses, other land use planning measures can be used. These include strategically controlling the type of development and uses allowed in hazard areas, and avoiding high-value and high-occupancy uses to the greatest degree possible.
- The capital improvement planning and budgeting process can be used to reinforce land use planning policies.

**Engineering Structures :** As most of the structures along the coast area belongs to fisherman community, these are constructed of light weight materials without any engineering inputs. Therefore there is an urgent need to educate the community about the good construction practices that they should adopt such as :—

- Site Selection— Avoid building or living in buildings within several hundred feet of the coastline as these areas are more likely to experience damage from tsunamis.
- Construct the structure on a higher ground level with respect to mean sea level.
- Elevate coastal homes: Most tsunami waves are less than 3 meters in height. Elevating house will help reduce damage to property from most tsunamis. Structural columns resist the impact while other walls are expendable. It is important also to ensure that adequate measures are brought into the design to cater for earthquake forces.
- Construction of water breakers to reduce the velocity of waves.
- Use of water & corrosion resistant materials for construction.
- Construction of community halls at higher locations, which can act as shelters at the time of a disaster.

**Flood Management :** Flooding will result from a tsunami. Tsunami waves will flood the coastal areas. Flood mitigation measures should be incorporated. Building barriers or buffers such as special breakwaters or seawalls can be an effective risk reduction measure against gushing waters in case of Tsunami/Storm surge during cyclones.

## **CHAPTER XIII**

# **CRISIS MANAGEMENT AND RELIEF ORGANISATION**

### **13.1. Introduction**

The preceding chapters have provided for Risk Management which includes preparedness, prevention and mitigation measures to be taken. Whenever large scale disasters such as floods, famine, fire etc., occur, people look at the Government for rescue, relief and rehabilitation. In the past, the work was done not according to any pre-arranged plan or through any specialised services, but on an ad hoc basis by switching the available administrative services to the relief work that becomes most necessary.

### **13.2. The need**

It is common knowledge that these disasters are frequent occurrence and cause enormous damage to life and property in one part of the State or another. What is probably not realised widely is that the value of the damage in terms of national wealth runs into several hundred crores of rupees each year as direct loss of natural calamities. Much of this damage could have been prevented, and a great deal of human suffering saved, had there been a predetermined and planned approach to the problem. The effects of these disasters on the people are not dissimilar, though the disasters themselves may vary in nature, point of time and incidence, and these can be mitigated by careful anticipation and provision of the necessary emergency services.

The basic idea is that relief operations under Crisis Management phase of Disaster Management should be conducted according to a predetermined and fully integrated plan by a composite organisation of officials and Panchayat Raj Institution, who would each have specific roles assigned in advance, would be fully oriented in those roles and would have the complete measure of the problem at all times. By this, hesitancy and improvisation leading to a time-lag in the commencement of relief operations, inadequate resources and ill-co-ordinated and, therefore, wasteful action after the occurrence of a calamity can be avoided.

### **13.3. Aims and objects**

The Emergency Relief Organisation for Crisis Management will be required to-

- (a) Assess the magnitude of the problems arising out of natural calamities in various parts of the State,
- (b) Collect information relating to official agencies that could be deployed for rendering assistance to people affected by these calamities,
- (c) Ascertain the resources available with these agencies for conducting relief operations,
- (d) Co-ordinate the relief activities of the various departments by
  - (i) evolving an Incident Command System
  - (ii) drawing up operational plans in consultation with the related line departments,
- (e) Establish liaison between the Central Government and the State Governments.

#### **13.4. Classification of Natural Calamities**

For the purpose of the scheme, natural calamities have been broadly classified as hereunder:

- (a) Floods, storms, cyclones, drought, hailstorm,
- (b) Earthquakes, landslides, collapse of buildings, etc.
- (c) Major accidents in railways, docks and mines and at festivals, fairs, other religious and social gatherings,
- (e) Serious fire outbreaks.

#### **13.5. Nature of preventive and control measures**

(a) Measures for the prevention and control of natural calamities should as far as possible be devised in advance of the occurrence of the calamities. In this respect, the experience gathered in the past and data collected over a period of years should afford valuable guidance. The provisions in this regard are laid down in previous chapters.

(b) The measures to be put into force during the disaster are those intended to mitigate its effects and to administer relief to the people in need.

(c) The measures to be taken after the disaster will generally be confined to the provision of such rehabilitation assistance as may be immediately necessary to the affected people.

#### **13.6. Problems created by natural calamities**

It has been observed that the problems created by various types of natural calamities are not similar in all respects, but most of them have certain features in common. Consequently, the relief measures to be undertaken will, to a large extent, conform to a pattern which can be predetermined. For instance, measures, such as

- (a) Rescue of casualties, repairs to buildings and other structures, and salvage of property, debris clearance, restoration of essential services,
- (b) Removal of those affected to safer areas, traffic control, emergency feeding, sheltering and clothing of the homeless provision of essential supplies and water,
- (c) First-aid and medical attention, emergency sanitation, prevention of epidemics, care of animals, identification and disposal of the dead,
- (d) Prevention of panic, and maintenance of morale would be common to most disasters, like floods, fire, earth-quakes, landslides and large-scale accidents at fairs, festivals and other social and religious gatherings.

#### **13.7. Grouping of relief measures**

It is proposed that the measures undertaken by the Disaster Management Department should be grouped under the major heads of services.

The intention is that proper coordination among each of these services is essential for the purpose of Crisis Management.

#### **13.8. Functions of the Department of Disaster Management**

The ultimate responsibility for taking preventive and control measures in respect of

disasters that could be foreseen will naturally be those of the Government. The Department of Disaster Management will in the circumstances, be concerned with the best and most expeditious manner in which Governmental responsibility for the prevention, regulation and control of the consequences of natural disasters can be discharged and the voluntary assistance of social welfare agencies and of the people at large can be fully and economically harnessed, coordinated and applied to the maximum advantage.

### **13.9. Approach**

The Crisis Management is based on the following principles:-

- (a) The relief operations should be conducted according to well-laid plans drawn ahead of an emergency and as far as possible, by personnel well-trained in conducting such operations,
- (b) The greatest emphasis should be laid on the principle of self help so that assistance from outside the area immediately affected by a disaster is reduced to the minimum and is not applied for unless there is a real and pressing need,
- (c) Even though disasters may vary in nature and in intensity, certain basic measures of relief will be common to all, and
- (d) The district and local authorities and the State Government should take on themselves the responsibility for proper integration of the activities in this respect within their respective areas. For this purpose, it would be necessary to set up advisory committees consisting of their own representatives, and members of the public.

Adequate emphasis should be laid on securing the co-operation of the existing social welfare agencies at all stages and kept alive their initiative and enthusiasm for relief work.

### **13.10. Emergency Relief Organisation at State level**

The State Government draws up own Emergency Relief Plans. The State participates in Disaster Resources Network Programme coordinated by Govt. of India. Such co-ordination will ensure uniformity in the method of functioning of the various State units and also enable the State to benefit by the experience of other State units in the zone. Further, such co-ordination will also be helpful in cases where natural calamities like floods or famine affect areas in more than one zone or where the resources of the State or zone affected are not adequate and have to be supplemented from the neighbouring states or zones.

In order to draw up plans on the lines indicated above and to coordinate all emergency relief work within their respective territories, the Department of Disaster Management in addition to drawing up the State Plan and coordinating all relief work within the State, will attend to such details as implementing the policy decisions and recommendations of Govt. of India, keeping the Central Govt. in close touch with all major developments and furnishing to it full factual information regarding damage to property, casualties, etc. All correspondence on behalf of the State Govt. is to be carried on under the direct supervision and guidance of the Chief Secretary to the State Government.

### **13.11. Emergency Relief Organisation in districts/subdivisions and blocks**

There is broad based staff of Disaster Management Department throughout the State upto the Block level.

### **13.12. Emergency Relief Organisation in rural areas**

The unit of relief organization is Gram Panchayats. Some contiguous Gram Panchayats form into charges under a Block Development Officer.

### **13.13. Training**

The State Disaster Management Department will have to develop suitable arrangements for the training of officials and volunteers for assumption of responsibility in connection with the actual field work as effective members of teams participating in the various branches of emergency services.

### **13.14 Planning for emergency relief at various levels**

#### **13.14.1. Planning - General approach**

The success of Crisis Management will depend to a considerable extent on the preparation and implementation of emergency relief plans on proper lines. Those responsible for the preparation of these plans should, therefore, proceed with the work systematically and ensure that the plans take into account all contingencies and are complete in all respects. In order to avoid the possibility of any omission, skeleton plans may first be prepared and circulated to the line departments and other concerned with their implementation, inviting their comments with a view to improving these skeleton plans. Alternatively, comprehensive questionnaires, which would bring forth answers that will be helpful in preparing the plans, may be drawn up and circulated to such agencies and thereafter the plans prepared on the basis of the replies received.

It might also be helpful if the plans are divided into parts and responsibility for collecting the necessary information for preparing the "part plans" is entrusted to those who have specialised knowledge or previous experience of the particular type of work. For instance, the functions of the Crisis Management are conveniently grouped under (i) Organisation and Training services, and (ii) Relief Operations and other ancillary services. These services can be further subdivided into medical and public health services, rescue service, welfare service, etc. The task of the planning authority at the State and District levels will no doubt be made easier if, for instance, the portions relating to medical and public health services in the State plans and District plans are prepared under the supervision of the Secretary to the Health and Family Welfare Department and the Chief Medical Officer of Health respectively. These authorities have the necessary specialised knowledge and experience and, therefore, are in the best position to draw up the plans. The plans, when thus prepared in parts, may then be put together by the planning authority.

#### **13.14.2. General Instructions**

The normal requirements of the various emergency relief schemes, with an indication of how they should be planned, are given below for the guidance of the planning authorities.

**Assessment of problem : Classification of areas based upon the degree or vulnerability to natural disasters.** Every planning authority should first find out whether there are any particular local areas which are particularly susceptible to one or more types of natural calamities and the frequency thereof. For instance, low lying areas by the side



of turbulent rivers, areas containing godowns for cotton, jute, timber and other easily inflammable materials, areas surrounding oil storages or refineries, hilly regions where land-slides occur frequently, places of pilgrimage where festivals fairs and other religious or social congregations are held periodically, areas affected by heavy rains during the monsoon, etc., should be treated as extremely vulnerable areas and it is for these areas that planning should be undertaken first. If possible, it is desirable to classify the different areas and localities within each district on the basis of the frequency and intensity of natural calamities that have occurred in the past. The suggested classification is:-

- (a) Very Vulnerable Areas- Areas which have been affected by natural disasters most often and with some severity,
- (b) Vulnerable Areas- Areas wherein such disasters are not of very frequent occurrence but are nevertheless to be seriously reckoned with, and
- (c) Other Areas.

This classification of areas would have to be done with reference to each particular type of disaster. For instance, an Area which may have to be classified as “very vulnerable” for purposes of flood relief measures will naturally require no measures to be undertaken for drought relief. The advantage of the classification would be that relative priorities can be settled by the State Relief Commissioner as between different types of relief measures that may be indicated for a particular area. The quantum of relief services to be provided and the supplies and equipment to be arranged for by the Disaster Management Department would also depend on this classification. The frequency and intensity of future disasters are no doubt variable factors which cannot be precisely calculated in advance, but experience of the past will certainly afford valuable guidance in working out suitable formulae and scales of assistance.

#### **13.14.3. Collection of statistics**

District Magistracies will, with reference to each type of disaster, collect statistics (in the Proforma as per **Annexure A**) in respect of disasters that had occurred in various parts of their districts in the past and make use of the data collected in the manner indicated below. The State Government will, however, have the discretion to determine the nature of calamities, the particular aspect of each calamity and the period of time in regard to which the statistical data should be collected.

(a) Very Vulnerable Areas: In the case of “very vulnerable area,” the possibility of a disaster striking again with the same intensity as it might have done in the previous years cannot be lost sight of. In view of this, it is suggested that for purposes of planning, for deciding the quantum of relief services and supplies and equipment to be provided for, it may be assumed that the next disaster would have the same intensity as the worst disaster that had occurred in the areas during the last 10 years and that the problems created thereby would be more or less similar to those that had to be faced on that occasion. These does not, however, mean that planning authorities should take into account any previous disaster of an unprecedented intensity and devastation as a standard for the provision of relief measures in the future. All that is intended is that such unprecedented disasters should be left out and only the remaining disasters should be taken into account to provide maximum coverage for such disasters. Another important factor to be taken

into account is the permanent measures that may have been taken by the authorities in the area subsequent to the last disaster, for future prevention and control of similar disasters. The planning authorities should, in calculating the probable intensity of a future disaster, therefore make suitable allowances on the basis of the preventive and control measures taken in the area.

The intensity of any disaster should be determined in relation to the effect the disaster is likely to have on –

- (i) Human beings,
- (ii) Cattle and
- (iii) Property.

The relief measures drawn up should be so designed as to afford maximum protection to human lives first and then to cattle and finally to property.

(b) “Vulnerable” and “other” areas -The principles to be followed in determining the intensity of natural disasters in “vulnerable” and “other areas” need not, for obvious reasons, be as rigid as in the case of “very vulnerable” areas. In the case of such areas, it is considered that it ought to suffice if the average of the impact of the devastation on persons and property caused by natural disasters during the last ten years, is taken into account and the scales of services, supplies and, equipment and other resources for relief purposes are worked out on the lines indicated in the foregoing paragraph.

#### **13.14.4. Assessment of Requirements, Availabilities and Deficiencies**

Another factor to be borne in mind is that plans of this type will be complete only if:

- (a) An assessment is made of the requirements,
- (b) The availabilities are worked out, and
- (c) Provision is made for making up the deficiencies, if any.

In so far as the crisis management is concerned, the requirements, availabilities and deficiencies will have to be worked out in respect of three items, namely -

- (i) Manpower (i.e., Government personnel and trained non-official workers for conducting relief operations),
- (ii) Supplies and equipment (such as fodder, food stuffs, medical supplies, clothing, shelter, transport, appliances and implements for fire-fighting and for rescuing people trapped in collapsed houses, etc.), and
- (iii) Training facilities (for Government personnel and non-official workers, training equipment, etc.).

The authorities in charge of planning should, with reference to the magnitude of the problem to be faced based on past experience, expert advice, etc. draw up the requirements of trained manpower, supplies and equipment in respect of each of the emergency services that will be provided by the Disaster Management Department. The next step would be to collect detailed information relating to availabilities. The various non-official agencies participating in the scheme will no doubt be in a position to let the planning authorities know the number of volunteers registered with them, whose services could be made available in an emergency. Similarly, it should be possible for the planning authorities to ascertain details regarding existing training facilities. The Civil Defence Department imparts training to youths on Search, Rescue and First Aid. On the basis of the information so

collected, the authorities should decide whether the manpower and the training facilities already available are reasonably adequate and if not, how the deficiencies should be made up. In the case of supplies and equipment, more elaborate planning will be required. For instance, it would be necessary not only to verify the resources of the various participating agencies (including Government Departments), but also to ascertain that additional resources can be found at short notice. Special reserves for augmenting the existing normal reserves of various agencies may be developed at convenient or strategic centres scattered all over the State in an emergency. The Crisis Management plans should provide for these agencies storing, in addition to their normal stocks, reserves on behalf of the Disaster Management Department to be operated on by the department in an emergency. Such details as the location of the supply-depots within each zone, State or district, their contents, the procedure to be followed for the procurement of stores and despatch to affected areas, priorities, if any, etc., should be clearly indicated in the plans.

It is not envisaged that any paid workers will be recruited for emergency relief work. In areas or localities in which there are no social welfare agencies, the department, through its Advisory Committee, should create among the people the requisite awareness of their social responsibility to volunteer for such work when an occasion arises and encourage them to organise themselves for the purpose. There should be provision of fund from the plan Budget for conducting awareness campaign among the common people.

#### **13.14.5. Stages of Planning**

In order to ensure that the authorities planning for emergency relief and the Department of Disaster Management proceed with their work methodically and that there is no confusion at a later stage about the duties and responsibilities of those concerned with the implementation of the Disaster Management Plans, it is desirable that each plan is prepared and developed in two stages, viz. Planning Stage and Operational Stage.

**Planning Stage.-** Planning Stage is the stage at which Central, State and District Disaster Management Authorities are set up and paper plans relating to the requirements, availabilities and deficiencies in respect of manpower, training, equipment (training and operational) and supplies at various levels are prepared on the basis of the data collected from various sources. At this stage, the duties and responsibilities of the department should be laid down, plans for the receipt and dissemination of warnings of impending natural disasters should be worked out, and the procedure to be followed in rendering assistance to people affected should be tentatively settled.

Thereafter, all arrangements for implementing the paper plans should be finalised, necessary personnel recruited, the duties and responsibilities to be undertaken by the department should be specifically allotted to particular official selected for the purpose, training programmes should be given effect to and necessary training equipment should be procured and issued. Action committees should be set up and supplies and equipment should be arranged for and where necessary, stored. Additional supplies that may be required to be collected during the emergency should be earmarked for procurement at the appropriate time.

**Operational Stage.-**This stage will also consist of two **sub-stages**:

- (i) Precautionary, and (ii) Action.

(i) Precautionary Stage is the stage at which more or less definite information regarding the probable occurrence of a disaster becomes available and steps are taken to alert the operating services, post them to their places of duty, finalise arrangements in respect of despatch of supplies and other equipment already collected and stored to the places likely to be affected, indenting, if necessary, for additional supplies and equipment previously earmarked, and issue of operational equipment to the services concerned.

Sometimes, the precautionary stage may merge in the Action Stage as for example, when the calamity sets in suddenly, and the measures outlined for both stages may have to be taken simultaneously.

(ii) **Action Stages – The stage when the disaster strikes, when the various line departments go into action.** It is possible that in certain types of disasters, an area or locality is struck all on a sudden and the department may be required to conduct relief operations at a very short notice. In view of this, the Planning authorities should, at least in respect of “very vulnerable” areas, work on the basis that there is only one stage, namely, the Action Stage and provide for the completion of as many of the functions as are to be undertaken in the precautionary stage, in the preparatory part of the planning stage itself. It will also be a measure of prudence to provide for a nucleus of staff with all the essential supplies, etc., so that this nucleus can, before arrangements are made for the despatch of other staff, supplies, etc., go into action on their own under the supervision and guidance of a “leader”. This nucleus should be placed under the Block Development Officer responsible for conducting the operations at the Block level.

#### **13.14.6. Flexibility and Adaptability**

The Crisis Management Plan is so designed as to afford the fullest scope for the participation of the people in it as far as possible. In preparing the plans, therefore, due considerations should be paid to local sentiment and practices with regard to the manner in which particular problems are tackled. The plan should be flexible to this extent. Since any attempt to revise the plans or to introduce a new system immediately before or during an emergency will result in confusion and chaos, the planning authorities should decide on the exact way of tackling any problem at the planning stage itself and give wide publicity to the decisions.

#### **13.14.7. Provision for alternatives, mutual aid and reinforcements**

The planning authorities should not lose sight of the possibility of some of the trained staff not becoming available during an emergency and unforeseen destruction of supplies and other resources as a result of the emergency itself. It is also possible that a disaster may be of a magnitude not normally anticipated and provided for and thus it may be necessary to augment the facilities available for conducting the relief operations. For all these reasons, it is suggested that the plans may provide for:

- (a) In respect of manpower, the number of personnel to be trained should be in excess of the normal anticipated needs. In respect of key posts, there should be at least one alternative hand trained to perform the duties of the person whose responsibilities he is to take over,
- (b) In respect of the resources and supplies, the source within the area or locality

wherefrom additional supplies or resources can be acquired at short notice should be ear-marked,

- (c) In respect of training, alternate arrangements should be planned for,
- (d) In respect of all the three items mentioned above (manpower, supplies and training), agreement should be entered into with the nearest unit of the Disaster Management Department outside the area or locality to which the plan relates, for mutual assistance and provision of reinforcement in an emergency.

The plan should lie down clearly that the main responsibility of the department will be to save human lives and alleviate human sufferings. To this extent, the department will attend to the people in distress first and then only attempt salvage of property.

### **13.15 Supply Service**

#### **13.15.1. The need for the Service**

In the event of widespread natural calamities, stocks of food-grains and other essential commodities available in the affected areas may get destroyed. It is also possible that the normal means of transport, by which such commodities are brought into the affected areas from outside, may get dislocated. The authorities concerned should, therefore, plan in advance for the procurement of essential supplies for use in the areas affected. Floods, heavy rains, cyclones, earthquakes, etc., may also cause the collapse of houses and other buildings and, in such cases, it will be necessary to remove the people affected to safer localities and make temporary arrangements for their shelter. The people who get injured will require medical attention and this will necessitate the storage and distribution of essential medical supplies. For taking action in advance for the storage of stocks of food-grains, clothing, medical supplies, etc., in comparatively safe localities within easy reach and for arranging for the distribution of these stocks in an emergency, the Disaster Management Department should develop a suitable Supply Service. The Supply Service should also be responsible for providing necessary transport, an equipment required by the Disaster Management staff for conducting the relief operations. The duties and responsibilities of the Supply Service will thus be two-fold, namely,

- (a) Making all arrangements for the procurements and distribution of the material necessary for rendering relief to people affected by natural calamities through the Block Development Officer concerned and
- (b) Procurement and distribution of equipment (including transport necessary for the relief workers for conducting the relief operations).

#### **13.15.2. Planning**

For the efficient performance of their duties and responsibilities, the Supply Service of the Disaster Management Department should prepare suitable plans providing for the steps to be taken for

- (a) the procurement of supplies and equipment,
- (b) their storage and maintenance, and
- (c) their distribution.

The plans so drawn up should take into account all available data and contain at least

an approximate indication of requirements, availabilities and deficiencies, and how the deficiencies are to be made up.

### **13.15.3. Requirements**

The supplies and equipment required for relief work can be broadly classified as

- (a) Essential commodities such as food-grains, clothing, kerosene and other burning oils, coal/firewood, etc.
- (b) Medical stores including medical and surgical equipment, medicines, bandages, stretchers, vaccines, antibiotics, disinfectants, blood-plasma, vitamin tablets, children's foods, condensed milk, etc.
- (c) Transport vehicles including motor vehicles, cycles, motor cycles, bullock and other animal driven carts, buses, boats, motor launches, such other items as petrol, oils, lubricants and spare parts of vehicles.
- (d) Miscellaneous stores and equipment such as fire-fighting and rescue and demolition equipment, material for emergency construction and repairs, office furniture, stationery, uniforms and bandages for disaster management staff etc.

### **13.15.4. Availability**

Requirement having been worked out, the availability of resources normally available within the area should be assessed.

The normal resources can, for this purpose, be taken as

- (a) Resources stored by official agencies for the specific purpose of being utilised in emergencies and
- (b) Resources available with official agencies intended for their normal use but which or a part of which can be borrowed for use in emergency.

### **13.15.5. Pooling of Resources**

In order to ensure that all the resources required for conducting the relief operations are available from a common source within the area so that there is no confusion as to wherefrom the supplies, equipment, etc., should be collected and who will be responsible for storing and maintaining them, the Department of Disaster Management has taken plans to create Relief Godowns and already created godowns in different vulnerable zones.

### **13.15.6. Units and scales**

Obviously in order to work out the requirements, availabilities and deficiencies, the planning authorities will have to adopt suitable scales. These scales could be worked out tentatively and modified later on in the light of experience.

### **13.15.7. Method of working out unitary measures and scales**

It should be possible for the District Disaster Management Authority with the help of statistics collected from various sources and on the basis of approximate requirements as can be obtained from the local B.D.Os, to work out the approximate requirements of manpower, supplies and equipment and other resources necessary for dealing with problems created by a disaster in a certain magnitude.

#### **13.15.8. Standardization of scales and scrutiny of plan**

After the District Disaster Management Authority has worked out the scales for different relief services, supplies and equipment and has also drawn up the District Plan, the plan should be shared with the District Planning Committee and then transmitted to the State Disaster Management Authority. The State Disaster Management Authority will then proceed to standardize unitary measures and scales for the State as a whole and scrutinise the provisions made by each District Magistrate in respect of its requirements, availabilities and deficiencies. On the basis of scales it adopts, the State Disaster Management Authority will indicate the extent to which it will be able to render support to various District Disaster Management Authorities and pass on its proposals for various Central Assistance to the Government of India.

#### **13.15.9. Block Development Officer to be Alert**

On receipt of definite information or warning of likely occurrence of a disaster, the members of Block Disaster Management Committee will be instructed by the B.D.O. to report for duty at Block Control Room. The B.D.M.C will then proceed to make an appreciation of the content of the information / warning in the best manner possible and take the following action:-

#### **13.15.10. Manpower:**

- a) Block level Disaster Management Committee mobilize their resources and assemble at a pre-arranged point with service equipment,
- b) Send a survey party to the threatened area to report on the extent of damage already caused to life and property or is likely to cause, along with a nucleus of trained volunteers under a trained leader,
- c) If evacuation of people from the threatened areas is necessary, finalise the arrangement and start evacuation.

#### **13.15.11. Equipment:-**

- a) Procure supplies of medicines, foodgrains etc. in accordance with previously arranged procedure,
- b) Collect emergency clothing that may become necessary,
- c) Finalise arrangements in respect of transport and instruct owners of vehicles earmarked for relief work to make their vehicles available.

#### **13.15.12. (A) Fire fighting**

For fighting fires, the services of local fire brigades should be used to the extent possible. In rural areas, the services of trained volunteers and members of the police force should be availed of primarily.

**(B) Rescue** – Only volunteers specially trained will be able to rescue people from flooded areas, buildings on fire, people trapped under debris etc. In some cases, special types of equipment and appliances may be needed. The problem will vary from one area to another.

**(C) Medical and Public Health Services** - These will be concerned respectively with (i) administration of first aid to the injured on the spot (ii) removal of persons who

are seriously injured to emergency camp hospitals or to regular hospitals nearby (iii) maintenance of mobile medical and first aid vans and ambulances and, (i) emergency sanitation, (ii) purification of contaminated water, edibles etc. (iii) control of epidemics including inoculation and vaccination.

**(D) Welfare –**

- i. Housing – As per as possible, vacant buildings, schools etc. should be used for housing those rendered homeless. Emergency camps should be set up only in exceptional cases.

Cyclone/Flood shelter: During the ravages wrought by natural calamities like flood, cyclone etc. the government experiences much difficulty in providing shelter to the rescued people because of absence of proper building / premises which could be utilized for the purpose and also because of the fact that continued use of public buildings like schools etc. create problems for resumption of normal activities.

In view of this, the Government has taken up programmes for construction of cyclone/ flood shelters in cyclone and flood prone areas. These shelters should be located on high lands and where people from several villages could be given shelter in time of need.

- ii. Feeding – Foodgrains and essential article of diet may be rationed out to the affected people or supplied as cooked food at gruel centres or field kitchens, according to exigencies of the situation.
- iii. Clothing – What is important is that the requirements should be estimated, procured and distributed to the needy people without delay.
- iv. Evacuation – For systematic evacuation, it would be necessary to provide adequate transport and to allot priorities. It would also be necessary to maintain close liaison with the housing and feeding sections. Because of the disaster, well known land marks may have completely disappeared or may have become unrecognizable. In that event, assembly points should be established and people guided to those points by volunteers, workers and police.
- v. Publicity and Information – People in distress require courteous and sympathetic treatment and prompt and adequate service. Competent workers should be assigned for providing the sufferers with –
  - a) General information on relief operation as a whole, designed to keep up their morale,
  - b) Detailed information regarding the arrangements made for their housing, feeding, clothing, etc.,
  - c) Information regarding missing persons.

The last is of particular importance as members of a family are likely to get separated in a major emergency and would be frantic with fear and anxiety until they know where the missing persons are and what has happened to them.

**13.15.13. Public Co-operation**

Integrated action by non-official social welfare organizations as well as by the machinery of the Government should be developed by coordination. Successful cooperation can result only when there is mutual trust, confidence and understanding among the participants.



Some of the methods by which the co-operation of the public may be enlisted are –

- a) Publicity through organised meetings addressed by acknowledged leaders of the people, slogans and songs,
- b) Distribution of leaflets, hand-bills etc. and display of posters,
- c) Display of documentary films, slides, shorts etc.
- d) Propaganda in schools, colleges and other organised institutions and associations,
- e) Radio-talks by national leaders and other eminent personages etc.

#### **13.15.14. Assistance and co-operation of the police**

This will be required not only for maintaining law and order but also in the conduct of actual emergency relief operations. The following are some of the needs for which no alternative agency can perhaps serve as an adequate substitute –

- (a) Traffic control
- (b) Cordoning off
- (c) Restoration of communications
- (d) Public Health in enforcing orders passed by local Public Health authorities with regard to sealing of contaminated wells and destruction of contaminated food etc.
- (e) Care and salvage of unclaimed property
- (f) Disposal of corpse/carcasses.

#### **13.15.15. Assistance that can be expected from the Defence authorities**

Defence authorities are expected to provide assistance in the following items, viz :

- a) Fighting fire
- b) Rescuing people marooned in water-logged areas
- c) Air-dropping food stuffs, medical supplies, etc.
- d) Supplying food stuffs
- e) Helping in distribution of food supplies
- f) Medical aid
- g) Providing temporary bridges
- h) Repairing roads and restoring essential services such as electricity, water etc.
- i) Dismantling damaged buildings
- j) Setting up camps for the homeless
- k) Providing transport for evacuation
- l) Providing amphibious vehicles
- m) Repairing breaches in embankments
- n) Preventing looting, etc.

#### **13.15.16. Assistance from other public services**

As in the case of Police and the Defence Services, the planning authorities should assess the special assistance that may be needed from other State and Central Services and provide the extent and manner of such assistance.

#### **13.15.17. Action Points**

These actions points should be borne into the mind of Disaster Managers of all levels.

##### **1. After an Earthquake:-**

- a) Instant reaction
- b) Establishment of Control Room
- c) Military Assistance

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- d) Corpse Disposal
  - e) Medical Aids
  - f) Epidemics
  - g) Salvage
  - h) Deployment of Resources
  - i) Outside Relief—receiving, stocking, safety, dispatch
  - j) Camp-work and Employment
  - k) Fire Fighting
  - l) Information
  - m) Reception of outside assistance and VIPs
  - n) Media management
2. Action after Receipt of the Second Warning of Cyclone (Actual/ Threat):-
- i. Evacuation
  - ii. Relief to Stranded persons
  - iii. Stoppage of traffic on National Highways
  - iv. Stock of foodgrains
  - v. Declaration of local holiday to the Educational institutions
  - vi. Media management
  - vii. Dissemination of information to the public and media
3. Post-Cyclone Measures:-
- i. Convening of the meeting of the Disaster Management Committees
  - ii. Rescue Operations
  - iii. Removal of corpses and carcasses
  - iv. Health Measures
  - v. Restoration of traffic
  - vi. Adequate number of mobile squads be made available by the Police Department for helping clearing of fallen trees, etc.
  - vii. Electricity Board should clear the roads of fallen electric poles and restore power supply as quickly as possible
  - viii. The General Administration must ensure to build up photographic record of the damage simultaneously, using services of the local Officers or by employing local men
  - ix. Immediately after the cyclone, the Block Disaster Management Committee should form required number of teams to assess damage to the houses, crops, loss of human lives, livestock etc.
4. Arrangements during and after Floods:-
- Organizing rescue operations
  - Organizing shelter for the people in distress. In case the capacity of the civil authorities are considered inadequate, Army assistance should be requisitioned
  - Relief measures by non-official and voluntary organisations may be enlisted as far as possible
  - Organise relief camps
  - Provision of basic amenities like drinking water, sanitation and public health care

- and arrangements of cooked food in the relief camps
- Making necessary arrangements for air dropping of food packets in the marooned villages through helicopters
  - Organizing enough relief parties for rescue of the marooned people within a reasonable time limit
  - Establish alternate communication links with mechanised/country boats to have effective communication with marooned areas
  - Organizing controlled kitchens to supply foods initially at least for three days
  - Organizing cattle camps, if necessary, and provide veterinary care, fodder and cattle feed to the affected animals at least for three days
  - Grant of emergency relief to all affected people
  - Submission of daily reports and dissemination of correct information through mass media to avoid rumours
  - Rehabilitation of the homeless
  - Commencement of agricultural activities-desalination, re-sowing, alternate cropping pattern
  - Repair and reconstruction of infrastructure facilities such as roads, embankment etc.
  - Resettlement of flood prone areas, if required
  - Health measures
  - Relief for economic reconstruction.

#### **13.15.18. Drinking water and fodder**

District Magistrate will also at this stage arrange a survey of the affected areas of his district so as to find out whether the existing sources of drinking water are sufficient or not. He will have to come up to Government for funds for improving the sources of drinking water where such sources are inadequate. This item will demand special attention of the District Magistrate particularly when distress follows drought or flood. The Department of Public Health Engineering will arrange for supply of contamination-free water pouches to the concerned District Magistrates.

#### **13.15.19. Three Stages of Flood Relief**

Three stages in flood relief:

(1) At the emergency stage when the water is high and is still rising, saving of life is the primary consideration. In addition, it may be necessary to rescue cattle. In a sudden and very heavy flood, men and cattle may have to be removed by boat or other conveyance to high land, arrangements being subsequently made for food, drinking water, fuel and fodder. Properly organised relief centres may have to be opened to deal with the situation. There is scope for collaboration between non-official philanthropic organisations at this stage.

(2) At the intermediate stages, when rescue work has been completed, flood level being either stationary or beginning to fall, the main problem is to ensure that food and fuel are available to the destitute and some sort of temporary shelter to the homeless. A second and very important task is to stimulate the villagers to help one another and to save as

much of the crops as possible. The rehabilitation work at this stage should be organised methodically, relief centres being opened at carefully chosen centres. Particular care should be taken to ascertain the stocks of food available in the villages. In vulnerable areas, the District Magistrate should arrange building of adequate reserves of foodstuff before the monsoons in collaboration with the Food and Supplies Department.

(3) At the final stage, when the flood has subsided, and conditions are becoming normal, relief assistance should be curtailed and detailed reports prepared as at Annexure-B and submitted to Government, estimating the extent of the damage to crops and houses, with a view to rendering necessary relief.

#### **13.15.20. Immediate dangers in a heavy flood**

The most immediate danger in a heavy flood is that villages may be suddenly inundated and that people may be unable to escape in good time to high ground. The second danger is that parties of villagers who have taken refuge on islands or high lands may be left for several days without food or shelter.

In such cases, arrangements must be made for rendering immediate effective assistance. Boats and other conveyances should be requisitioned from all quarters. Steps should first be taken to rescue the people who are in danger of their lives and as far as possible, their cattle, for it is a common experience that villagers refuse to be rescued until their cattle are rescued at the same time. The people who are stranded on islands or high lands should then be attended to. Steps should be taken to provide food, shelter and fodder, if the people cannot be immediately removed from such places. The help of the Chief Medical Officer of Health and his staff will be available to keep those places in proper sanitation.

#### **13.15.21. Alertness of District Officers**

District Magistrate and Sub Divisional Officer should bear in mind that speed and initiative in deputing all available officers to commence at the earliest possible moment the collection of information and the distribution of relief are of the greatest importance in flood relief work.

#### **13.15.22. Some other steps**

Other steps to be taken by the District Officer. This stage includes the following:

- (i) Securing the services of technical personnel,
- (ii) Obtaining other staff,
- (iii) Making revised estimates, if necessary, of the amount of money required for distribution of House Building Grant.

#### **13.15.23. Relief Admissible**

Whenever there occurs cases of disaster in his block, it will be the responsibility of the BDO to have those cases enquired into as expeditiously as possible and to arrange relief. Relief should reach the affected people as early as possible in order to be of real help to them. Persons affected by any disaster may be assisted in any of the following ways:-

- 1) Special Relief Assistance in cash or kind: Relief Assistance at the rate admissible from time to time may be made as immediate relief to the indigent family. The current rate

of assistance as Special Gratuitous is 12 kg common rice per adult per month and half the rate per non-adult or Rs.120/- and Rs.60/- in lieu thereof respectively. 'A family should be considered as indigent one when a family is belonging to Below Poverty Line (BPL) category as defined by the Panchayat and Rural Development Department of this Govt. from time to time, and whose total monthly income does not exceed Rs. 2500/- (Rupees two thousand and five hundred) only... the aforesaid ceiling of monthly income of an indigent family will remain in force until it is revised afterwards.'

2) Free Distribution of Clothing as emergency measure: In cases of affected people needing immediate relief, BDO may arrange distribution of clothing as emergency measure.

3) House Building Grant: On receipt of the information regarding damage of residential houses, the BDO should cause an enquiry according to the provisions laid down in the Govt. Orders and the proposals be sent to the District Magistrate. The District Magistrate should send the proposals to the Department of Disaster Management with the least possible delay with certificates as made mandatory by the Ministry of Home Affairs, Govt. of India, for administration of State Disaster Response Fund.

#### **13.15.24 Air-Dropping of Food Articles**

In the event of large scale disaster, requiring for air-dropping of food articles, the Officer-in-charge of distribution by airdropping will issue a certificate in the prescribed form after such distribution is over as to the quantity of food stuff in quintal and the number of sorties undertaken per day and the certificate so furnished shall be sufficient acquittance and no separate Muster Roll need be obtained. The District Magistrate will send this certificate to the Department of Disaster Management.

#### **13.15.25 When Distribution of Food Article Becomes Necessary to Prevent Starvation**

In the event of large-scale disaster when distribution of food article becomes necessary to prevent starvation, the District Magistrate, in consideration of the magnitude and intensity of devastation and other practical aspects and in consultation with the Government may order distribution of any article as a measure of immediate relief by any Relief Distributing Agency and in this situation he may require appropriate certificate from the distributing agency in the format as at Form-F.

#### **13.15.26 Report to Government when distress is imminent**

Whenever owing to natural calamity, agricultural prospects become serious and apprehensions of acute distress arise in any part of his district, the District Magistrate shall, at once, submit to the State Relief Commissioner, for the information of the State Government, a special report as **FIRST INFORMATION REPORT (Form-A)**

#### **13.15.27. Further report if required**

The preliminary report should be furnished as soon as it is possible for the District Magistrate to form a general estimate of the position and should not be delayed for detailed or exact statistical information, the object being to give the State Government the earliest information practicable as to the likelihood of relief measures being required. If the statistical data are not complete, a fuller report should be furnished in continuation of the preliminary

report as soon as the materials are available. Any marked change in the situation for better or worse should be immediately reported. CA-II Format should be used as given at Form-A.

### **13.15.28. Preliminary report by the State Government to the Government of India**

Similarly, the Government of India should be furnished a First Information Report in respect of all the affected areas of the State. The report should review the economic condition of the district or group of districts affected, the outturn of recent harvests, the nature and extent of the anticipated failure of crops, the probable intensity and duration of distress and the contingencies on which they depend, the classes of people most affected, the position as regards local trade, communication, food-stocks, prices, fodder and water supply, etc. and the precautionary steps taken to organise measures for dealing with distress. A similar report should be submitted for any new district or groups of districts which may become affected subsequent to the submission of the first report. The Ministry of Home Affairs, Govt. of India, has devised a format for sending First Information Report, which will be found at Form-H.

### **13.16. Emergency Management**

#### **1.General:**

Past experience of handling disasters have highlighted that there is often delay in decision making, dissemination of early warning, flow of information horizontally and vertically, mobilizing and deploying resources at the site of incident in the event of an emergency. Resources at the incident site may not be utilized in the most effective and efficient manner due to lack of developed planning process and logistic support. Following reasons can be ascribed for inefficiencies in responding to an emergency:

- 1) Absence of any emergency operation center which will function as a nerve center of disaster management system,
  - 2) Timely dissemination of warning,
  - 3) Staff officers working at different levels are not adequately trained to carry out specialised disaster response functions such as logistic management, operation planning, information management etc.,
  - 4) Inadequacy in response functions,
  - 5) Constrains imposed by interdepartmental seniority and departmental hierarchies.
- To address this issue, a two-pronged programme should be developed. This programme should consist of institutionalization of -
- i. Emergency Operation Center (EOC) or Control Room and
  - ii. Incident Command System.

#### **2. Emergency Operation Center (EOC):**

The effectiveness of disaster reduction actions could be improved if upto date information on disaster reduction and risk at a suitable scale is made available systematically. The administration should be prepared beforehand at each level. In State, District and Block levels it is possible through EOC. An independent EOC should be run throughout the year at State, District and Block levels. The Gram Panchayat Office should act as EOC during the disaster and it should run round the clock.

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EOC plays a vital role in the Disaster Management activation. It coordinates the flow of information with respect to activities associated with relief operations. The principal role involves collection of data and analysis and dissemination of information to different organisations. During the normal time, it maintains a systematic database of the resources available, important phone numbers, names and addresses of important government officials, international bodies and NGOs. During a crisis, it functions as a center for decision-making and helps flow of information horizontally and vertically to the concerned departments for smooth relief operations.

There should be special provision for an EOC or a control room. For proper functioning, it needs independent room, regular staff and necessary equipments and should function round the clock. Functioning of EOC during crisis fully depends upon preparedness during normalcy. Therefore, the importance of the EOC during the normal times is also very much important.

### **Aims and Objectives of EOC :**

- Collect information about the vulnerable areas
- Data related to disaster should be shared with all the line departments and other organisations
- Assessment of damage in disaster prone areas
- Collect all related information of different government schemes for smooth management.

EOC should monitor different disaster mitigation programmes and should coordinate with different organisations. It should also conduct evaluation of the programmes, and should immediately take up necessary measures. EOC should help in reaching the Incident Command Team to the affected people after disaster.

### **Desk Management of EOC :**

In the EOC all the major activities should be distributed among different government officials to ensure accountability, proper information, assimilation and record keeping. This also helps in easy coordination and reporting to the State Relief Commissioner/ District Magistrates.

**Operation desk:** The officials managing this desk should be responsible for

- Ensuring adequate supplies of food and water
- Monitoring rescue and evacuation operations
- Monitoring salvage operations
- Monitoring disposal of dead/carcasses
- Transportation of medical aid to the needy
- Proper function of transits and feeding centers
- Coordinating with NGOs, CBOs and lower level EOCs
- Updates lower level EOCs
- Maintenance of records

**Communication and Information Desk:** The officials managing this desk should be responsible for

- Monitoring the weather reports and sharing the information
- Keeping the action plans along with all necessary maps in hand
- Maintenance of all important telephone numbers, database on available resources, list of key persons
- Sending and receiving message and their respective records
- Maintaining information of damage, materials sent and ongoing activities for immediate sharing with District EOC.

**Logistic Desk:** The officer-in-charge should

- Assess the needs in terms of manpower
- Ensure proper storage and transport facilities for relief materials
- Maintain adequate supply of necessary transport and equipments
- Coordinate with private transport associations and boat association for emergency requirement
- Organise transport for rescue party, evacuated people, medical team and injured or sick people.

**Health Desk:** The officer-in-charge should be responsible to ensure

- Treatment of injured and sick
- Preventive Medicine and anti-epidemic measures
- Maintenance of record of all activities
- Setting up medical relief camps
- Maintenance of adequate supply of medicines, equipments and personnel
- Monitor maintenance of health measures in all camps and provision of safe drinking water.

**Service Desk:** The officer-in-charge should

- Assess the rescue, relief and search cash compensation requirements
- Organise and coordinate setting up of transit, relief and cattle camps
- Ensure supplies to these camps
- Maintain law and order
- Report the procurement and disbursement of relief materials received from all sources
- Organise and clear debris and temporary repair of communication facilities, power supply and water supply
- Construction of temporary shelters, medical facilities etc.

**Resource Desk:** The officer-in-charge should be responsible for

- Maintenance of cash and disbursements receipts, issue of relief materials, daily wages, cash or credit vouchers, etc.
- Issue of all cash and materials receipts
- Reimbursement of all expenses approved
- Issue of cash vouchers for petrol and diesel.



Disaster Management Manual

**INCIDENT AND MONITORING REPORT**

**Part-II**

**DAILY REPORT ON RAINFALL & FLOODS**

State .... WEST BENGAL

Date of reporting

**(A) Rainfall Position**

Sl. No.	Districts	During the last 24 hours (MM)	Cumulative rainfall Since 1 <sup>st</sup> June 2011 (MM)
1	Bankura		
2	Burdwan		
3	Darjeeling		
4	Howrah		
5	Purba Medinipur		
6	Paschim Medinipur		
7	Hooghly		
8	24-Parganas (S)		
9	24-Parganas (N)		
10	Birbhum		
11	Uttar Dinajpur		
12	Nadia		
13	Cooch Behar		
14	Dakshin Dinajpur		
15	Malda		
16	Purulia		
17	Murshidabad		
18	Jalpaiguri		

**(B) Rivers in flood**

1. Names of rivers flowing above warning level (specify warning level and actual water level)	
2. Names of rivers flowing above danger level (specify danger level and actual water level)	
3. Names of rivers flowing marginally below, at or above Highest Flood Level (HFL)	

**(C) Affected by floods**

1. Number and names of affected districts				
2. Number and names of affected Taluks (District Wise)				
3. Number and names of affected villages (District Wise)				

**(D) Extent of Damage**

S/ N	Details of damage / loss	During last 24 hours	Since 1 <sup>st</sup> June, 2011 (Cumulative)
1.	Population affected		
2.	Number of human lives lost	Today's Death Previous Death Reported Today-	
3.	Number of cattle livestock lost / perished		
4.	Cropped area affected (in hect).		
5.	Estimated value of damaged crop area (Rs. in lakh)		
6.	Number of houses damaged	i) Fully ii) Partially	
7.	Estimated value of damage to houses (Rs. in lakh)		
8.	Estimated value of damage to public properties (Rs. in lakh)		

## Disaster Management Manual

9.	Estimated value of total damage (Rs. in lakh) (5+7+8)		
10.	Any other information		

### E. Impact on infrastructure (Sector – wise)

1. Impact of floods on infrastructure and essential services (i.e. power supply, water supply, road transport, health sector and telecommunication etc.) (Rs. in lakh)	
--	--

### F. Rescue and Relief

(i)	No. of persons affected		
(ii)	No. of person evacuated		
(iii)	No. of boats deployed for evacuation		
(iv)	No. of relief camps opened		
(v)	No. of persons accommodated in the relief camps		
(vi)	Details of distribution of essential commodities (including air – dropped food packets)		
(vii)	GR paid, if any-specify the item and amount		
(viii)	No. of medical teams deployed		
(ix)	Whether outbreak of any epidemic occurred (Details thereof)		
(x)	No. of cattle in camps opened		
(xi)	No. of cattle in cattle camps		
(xii)	Any other relief measures taken-Specify		

**Joint Secretary**  
**Government of West Bengal**  
Fax 033-22141378

Memo No..... / FR

Dated .....

From : **Department of Disaster Management.**  
**Writers' Buildings, Kolkata-700 001**

To: Joint Secretary (DM-I)  
Ministry of Home Affairs  
North Block, New Delhi  
(FAX No. 01123093465 / 23093750)

Memo No ..... 1/(3)-FR

Dated .....

Copy to : 1) Chief Secretary to the Govt. of West Bengal  
2) Secretary, Department of Disaster Management  
3) Joint Secretary, Department of Disaster Management

**Joint Secretary**  
**Government of West Bengal**

### **3. Incident Command System (ICS):**

1. **Definition:** Incident Command System will mean the following:

- Standardized/ Structured Incident Management Command System for emergency response
- Provides a formalized professionally trained and accountable system for operations, logistic support, planning and financial/ administrative process.

2. **Chain of Command:** Given the territorial jurisdiction, the Incident Command Officer should in effect be designated in advance. In a Block, the Block Development Officer should function as Incident Command Officer (ICO). In case of disaster of a serious nature or a disaster which transcends the boundaries of a Block, the Sub-Divisional Officer should act as Incident Command Officer. In case of disaster that affects more than one sub division or exceeds the capability of Sub divisional resources, the District Magistrate will activate the District Incident Command and mobilize team. This district level team is headed by the District Magistrate and provides command, coordination, and support functions from the district level to the Sub-division and Block. For disasters of very serious nature when more than one district is affected, the State Relief Commissioner will activate the State Command and Mobilization Team. This State level team will be headed by a Secretary to the State Government to be nominated by the State Disaster Management Authority in the State Disaster Management Plan well in advance and provides command, coordination and support functions to the District Team. In case of overwhelming disasters or disaster of complex nature such as industrial accidents, chemical accidents etc. Special Incident Command Teams (SICTs) will be deployed in the districts under the authority of the District Magistrate to reinforce the response structure. Such teams should be sponsored and organized at the State Levels.

#### **4. Duties of Incident Command Officer (ICO)**

i) **Setting up of ICS** – It is important that the Incident Commander should activate the ICS as soon as the incident takes place and set up his post. The Incident Command Officer must report to the District EOC and State EOC immediately after the activation of ICS and give the position of the setup and telephone number. The Incident Command Officer should be equipped with satellite phone/ wireless sets etc. Block Development Officer, Sub Divisional Officer and District Magistrate will be ICO at the respective levels.

The main functions of Incident Command Officer are as follows:

- 1) To coordinate and control the operations of the different services,
- 2) To ensure that there is the closest cooperation of various services with Police and fire services,
- 3) To ensure that the operation proceed systematically and according to a well planned programme,
- 4) To keep the EOCs informed of the progress of work at the incident from time to time,
- 5) To prepare in advance a list of sub-ordinate officers who will take charge of different damage areas when disaster strikes.

ii) **Action:** The Incident Command Officer should follow the action points described in chapter of Crisis Management (XIII) for a particular disaster.

iii) **Reconnaissance and Information:** Information must readily be available with the ICO regarding the damage caused by a disaster and the casualty report. For this the ICO should depute immediately his sub-ordinate officers to the damage places who should

perform the following duties:

- (a) Collect all information and pass it on to the ICO,
- (b) To acquaint ICO of the progress of relief operation,
- (c) To keep record of relief measures.

To perform these functions properly, the sub-ordinate officers should take the cooperation of local Panchayat Raj Institution.

iv) **Progress Report:** The ICO must also keep the EOC fully informed about the progress of management of an incident and this he should do by periodically sending progress report.

v) **Organisation at the Incident:** At the place of damage the Incident Command Officer to be successful has got to organise his operations and build up a small organisation of his own to deal the varied problems that are likely to be faced.

(a) Sub-ordinate officers of an ICO should be directed as early as possible to take charge of a particular damage site each and to maintain contact with the ICO. These officers, besides performing various usual duties will provide an effective liaison amongst the points of damage, the services, the victims and the ICO.

(b) Contact should be established as early as possible with the police, who will require full information, if this has not already been obtained by them. They will help in traffic control and marshalling of vehicles.

(c) Homeless people may require direction to avail of relief shelters. Besides, there will be many more enquiries to deal with. The ICO should, therefore, activate EOC under his charge.

(d) If it is known or suspected that some persons have died, a suitable place should be selected in advance, where bodies can be placed under cover and away from the public gaze.

(e) Money, jewellery or other valuables recovered from damaged property in the course of relief operations should be collected by the ICO, a list made and handed over to the Police.

#### 5. General Supervision of Operation:

Besides performing the duties as mentioned above, the ICO will have to do a very close supervision of operations at the place of damage, to see that the relief operations proceed systematically according to a well-set out plan. Some of the following points in this connection should therefore be looked into by the ICO in regard to the supervision of operations :

i. In the beginning he must remain at the Post so that the services can be directed and deployed without any delay

ii. Having allocated the services to the place of damage, the ICO should then move to the scene of incident to have a first hand knowledge of operations. Before going, he should leave his assistant at the Post

iii. From time to time he should have to confer with the officers of the services on the spot and should have to consider :

- a) Whether any more help by way of reinforcements is necessary,
- b) Is there any need of special technical advice from outside in dealing with the damage at the incident site
- c) Whether any heavy equipment like crane or bull-dozer is required to facilitate relief operations.

## **CHAPTER XIV**

### **RELIEF ASSISTANCE**

#### **14. NORMAL RELIEF ASSISTANCE**

##### **14.1. General principles**

Success in the regulation of Normal Relief Assistance (N.R.A.) depends upon Zilla Parishad, Panchayat Samity and Gram-Panchayat and also upon the advisory committee set up for administration of relief in the urban / municipal areas under proper supervision. Relief assistance should be regulated by individual selection alone. Strictness in selection is necessary from the outset but always subject to preservation of life; selection should not be too long deferred.

##### **14.2. Persons eligible**

The following classes of persons shall be entitled to normal relief assistance in their villages or wards in municipal areas, provided that they have no able-bodied relatives by the customs of the country bound to support them -

- (a) Mentally Challenged
- (b) Physically Handicapped
- (c) Visually Handicapped
- (d) All persons who, from age or physical infirmity, are incapable of earning their living
- (e) All persons whose attendance on the sick or on infant children in their own houses is absolutely necessary
- (f) Women of respectable birth who are debarred by custom from appearing in public and are in danger of starvation
- (g) Such other persons who cannot work and cannot be provided with work.

Note -No woman entitled under clause (f) to normal relief assistance shall be compelled to disclose her name.

##### **14.3. Preparation of lists of person deserving normal relief assistance**

The first duty of the Gram Panchayat or Ward Committee, as the case may be, is to prepare lists of the persons according to the latest Government Orders in each village/ward, who deserve relief assistance. The lists should include all persons who are entitled to relief assistance as in the above paragraph. Instructions for the preparation of the lists must be printed and circulated at a very early stage. The list shall be approved by the concerned Panchayat Samity/municipality. The Panchayat Samity may, however, authorize the Prodhan of the concerned Gram Panchayat to approve the same. The approved petitions should be prepared village-wise and the rejected petitions should also be maintained separately. In urban/municipal areas the list shall be approved by Urban Advisory Committee according to the G.O.s of the Department of Disaster Management.

#### 14.4. Forms for maintaining Normal relief assistance list

Relief assistance list should be maintained in Form DM/I in the prescribed format given below:

<b>Name of the Village/Gram Sansad/Para</b>						
<b>Name of the Gram Panchayat/Ward</b>						
<b>Name of the Panchayat Samity/ municipality</b>						
<b>Sl. No</b>	<b>Name</b>	<b>Address</b>	<b>Annual Income</b>	<b>Whether belongs to BPL</b>	<b>Sl. No. in the BPL with Part No</b>	<b>Signature of Proadhan /Sabhapati/ Ward Commissioner / Chairperson</b>

#### 14.5. Checking of the lists:

When the lists have been prepared, they must be checked carefully by Block Disaster Management Officers and Sub Divisional Disaster Management Officers. District Magistrate and Sub Divisional Officer or any other officer authorized by the Government must also personally check these lists at random to see that they have been properly prepared. But it is not necessary for them to sign every list. The object of the checking is to see that no names have been erroneously omitted or included. In any case, the checking of the lists is a continuous process, and the efficiency of the system depends very largely on constant revision of the lists.

#### 14.6. Manner of distribution of the Normal Relief Assistance

Normal Relief Assistance may be distributed in kind (food grain, particularly wheat), or in cash, as the State Government may from time to time direct.

(a) The distribution of N.R.A. in the rural areas should be made by the Gram Panchayats on the basis of approved priority lists through N.R.A. dealer, if food grains is distributed.

(b) The distribution of N.R.A. in Kolkata Municipal Corporation area should be the responsibility of Kolkata Municipal Corporation.

(c) The distribution of N.R.A. in Municipal areas should be made by Ward Commissioner on the basis of approved priority list.

#### 14.7. Scheme for distribution of Normal Relief Assistance through modified rationing shops or fair price shops

The existing scheme for distribution of N.R.A. through modified rationing (M.R.) shops is as follows:

(1)The scheme is designed to provide for:

(a) Distribution of foodgrains to helpless people of the categories as mentioned in paragraph 14.2,

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- (b) Preparation of lists of such persons,
- (c) Recruitment of N.R.A. dealer (M.R.Dealer) and distributor (storing agent),
- (d) Issue of foodgrains at scale as decided by State Government from time to time from N.R.A. shops,
- (e) Free supply of foodgrains to such shops from Government stocks/Essential Supply agency,
- (f) Maintenance of accounts by N.R.A. dealers, storing agents,
- (g) Provisions of remuneration to N.R.A. dealers, storing agents for service.

(2) (i) Block Development Officer should arrange for preparation of list of persons entitled to N.R.A. in every Gram Panchayat.

The priority list for distribution of N.R.A. should be prepared by every G.P. The list shall be approved by the concerned Panchayat Samity by resolution. The Panchayat Samity may, however, authorize the Prodhan of the concerned G.P. to approve the same. The approved Priority lists for distribution of N.R.A. should be preserved in bound books. A register should be maintained by each Gram Panchayat ward for recording the following particulars.

**Format of the register:**

**Name of Gram Sansad/Para**

**Name of Gram Panchayat/Ward**

Sl. No.	Petitioner's Name	Address	Date of receipt of petition	Name and designation of the enquiring officer	Date of receipt of the enquiry report	Final order passed on the petition

The approved petitions should be preserved village-wise and the rejected petitions should also be maintained separately.

In areas where a Gram Panchayat does not function for any reason, the distribution of N.R.A. in that area may be made by the concerned Panchayat Samity.

In the urban/municipal areas, priority lists for N.R.A. should be prepared by the concerned Ward Commissioner and should be approved by the concerned Advisory Committee which will also exercise supervision during distribution of N.R.A. Priority lists should be maintained in the manner indicated above.

In superseded municipalities and in areas not covered by a Municipality or a Panchayat, the distribution of gratuitous relief will be made by the concerned Sub Divisional Officer in consultation with the local M.L.A. or his/her authorised representative, the Administrator/ Executive Officer of the Municipality as well as the Advisory Committee, if any.

The concerned Panchayat Samity should appoint a local Modified Rationing dealer or any suitable person as the N.R.A. dealer. In the urban/municipal areas, the concerned

Advisory Committee should prepare a panel for appointment of a N.R.A. dealer and submit the same to the Sub Divisional Officer who will appoint a N.R.A. dealer from such panel. In case no one in the panel is found suitable by the S.D.O., he may ask the advisory committee to suggest a fresh panel of dealers. No Panchayat representative and member of the Advisory Committee or Ward Commissioner should be appointed as N.R.A. dealer even on a temporary basis. If situation so warrants, more than one dealer may be appointed for distribution of N.R.A.

The N.R.A. dealers should execute a bond prescribed by Government in connection with distribution of N.R.A. The concerned B.D.O. will accept the bond on behalf of the Governor of the State of West Bengal.

In case of appointment of Storing Agent, the concerned Advisory Committee should prepare a panel of Storing Agents and submit the same to the Sub-Divisional Officer who will appoint a Storing Agent from such panel. The Storing Agent should execute a bond prescribed by Government. The concerned S.D.O. will accept the bond on behalf of the Governor of the State of West Bengal.

(ii) The ceiling of N. R.A. recipients shall be limited to the number of 750 for the Old Corporation areas and 2730 for the newly added areas. The existing list of N.R.A. recipients may be prepared/reviewed by the Chairman Borough Committee, Kolkata Corporation in consultation with concerned Councilors of Kolkata Corporation and while reviewing and preparing afresh a new list, the existing list of G. R. recipients shall be the basis. The N R.A. recipients should, however, be in extreme destitution, almost in starving condition and should qualify for such assistance in terms of rule 14.2 above. The list shall be approved by Mayor, Kolkata Municipal Corporation, under his own signature and office seal.

(iii) Government reserves the right to intervene if the situation so demands by bringing about the required modification in the priority list of the N.R.A. recipients. The list should however be reviewed once in 3 months. Nobody should be treated as permanent liability, because the condition of each N.R.A. recipient may change for the better after some months.

(iv) The Deputy Director of Disaster Management, W.B. will draw the amount to be allotted by this Department for this purpose and endorse the cheque in favour of Commissioner, Kolkata Municipal Corporation. The Commissioner, Kolkata Municipal Corporation will arrange for maintaining completely separate accounts and cash book. This fund shall never merge with general consolidated fund of Kolkata Municipal Corporation. The accounts and cash book may be inspected by an officer of this Department not below the rank of Assistant Director of Disaster Management, West Bengal. Commissioner, Kolkata Municipal Corporation, will arrange for maintaining the muster rolls properly and preserve the same as long as these are necessary after Audit/Inspection. The muster rolls shall be countersigned by the Dy. Director of Disaster Management, West Bengal, Kolkata.

(v) Distribution of N.R.A. shall be made in the respective Borough offices/Municipal offices with prior notice to the N.R.A. recipients, after appropriate identification by the Councilors of the Corporation. Director of Disaster Management will render necessary assistance to the Calcutta Municipal Corporation in the preparation of priority list, distribution



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of N.R.A., maintenance of Accounts etc. Distribution of N.R.A. shall be made only in presence of a Disaster Management Officer, not below the rank of Disaster Management Officer.

- (3) The duties of concerned advisory committee/Gram Panchayat will be as follows:
  - (a) Assisting in the preparation of lists mentioned in the previous paragraph,
  - (b) Inspection of actual issues from shops within the municipality/Gram Panchayat. For this purpose, particular days should be fixed for each shop so as to enable one or more of the members to be present at every shop on days of issue,
- (4) The Ward Commissioner/Prodhan of the concerned Gram Panchayat should issue tokens for each recipient,
- (5) The recipient will present his token at the modified ration supply. The counterfoil should be retained by the retailer and the original returned to the consumer with his signature or thumb impression in token of supply. Issues will be on a fortnightly basis.
- (6) The members of the Committee should frequently check these tokens.
- (7) The retailers will get a remuneration at the rate fixed by the Government from time to time. Where supplies are made through Storing Agent this remuneration should be split between the two.
- (8) The retailers and Storing Agent should submit their remuneration bill supported by the acknowledged tokens and acknowledged sub-delivery order as the case may be, to the Block Development Officer/Chairperson of Municipality.
- (9) The retailers and Storing Agents should also get the Transport rebate as per permissible rate.

### **14.8 Special Relief Assistance**

- (i) In an emergency it may be necessary to start distribution of foodgrains (Wheat/ Rice) or Cash Relief as emergency relief for a temporary period to the victims of natural calamities and accidental fire.
- (ii) Distribution of Cash Relief Assistance shall not be resorted to, unless this is necessary for preservation of human life.
- (iii) Relief materials like tarpaulin, dhuty, sharee, lungi, children's garment, salwar kameej, wrapper, blanket, milk powder, etc. should be distributed to the victims of natural calamities and accidental fire.

### **14.9 Mode of distribution**

Special Relief Assistance in cash may be distributed by the Block Development Officer or through Prodhan as the Block Development Officer may direct. When the distributing agency receives the money, the persons entered in the Special Relief Assistance list are paid their amount (for a week or a fortnight as the B.D.O may direct). Before the people arrive, the distributing agency should have a muster-roll (in Form-F) already prepared with the name of each recipient and the amount due to him. After payment is made, it is usual except in the case of lepers, to take the thumb impressions of each recipient on the

muster-roll. When payment is complete, the distributing agency adds its certificate of payment and a statement showing the amount of Government money left with him unspent. Special Relief Assistance given in urgent cases in anticipation of the approval of the Block Development Officer is entered in the remarks column of the rolls, thumb impression being taken there except in the case of lepers.

In urban area, Special Relief Assistance in cash may be distributed in Wards by concerned Ward Commissioner, other procedure as mentioned above remaining the same. Here chairperson will give direction to Ward Commissioner.

#### **14.10 House Building Grant**

House Building Grant is paid to the indigent families who are living Below Poverty Line and whose total family income does not exceed Rs. 2,500/- per month, to rebuild or repair their damaged / destroyed dwelling houses as a result of natural calamities and accidental fire.

#### **14.11 In case of damage to dwelling houses by any natural calamity**

A joint inspecting team consisting of one representative each of the Pradhan of the concerned Gram Panchayat, Sabhapati of the Panchayat Samity and Block Development Officer (for rural areas) or from the concerned Municipality / Urban Area Authority and the Sub-Divisional Officer, should enquire into the damages to the houses along with the pecuniary condition of the victims in the prescribed proforma as at Form-C and will submit draft priority lists of deserving families for H.B. Grant assistance, to the concerned B.D.O. (for rural areas) or the S.D.O. (for urban areas) who should cause the lists published for three days at the offices of the Gram Panchayat and Panchayat Samity or Municipality / Urban Area Authority and Sub-Divisional Officer concerned. In rural area, the fourth member of the Joint Inspection Team will be the leader of the Opposition of that Gram Panchayat and Ex-officio Member from the opposition Party (elected Member of the Panchayat Samity from the Concerned Gram Panchayat) or one Independent member of the concerned Gram Panchyat in absence of any elected member from the opposition party. In respect of urban areas, it will be Ward in place of Gram Panchayat and Municipality in place of Panchayat Samity, other conditions remaining the same. The B.D.O. (with the concurrence of the Savapati of the Panchayat Samity) or the S.D.O. will prepare and approve the priority lists in final form after disposal of the claims and objections, if any, by them. Fund for H.B. Grant available from the concerned District Magistrate, should be distributed on the basis of the approved priority lists.

In Kolkata Municipal Corporation, application for H.B. Grant will be received from the affected persons in the prescribed format. The Commissioner, K.M.C., or an officer, as authorised in this regard, should prepare a priority list of prospective beneficiaries in consultation with a body as may be decided by the Corporation. The Commissioner, K.M.C., will arrange for disbursement of H.B. Grant to the deserving persons and immediately after disbursement should send the Muster Rolls together with the Utilization Certificate to the Director of Disaster Management, West Bengal, for transmission of the same to Disaster Management Department.

#### **14.12 In case of damage to dwelling houses by accidental fire**

The same procedure as in the cases of natural calamities should also be followed for damages to houses by accidental fire. But, as sanction and allotment of fund for H.B. Grant (fire) from the State Govt. will be made on verification of duly filled in and recommended Form-B, it is advisable that the joint inspecting team should use the Form-B in stead of the simplified brief proforma prescribed for the cases out of natural calamity. The duly filled in Form-B should be recommended by the concerned B.D.O., Savapati of the Panchayat Samity / S.D.O. and A.D.M/ D.M. in case of rural areas and chairperson of Municipality, SDO and ADM/DM in case of urban areas. In case of KMC areas it will be recommended by the commissioner of KMC and the Director of Disaster Management.

#### **14.13 Proposal for Allotment**

For meeting emergent cases, the Block Development Officer-cum-Executive Officer, Panchayat Samity may submit a proposal for allotment of funds for house-building purposes pending detailed enquiries into individual cases, to the Sub-Divisional Officer in consultation with the Sabhapati, Panchayat Samity. The Sub- Divisional Officer on being satisfied may forward a requisition for funds to the District Magistrate with his recommendations. The District Magistrate in his turn may move Government for sanction of funds on an ad-hoc basis for meeting such emergent cases. It should, however, be ensured that the enquiries into individual cases are made expeditiously.

#### **14.14 Sanction of Fund**

On receipt of fund from Government, the District Magistrate may sanction fund in each case after considering the recommendations of the Screening Committee in each case as also taking into account funds allotted to him by Government for the purpose. The District Magistrate may sub-allot fund to the Sub-Divisional Officer, who in his turn, prepares necessary bill for each Block and endorse the same to the concerned Block Development Officer-cum-Executive Officer, Panchayat Samity for drawal and disbursement. In emergent cases, drawal may be made by the District Magistrate for crediting the same to the account of the Block Development Officer-cum-Executive Officer, Panchayat Samity under intimation to the Sub Divisional Officer. In Case of Municipalities, the District Magistrate may sub-allot fund to the Sub Divisional Officer, who, in his turn, will prepare necessary bill for each Municipality and endorse the same to the concerned chairperson of Municipality for drawal and disbursement.

#### **14.15 Processing and disbursement**

Processing and disbursement of all cases of House-building Grant should be completed within one month from the date of occurrence of each calamity.

Disbursement in all cases should be made by the Block Development Officer-cum-Executive Officer, Panchayat Samity in the presence of the concerned Prodhan of the Gram Panchayat or his authorised representative who will identify each individual recipient.

In areas where a Gram Panchayat does not function for any reason, enquiries, processing and disbursement of House-building Grant in that area should be made by the concerned Block Development Officer-cum-Executive Officer of the Panchayat Samity

in consultation with the Sabhapati, Panchayat Samity.

In Urban/Municipal areas, the cases of persons eligible for House-building Grant should be processed by the concerned Ward Commissioners and be approved by the concerned Advisory Committees set up for administration of relief in the Urban/Municipal areas, after making such enquiries as it may deem necessary. The application along with reports in Form C&B should thereafter be submitted to the Sub-divisional Officer who will take necessary action as indicated in paragraph (2) above. In superseded municipalities and in areas not covered by a Municipality or Panchayat and in the Notified Areas, the processing and disbursement of House-building Grant may be made by the concerned Sub Divisional Officer in consultation with the local M.L.A. or his authorised representative, the Administrator/Executive Officer of the Municipality/Authorities of the Notified Area as well as Advisory Committee, if any.

Muster rolls in respect of disbursement of House-building Grant should be maintained by the disbursing authorities. Immediately after disbursement, a certificate indicating the amount actually disbursed among the number of beneficiaries should be furnished by the disbursing authority to the District Magistrate. On the basis of those certificates, the District Magistrate will furnish a certificate to the Department of Disaster Management covering the entire amount so disbursed against allocations made by Government from time to time for record. Muster Rolls indicated above should be carefully preserved by the disbursing authorities for presentation to Audit.

#### **14.16 Disbursement**

The supervision of disbursement of H. B. Grant in any area under the Gram Panchayat shall be done by the concerned Gram Panchayat. The supervision of disbursement in any area may also be done by the District Magistrate or S. D. O. or any officer Authorised by the District Magistrate or the S. D. O.

#### **14.17. Audit**

Audit of all accounts shall be done as early as possible by the Auditor appointed by the State Government under the West Bengal Panchayat Act, 1973 (West Bengal Act XLI of 1973) and the Principal Accountant General.

#### **14.18 Eligibility**

Indigence of a person applying for House-building Grant should be determined after taking into account the extent of damage caused to his/her dwelling house and his/her capability to undertake necessary repair work. Indigence would mean lack of financial resources to rebuild or repair the damaged/destroyed house without financial assistance from Government provided the affected person has not got sufficient immovable property in the shape of land to provide security for any assistance in the shape of loan.

Refugee families, living in Government sponsored colonies, private colonies, squatters' colonies etc. and who have their own houses should also be considered to be eligible for House-building Grant for repair/rebuilding their houses damaged/destroyed by natural calamities or accidental fire.

The indigent share-croppers/ Adhiars may also get House-building Grant, if their houses

have been damaged or destroyed by natural calamities and accidental fire provided they are not considered credit worthy for house-building loan.

No house-building grant should be given to unauthorised occupiers of Government or private lands. The land on which the house existed before damage should be under authorised possession of the beneficiary. A certificate to this effect should be given by the District Magistrate in the proposal to the State Government for sanction of House Building Grant.

#### **14.19 Ex-Gratia Grant to the Bereaved Families of Victims of Natural Calamity / Accidental Fire**

Ex-Gratia Grant is paid to the next of kin of the person who suffered loss of life due to natural calamity such as flood, cyclone, earthquake, tsunami, hailstorm, drought, pest attack, avalanche, cloud-burst, and landslide as well as for accidental fire. It may be pointed out here that Ex-Gratia Grant is also paid to the bereaved family of the person who suffers loss of life due to snake bite and heat wave during any natural calamity.

Essential papers required for sanction of Ex-Gratia Grant by the concerned District Magistrates are:

- a). Application of the claimant(s),
- b). Attested copy of death certificate,
- c). Attested copy of Post-Mortem Report,
- d). Police Report.
- e). Proforma Report with recommendations of the Gram Panchayat Proadhan, B.D.O, Savapati the Panchayat Samity / Chairman of the Municipality/Urban Authority, & S.D.O. concerned.

In Kolkata Municipal Corporation area, the Director of Disaster Management, West Bengal will sanction the Grant to the next of kin of the deceased. The Proforma Report is required to be recommended by the Deputy Director of Disaster Management and preferably by the local Ward Councilor.

#### **14.20 Economic Rehabilitation Grant (E R Grant)**

Government has to spend considerable amount of money every year by way of distribution of Relief Assistance. This kind of relief assistance, if continued for a prolonged period, tends to demoralize the recipients as their spirit of self-help and initiative is affected. Government has, therefore, felt it necessary that something effective should be done for the destitute families of the State in order that they may be gainfully employed instead of being dependent on relief assistance. With this object in view, a scheme for rehabilitation of individual destitute families by employment of their idle members for supplementing their income as a substitute for Normal Relief Assistance has been introduced.

The scheme is designed to ensure economic rehabilitation of poor families by providing them either sewing machine or fund for starting small trades, the procedure being the following :

- (a) Enquiries into cases of individual destitution on the basis of application in a prescribed proforma,
- (b) Sanction of grants in cash or kind per family after due consideration of reports on

their economic condition, for the purpose of rehabilitation of such families as are suffering from economic scarcities (the amount will be given according to latest Government orders issued in this connection),

(c) Follow up enquiries after a reasonable period regarding effective use made of these grants,

(d) Agency for such enquiries and distribution of grants.

#### **14.20.1 Screening Committee**

On receipt of the documents from the Block Development Officer with recommendations of the concerned Panchayat Samity, the applications and the other documents should be scrutinized in the Collectorate and placed before a Screening Committee to be set up in each district with the following:-

- a) Sabhadhipati of the Zilla Parishad or his authorized representative as chairperson,
- b) Additional District Magistrate in charge of Disaster Management,
- c) Karmadhyaksha, Sthayee Samity on Disaster Management in Zilla Parishad,
- d) One Female Member of the Zilla Parishad.
- e) District Disaster Management Officer/ Officer-in-charge of Disaster Management -Member Secretary.

The function of the Screening Committee will be to scrutinize all proposals for E.R. Grant and to furnish its recommendations in each case as well as a list of deserving cases in order of priority to the District Magistrate. The Committee should process the cases expeditiously so that deserving persons receive assistance as quickly as possible.

#### **14.20.2 Allotment of funds**

For the purpose of obtaining allotment of funds from Government, the District Magistrate on the basis of the recommendations of the above committee shall submit specific proposals to Government for the purpose with the following information (a) Total number of applications received (b) Total number of cases recommended, (c) Total number of cases sanctioned and disbursed in the previous year prior to the present proposal, (d) Total amount disbursed during the current financial year upto the date of his report, (e) Amount available, if any, out of previous allotment and (f) Further amount required.

A copy of the said proposal should also be endorsed to the Commissioner of the Division concerned for information.

#### **14.20.3 Sanction of fund**

On receipt of fund from the Government, the District Magistrate may sanction fund in each case after considering the recommendations of the Screening Committee on each case as also taking into account funds allotted to him by the Government for the purpose. The District Magistrate may sub-allot fund to the Sub Divisional Officer, who in his/her turn, prepare necessary bill for each Block and endorse the same to the concerned Block Development Officer-cum-Executive Officer, Panchayat Samity for drawal and disbursement.

Disbursement in all cases should be made by the Block Dev. Officer-cum-Executive

Officer, Panchayat Samity in the presence of the concerned Prodhan of the Gram Panchayat or his authorised representative who will identify each individual recipient.

**14.20.4 Procedure for processing such cases in areas not under the Panchayats**

In rural areas where a Gram Panchayat does not function for any reason enquiries, processing and disbursement of House-building Grant in that area should be made by the concerned Block Development Officer-cum-Executive Officer of the Panchayat Samity in consultation with the Sabhapati, Panchayat Samity.

In Urban/Municipal areas, the cases of persons eligible for House-building Grant should be processed by the concerned Ward Commissioners and be approved by the concerned Advisory Committees set up for administration of relief in the Urban/Municipal areas, after making such enquiries as it may deem necessary. The application along with reports should thereafter be submitted to the Sub-Divisional Officer who will take necessary action as indicated above.

In superseded municipalities and in areas not covered by a Municipality or Panchayat and in the Notified Areas, the processing and disbursement of House-building Grant will be made by the concerned Sub Divisional Officer in consultation with the local M.L.A. or his authorised representative, the Administrator/Executive Officer of the Municipality/ Authorities of the Notified Area as well as Advisory Committee, if any.

In Kolkata, the Director of Disaster Management after receiving such applications should get them enquired by the Disaster Management Officers under his disposal. After enquiry, he should submit all the applications along with the enquiry reports with his recommendations and an abstract with item wise information enumerated at items (a) to (e) of 14.19 to the Department for scrutiny. Requisite fund will thereafter be made available, according to availability of resources, for disbursement.

## CHAPTER XV

### ROLE OF PANCHAYAT RAJ INSTITUTION (PRI) IN DISASTER MANAGEMENT

#### 15.

The Disaster Management measures should be people-oriented, people-centered with people's participation at every level, for planning, implementing, monitoring and evaluation.

Panchayats are local self-government institutions nearer to the people and they have a vital role to play as a sequel to 73<sup>rd</sup> and 74<sup>th</sup> Constitution Amendments. They have to be involved in identifying the persons in vulnerable areas for taking preventive, protective and proactive steps in mitigating disasters through appropriate steps aiming at development. The role of three tier Panchayat Raj Institution should be-

- a) Awareness building/Information dissemination
- b) Community based approach of mass movement for disaster preparedness and capacity building
- c) Empowering the community to cope with hazards with all mitigation strategies
- d) Adhering to building codes and standards
- e) Capacity building which will include:
  - (i) development of appropriate tools, (ii) Use of these tools to convey & elicit useful information pertaining to disasters to the citizen.
- f) Preparation and circulation of area-specific fact sheets with emergency preparedness checklist, family disaster plan, family disaster supply kits, etc.
- g) "Do's" and "Don'ts" for the public through various methods regarding disasters
- h) Help in constitution of village task force to be trained in emergency evacuation and relief
- i) Building community leadership and a chain of trained community cadres through participatory approaches. This will strengthen the resilience and resourcefulness of the community to cope with disasters
- j) Maintain up-to-date information about population, livestock, housing, crops and other assets both private and community as also the Government property and their actual condition
- k) Preparing Gram Sansad/Village Disaster Management Plan
- l) Ensure that all the drains in and around the village/town are clear, civic amenities are properly maintained
- m) Persuade people not to inhabit vulnerable/low lying areas
- n) Help in identifying and establishing animal camps in safer places
- o) Help in identifying and establishing relief camps
- p) Arrange specific help for children, expectant mothers, handicapped & old age people
- q) If the whole village or part of a town is to be evacuated, help the government officials in evacuation



- r) Help in restoring basic infrastructure
- s) Help in damage assessment
- t) Help in other such activities, which require assistance from Gram Sansad and Gram Panchayat. Local self-government being in the front line of disaster management, will be a part of coordination process.

Coordination and collaboration with three tier Panchayat Raj Institution will help in mainstreaming of the disaster management into the ongoing development programme. They are more useful in community development, so as to strengthen their capacity to manage the vulnerability reduction programme.

### **15.1 Gram Sansad Level**

The Panchayati Raj Institutions should play a key role in the various implementation process of the Disaster Management Programme. The Disaster Risk Management Plan starts from the Gram Sansad. The elected member of Gram Panchayat from a Gram Sansad along with the village volunteers should help the community in preparing the multi-hazard preparedness, prevention and mitigation plan.

### **15.2. Gram Panchayat level**

At the Gram Panchayat level, the Prodhan and other members of the Gram Panchayat form part of the Gram Panchayat Disaster Management Committee (GPDMC). The Prodhan is the chairperson of the GPDMC and the convener is the Gram Panchayat Secretary. In normal times, the Prodhan and the members of Gram Panchayat should help in preparing the Gram Panchayat Disaster Management Plan and approval of all plans in Gram Panchayat. They should assist village disaster management team members to carry out the activities and prepare themselves for emergency.

### **15.3 Block/ Panchayat Samiti Level**

At the Block level the Sabhapati of Panchayat Samiti would play a key role in forming the Block Disaster Management Committee [BDMC] and preparing the multi hazard preparedness and mitigation plan. He would be the Chairperson and BDO would be the convener of the BDMC. They could help in providing training at the Panchayat Samity level and help in carrying out the preparedness activities. In pre, during and post-disaster period stock piling of food stuff in vulnerable areas, coordination of relief, rescue operation, shelter management, first aid and health, damage assessments, etc. could be some of the major activities that they should have to carry out. Similarly, it is the responsibility of Panchayat Samiti to approve the Block Disaster Management plan and make it a regular programme of the Block.

### **15.4 District/ Zilla Parishad level**

The Sabhadhipati of Zilla Parishad (ZP) and the other elected members of Z.P. would be part of the District Disaster Management Committee (DDMC). They should basically monitor and coordinate the preparedness programme of the district, coordinate with the District Disaster Management Team [DDMT] for supporting other Disaster Management Teams (DMTs) in training on relief, rescue operation, shelter management, first aid and

health, damage assessments and carry out the activities when a disaster strikes. Awareness generation among the community members should be a role that the elected members could play. The Sabhadhipati would be chairperson of the DDMC while the District Magistrate would be the Executive Chairman of the committee. ADM (Disaster Management) would be the convener of DDMC. They should take a lead role in carrying out the preparedness and mitigation activities in the district, which would reduce vulnerability and save life and property during disasters.

### **15.5. Scope for and role of ZILLA PARISHAD**

1) Zilla Parishad is to play a significant role in effective implementation and monitoring activities. Periodic mock drill and need-based training exercises of elected members are to be taken up through the initiatives of Zilla Parishad,

2) Zilla Parishad is to be facilitated for drawing up Community Based Disaster Management Plan,

3) Zilla Parishad is to ensure that information, education and communication aiming at both structural and non-structural components is in place,

4) Panchayat Samities are to focus on planning, implementation, coordination and monitoring,

5) Gram Panchayats to play a leading role in execution of disaster prevention, mitigation, response, rehabilitation and development activities with the participation of local people,

6) Development projects and schemes perceived by the three tier Panchayat Raj Institution to have disaster prevention and mitigation components engrained in those,

7) Voluntary Groups to be formed by the Gram Panchayat with the help of Panchayat Samities and Zilla Parishads in different areas of crisis management,

8) Detailed and periodically updated data banks to be prepared at village, Gram Panchayat, Panchayat Samity and Zilla Parishad levels,

The PRI to be oriented for ensuring proper coordination between NGOs, Govt. Departments and themselves.

9) PRI to be oriented specially for the vulnerable sections of the society,

10) The Governmental and Non-Governmental Institutes to be used for taking up exercise for capacity building of PRIs who in turn are to focus environment of community in each endeavour.

## **CHAPTER XVI**

### **TRAINING**

#### **16.1. General**

How successfully the Disaster Management Department achieves its objectives, satisfies social responsibilities, or both, depends, to a large extent, on its officials. So, the officers of Disaster Management Department should do their jobs efficiently and effectively to achieve the goal of disaster management. No amount of efficiency can make up for a lack of effectiveness. Effectiveness is the key to an organisation's success.

The training module should be designed to improve overall effectiveness of officers in their present positions and to prepare them for greater responsibility when they are inducted in the Department. Training is transfer of learning. The training programme should be tailored to fit the unique developmental requirements of the officers attending. Before a training programme is selected, need analysis should be made to identify the particular needs and problems of the officer or group of officers. Then the appropriate training activities should be recommended.

Disaster Management is the process of planning, organising, leading and controlling the efforts of stakeholders and using all other resources of the government to achieve the goal. The officers are responsible for carrying out the above four main activities of disaster management as a whole. However, officers are classified in two ways- by their level of responsibility and by the range of functional activities. So the training module should also be prepared taking into account these aspects of a trainee officer. The module of training for Disaster Management Department should be more holistic in nature than that of the other service Departments.

#### **16.2 Need for Training**

To be successful, disaster management operations should be conducted by personnel, trained specifically for each particular type of disaster management work. Exercises, refresher courses, etc., at regular intervals can so condition the mind and body that the most difficult operations can be performed with almost mechanical efficiency. The work can then be performed with confidence and in the shortest time. Training also inculcates discipline and fosters team spirit. It enables the trainees to keep in touch with the latest techniques. Exercises, which form an integral part of training, help to discover defects in methods of planning, operational procedure, etc. These also help to determine the standard of efficiency attained by the personnel. Thus by proper training, the available manpower, equipment and supplies can be utilised to the best advantage.

#### **16.3 Basic Principles of Training**

(a) *Self help and Mutual Aid* - Disaster management operations should as far as possible be conducted by composite teams of official elements as well as volunteers drawn from members of the public in the locality affected. Though outside help may be required on occasions, situations created by disasters are usually such as not to allow any delay in help reaching the affected area quickly enough. The initial impact has, therefore,

to be met with whatever resources can be mustered within the area itself, and it is accordingly essential that the people are well trained in methods of self-help and mutual aid. Concerted action taken immediately on the occurrence of a disaster will considerably blunt the edge of the calamity and largely mitigate its consequences on the people.

(b) *Improvisation* - Quite often one or more types of material and equipment for which the need may be felt may not be readily forthcoming and a good deal of improvisation may be necessary. The training programme must lay sufficient emphasis on this and prescribe when, how and for what purpose improvisation can be resorted to.

(c) *Psychological approach* - Natural disasters cause widespread damage. Whatever the technique of rendering relief and however efficient the method, the losses on account of disasters can never be fully made up. Hence, apart from the relief technique, the workers must be trained to make the right psychological approach towards victims of these disasters. The emotional strains and stresses created by a disaster not only paralyse the thinking faculty but also lead to maladjusted behaviour on the part of those who ought to know better. Relief workers must know how to tackle emotionally disturbed persons and how best to assist in their mental rehabilitation. One of their primary tasks would be to know beforehand how to allay panic and maintain the morale of the people.

#### **16.4 Types of Training Programme**

The matter of identification and selection of objectives should determine the entire course of the instructional programme and should not be overlooked or minimised. The training programme for Disaster Management should be set up to provide an extensive grounding in specific skills.

- i) **Orientation or Socialisation:** It should be designed to provide a new employee the information which he or she needs to function comfortably and effectively in the Disaster Management department. Typically, the socialisation should convey three types of information: (a) general information about the daily work routine (b) a review of department's history, purpose, operations and services as well as how the employee's job contributes to the department's needs, and (c) a detailed presentation in a brochure, of the departmental orders, relevant Govt. orders, work rules etc. Effective socialisation or induction training reduces the anxiety of new employees.
- ii) **Refresher's training** – The need to train new or recently inducted employees is self-evident. They have to learn new skills and since their motivation is likely to be high, they can be acquainted relatively easily with skills and behaviour expected in their new position.
- iii) **Advance Training** – The training need of experienced officers should be determined by using following procedures :
  - a) Performance appraisal
  - b) Analysis of job requirement
  - c) Organisational analysis
  - d) Survey of officers

### **16.5 Training set up**

The Disaster Management Department should set up and maintain training institute. The induction training should be imparted solely by these institutes.

In case of refresher's training and advanced training the departmental training institute should jointly conduct the training with Administrative Training Institute of Government of West Bengal.

### **16.6 Training programme**

More time and more extensive training should be given in advance training programme. Preliminary training should be less extensive, but there should be no difference between the two in terms of basic learning principles. Following topics should be incorporated in the training:

1. Administration and organisation
2. Supervision and direction of disaster management operations
3. Preparation of Disaster Management Plan at all levels
4. Action to be taken before, during and after the disaster
5. Transport services
6. Supply of Equipments
7. Accounting and inspection/ vigilance
8. Improvisation
9. Warning System
10. Communication
11. Leadership and discipline
12. Measure for panic control
13. Principles of reconnaissance and correct appreciation of situation
14. Cooperation of Relief Work
15. Preparation of Report
16. Operation of Control Room
17. Map reading/ Zone mapping
18. Signaling process
19. Local Topography
20. Methods of instructions
21. General Idea of rescue, fire fighting, first aid and welfare
22. Concept of G.I.S.
23. Satellite phone operation
24. Shelter Management
25. Water and Sanitation Management.

### **16.7 Trainer's Training**

The lowest level of Disaster Management unit is Gram Panchayat. A group of officials of this Department should be selected and developed as trainers, who will in turn impart training to the persons concerned in implementation of Disaster Management Plan at different administrative levels and PRI set up.

So, proper care should be given in preparing the module of training programme of the Trainers. In each district the District Magistrate should select a group of trainers who will act as Key Trainer.

### **16.8. Training at Local Level**

These instructors on return to their respective areas will start training the members of their own organisations. The District Key Trainer at the local level will act as Training Officer for the whole district and will coordinate the training programmes of the various agencies. The District Disaster Management Officer will in addition arrange combined exercises.

### **16.9 Role of Trainer in Participatory Training**

#### **Pre training Role**

- Training Design
- Administrator Organizer

#### **During Training Role**

- Facilitator
- Instructor
- Counselor
- Recorder : All the queries can be noted
- Evaluator : On going evaluation
- Organizer/ Administrator/ Manager:
- Time management

#### **Post-Training Role**

- Report Writer
- Follow – up – Coordinator

### **16.10 Pre-Training Role**

#### **As Training Designer**

- Collecting and identifying the learning needs
- Listing the objectives
- Working out the related content and methods, materials and exercise
- Sequencing the content and activities
- Identifying the resource persons
- Preparing and selecting the learning materials

**As Administrator/ Organizer**

- Choosing venue and time
- Selecting and scheduling facilities
- Regularly communicating with the trainers regarding programme plans
- Identifying and arranging the needed support system at the training venue
- Scheduling the time of co-trainer and resource persons distributing training materials
- Arranging/ Mobilizing resource

**16.11 During Training Role**

**As Facilitator**

- Eliciting opinions
- Focusing participant's attention on their potentials
- Summarizing and synthesizing information
- Intervening in the process

**As Instructor**

- Provide information and concepts
- Directing structured learning
- Using learning aids – film, audio, tapes, video tapes and other materials

**As Recorder**

- Observing keenly both flow of content and process maintaining detailed notes on a daily basis

**As Evaluator**

- Planning and evaluation mechanism
- Using written as well as verbal reports to assess an event
- Utilising evaluation design to assess individual changes in attitude behaviour and knowledge
- Conducting mid term review
- Sharing reflections and analysis with co-trainer
- Providing relevant feedback

**As Organizer/ Administrator/ Manager**

- Managing time and space for each session
- Solving problems relating to food, lodging
- Organizing reservations, departures, reimbursement
- Timing, Breaks, Off – Time etc.

### **16.12 Post-Training Role**

#### **As Report Writer**

- Organizing the relevant information for the report writing
- Disseminating the reports to all participants, resource persons and other interested

#### **As Follow up Co-ordinator**

- Communicating at regular intervals
- Inviting feedback from both individuals and organizations
- Collecting learning needs for the next
- Providing support in the field
- Impact assessment

### **16.13 Dual Role of Training Staff :**

The Specialist Instructors will normally work under the Organisation to which they are affiliated. During an emergency, all training work will be suspended and the Specialists Instructors will report to the District Disaster Management Officer who will assign them Relief Coordinating duties. In fact, most of them will be designated as Relief Coordinators in the disaster area. After the emergency is over they will resume their ordinary training duties.



Disaster Management Manual

Annexure - A

**History of Disasters at District Level :**

Type of Hazard	Year of Occurrence	Area affected		Impact of Life		Livelihood			Damage to Public Properties		Estimated Total damage to houses, crops & public properties (in ₹)
		No. of Blocks, Municipalities & Gram Panchayats, Gram Sansads/villages	Land Area Affected (in Ha.)	No. of Human Lives Lost	No. of Houses Damaged (Pucca & Kutcha) including total estimated value (in ₹)	Cropped Area Affected (in Ha.)	Estimated Loss to crops (in ₹)	No. of Animal Lost (big, small & poultry)	Length of State, district, village roads; No. of bridges, culvert & school buildings damaged	Estimated value of the damage (in ₹)	

**History of Disasters at Block Level :**

Type of Hazard	Year of Occurrence	Area affected		Impact of Life		Livelihood			Damage to Public Properties		Estimated Total damage to houses, crops & public properties (in ₹)
		No. of Municipalities & Gram Panchayats, Gram Sansads/villages	Land Area Affected (in Ha.)	No. of Human Lives Lost	No. of Houses Damaged (Pucca & Kutcha) including total estimated value (in ₹)	Cropped Area Affected (in Ha.)	Estimated Loss to crops (in ₹)	No. of Animal Lost (big, small & poultry)	Length of State, district, village roads; No. of bridges, culvert & school buildings damaged	Estimated value of the damage (in ₹)	

**History of Disasters at Gram Panchayat Level :**

Type of Hazard	Year of Occurrence	Area affected		Impact of Life		Livelihood			Damage to Public Properties		Estimated Total damage to houses, crops & public properties (in ₹)
		No. of Sansads/villages	Land Area Affected (in Ha.)	No. of Human Lives Lost	No. of Houses Damaged (Pucca & Kutcha) including total estimated value (in ₹)	Cropped Area Affected (in Ha.)	Estimated Loss to crops (in ₹)	No. of Animal Lost (big, small & poultry)	Length of village roads; No. of bridges, culvert & school buildings damaged	Estimated value of the damage (in ₹)	

**History of Disasters at Gram Sansad Level :**

Type of Hazard	Year of Occurrence	Area affected		Impact of Life		Livelihood			Damage to Public Properties		Estimated Total damage to houses, crops & public properties (in ₹)
		No. of Hamlets/Para	Land Area Affected (in Ha.)	No. of Human Lives Lost	No. of Houses Damaged (Pucca & Kutcha) including total estimated value (in ₹)	Cropped Area Affected (in Ha.)	Estimated Loss to crops (in ₹)	No. of Animal Lost (big, small & poultry)	Length of village roads; No. of bridges, culvert & school buildings damaged	Estimated value of the damage (in ₹)	

**CALAMITY REPORT**

Special attention should be given to fill up the following information meticulously in the format, so as to enable the Disaster Management Department to include the particulars in the report of the State to the Govt. of India, to facilitate release of fund from the Centre.

**I. Damage Data**

- 01. Name of the district:
- 02. Name of the Calamity :
- 03. Period of occurrence of the Calamity :
- 04. Area affected in Sq. K.M. :
- 05. No. & Name of villages affected:
- 06. No. of people affected:
- 07. No. of houses damaged / destroyed (Kutchcha/Pucca):
  - Fully damaged— Money Value =
  - Severely damaged— Money Value =
  - Partially damaged— Money Value =
  - Huts damaged / dastrayed— Money Value =
- 08. No. of human lives lost :
- 09. Cattle lost:- No Approx. Value.....
- 10. Crop areas damaged (in Hector): Loss of Crop in M. T. ....
- 11. Value of the crops damaged :
- 12. Damage to properties other than crops and houses
  - Name of properties Value of damage
  - i)
  - ii)
  - iii)
- 13. Total Loss (7+9+ 12) : Rs.....
- 14. Relief Measures Undertaken:
  - i) From the District : .....
  - ii) From the Sub Division: .....
  - iii) From the Block: .....
  - ii) From the Gram Panchayat: .....



## FORM –B

**Detailed particulars in respect of families affected by Fire accident/Natural Calamity (with indication of the Specific Nature of the Calamity) proposed to be given House Building Grant.**

SI. No.	Name of the head of the family	Village	Police Station	Present monthly income of the family	Extent of arable land in possession	Date of occurrence	No. of houses destroyed or damaged	Detailed particulars of loss		Whether indigent	House building grant recommended				Remarks
								On account of damage to house	On other accounts		Fully	Severely	Partially	Huts	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

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**Recommendations:**

Certified that the above families belong to Below Poverty Level are holders of B.P.L. Cards and the total family income of each does not exceed Rs. 1000/- per month, that the land where the house is/was located is possessed by the applicant.

Savapati  
.....  
Panchayat Samity

Chairperson  
.....  
Municipality

Block Dev. Officer  
.....

Sub-Divisional Officer  
.....

District Magistrate / Addl. District Magistrate  
.....

## FORM-C

### INSPECTION REPORT

Detailed particulars in respect of the families affected by Fire Accident/Flood/Cyclone/Landslides or other natural calamities, which are recognised under Calamity Relief Fund (with indication of the specific nature of the calamity), proposed to be given House Building Grant.

SI. No.	Name of the head of the family	Village	Police Station	Extent of damage				Whether the family belongs to Economically weaker section	Signature/LTI of the head of the family	Remarks
				Fully	Severely	Partially	Huts			
1	2	3	4	5	6	7	8	9	10	11

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**1. Sanctioned Rs.**

**2. Recommended by the Joint Inspection Team members:**

**3. Signatures of the Members of the Joint Inspection Team**

**FORM-D**  
**Ex-gratia Grant**

Name of the deceased person (with father's/ husband's name)	Address of the deceased person	Cause of death with date	Age	Sex	Name and address of the legal heir(s) of the deceased person	Whether death certificate, petition of legal heir(s), etc. sent herewith

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- i) Recommendation of Tran Sthayee Committee attached to Panchayat Samity (in the case of rural area)
- ii) Recommendation of the B. D. O. (in the case. of rural area)
- iii) Recommendation of the Municipal/Notified Area Authorities (in the case of urban area)
- iv) Recommendation of S. D. O.
- v) Recommendation of D. M./A.D.M.
- vi) Recommendation of the D.D.M. W.B./DDDM, Cal (in case of Calcutta)
- vii) Certificate from D.M./D.R. W.B. that no proposal under the personal Accident Insurance Social Security Scheme has been initiated in respect of this case and will not be initiated.

**FORM-E**

**Relief Assistance Beneficiary list**

**Police Station.....**

**Gram Panchayat / Ward No.....**

**Block / Municipality.....**

Serial No.	Name	Father's/Husband's Name	Residence	Age	Previous occupation, if any	Grounds in brief for inclusion in the list	Remarks
1	2	3	4	5	6	7	8

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**Prepared by Prodhan / Ward Councilor**

**Approved by Sabhapati / Municipality**

.....Gram Panchayat / Ward

.....Panchayat samity / Municipality

**FORM-F**  
**Muster Roll of Relief Assistance**

Thana.....

Village.....

Gram Panchayat / Ward No.....

Block / Municipality.....

Scale of Relief-

(1) Adult....

(2) Minor.....

Balance brought forward.....

Amount Received Today.....

Total credit.....

Total expenditure today.....

Balance.....

Date of Disbursement.....

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Serial No.	Name	Father's/Husband's Name	Residence	Age	Grounds in brief for inclusion in the list	Signature of the recipient	Signature of the distributor
1	2	3	4	5	6	7	8

Verified by Prodhan / Ward Councilor  
.....Gram Panchayat

Countersigned by Block Disaster Management Officer / Chairperson  
.....Block / Municipality



**FORM-G**

**Register of Relief Assistance given by Block Dev. Officer / Chairperson**

**Name of Block / Municipality.....**

**Village.....**

**Gram Panchayat / Ward No.....**

**Block / Municipality.....**

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Date	Name and residence of persons given relief assistance	Period for which relief assistance given	Particulars of relief assistance	Quantity/Amount of relief assistance given	Remarks
1	2	3	4	5	6

## **CHAPTER XVII**

### **GRUEL KITCHEN**

#### **17.1 Distinction between a relief camp and gruel kitchen**

When natural calamities affect an area severely, people may have to be evacuated to permanent rescue shelters constructed with fund from the Department of Disaster Management, any other State Government Departments or other donor agencies. People may even be evacuated to temporary shelters. This is purely a temporary matter. It may so happen that people have to be evacuated before a natural calamity like cyclone strikes the coastal areas of South 24 Parganas or Purba Medinipur and provided temporary shelter in permanent or temporary shelters by the district administration for a day or two. These shelters are relief camps. The evacuated people may be provided here with Special G.R. rice for cooking by themselves. Cost of fuels may also be provided as per norms provided in the Calamity Relief Fund. No gruel kitchen has to be opened here by the administration because condition of the evacuated people is not so wretched as to arrange for gruel kitchen.

Gruel kitchen becomes a necessity when the persons sheltered in permanent or temporary shelters have lost means for livelihood for a temporary period under impact of a severe type of natural calamity, which caused wide spread destruction of housing stock of the evacuated people. In such cases, the persons who have been evacuated may have to depend upon government aid for a week / fifteen days and to stay at the rescue shelters for fifteen days at a stretch. Gruel kitchens have to be opened by the government for the affected persons in this exceptional case.

#### **17.2 Conditions under which gruel kitchen will be opened**

Gruel kitchens have to be opened under express permission of the State Government to be taken prior to such opening by the concerned District Magistrate. The Block Development Officer will inform the District Magistrate about the scale of destruction of houses of the persons affected after a thorough on the spot enquiry by a four-membered team within two or three days or as quickly as possible. On the basis of the report of the Block Development Officer, the District Magistrate will assess in consultation with the Sabhadhipati of the concerned Zilla Parishad, the need to open a gruel kitchen. If a gruel kitchen is found to be of immediate necessity, the District Magistrate will report to the State Relief Commissioner and with permission of the later, will arrange for opening as many gruel kitchens as required in really affected areas.

#### **17.3 Duration of gruel kitchen**

Gruel kitchen will be opened usually after two/three days in the relief camps if it is found on enquiry that the persons evacuated have lost their houses fully, irrespective of nature of the houses, rendering them houseless and thereby making the district administration responsible for their upkeep for some time, maximum for a fortnight.

#### **17.4 Duty of the Gram Panchayat Disaster Management Committee:**

The Gram Panchayat Disaster Management Committee will finalise beforehand the

names of persons of each Gram Sansad, to be named leaders, who will assist the people of those Gram Sansads in times of evacuation by preparing the list of family persons who have taken shelter in pre-determined rescue shelters. Those leaders will be notified beforehand to be available in times of necessity. At least five/six leaders should be pre-selected by the Gram Panchayats for each Gram Sansad. Their role should be acknowledged by the Sabhapati of Panchayat Samity and the Block Development Officer concerned.

#### **17.5 Duty of the leaders in the gruel kitchen**

The leaders will prepare lists of persons family-wise who have taken shelters in the rescue shelters on the day of start of the relief camps and supply copy to the Gram Panchayat.

#### **17.6 Duty of the four-membered committee**

On the basis of the lists supplied by the leaders, the committee will physically enquire in the areas from where the persons have been evacuated or have shifted themselves to the shelters. Enquiry will focus on what is the extent of damage to their houses. If the extent of damage to their houses is above 50%, the persons will be given cooked food after receiving permission from the government.

#### **17.7 Duty of the leaders in the shelters for opening gruel kitchen**

The leaders present at the rescue shelters, will form a committee of five persons, two from the leaders and three from the evacuated persons. The leader older in age will be head of the committee, which will receive consignment of Special G.R. Rice, water pouches, fuel, etc. either from the Block Development Officer or the Prodhan, Gram Panchayat concerned, keep accounts in a register, arrange distribution at a prescribed scale to be notified by the State Government by obtaining receipt from the persons accommodated in the rescue shelter and submit the muster roll to the Prodhan of the concerned Gram Panchayat within a week of distribution. The committee will maintain shelter-wise accounts of materials received and return undistributed materials to the Prodhan of the concerned Gram Panchayat. If the State Government permits to open gruel kitchen in the shelter, utensils for cooking will be supplied to the committee by either the Block Development Officer or the Prodhan of concerned Gram Panchayat. The committee will arrange cooking with the help of inmates of the shelter concerned for maintaining quality of the cooked food. The inmates who will help in cooking may be paid fee@ Rs.75/- per head per day for a maximum number of four per day. Accounting will be maintained in the format named Form-G.

#### **17.8 List of recipients of cooked food**

A list of recipients of cooked food in each gruel kitchen should be prepared family wise by the five-membered committee with approval of the Block Development Officer concerned in the following form:

## Register of recipients of cooked food

**Name of the place :**

**Name of Village :**

**Name of Gram Panchayat/ward No :**

**Name of Block/Municipality :**

Serial No.	Name Head of the Family	Father's name	Residence		Members in the family			Members in the family to be served with cooked food			Remarks	
			Village	Gram Panchayat								Adult

**Signature of members of the Committee**

- 1.
- 2.
- 3.
- 4.
- 5.

**Countersigned by the Prodhan/Ward Councilor of \_\_\_\_\_**  
**\_\_\_\_\_ Gram Panchayat/Ward No.**

**Accepted by the Block Development Officer/Chairperson \_\_\_\_\_**  
**\_\_\_\_\_ Block/Municipality.**

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Each such recipient should be provided with a card in the following form indicating the number of persons in the family to be served with cooked food. No person without a card will be allowed to have any food served from the kitchen.

**Card for admission to the kitchen**

Serial No.....

At (Name of the Camp Site) -----

Village -----

Gram Panchayat/Ward No. -----

Name of Block/Municipality -----

1. Name of the head of family -----

2. Village -----

3. Gram Panchayat -----

4. Block -----

5. No. of members in the family to be served cooked food:

Adult

Minor

Total

Signature of the members of the Committee

1.

2.

3.

4.

5.

Signature of Prodhhan/Ward Councilor -----

----- Gram Panchayat/Ward No.

Signature of Block Disaster Management Officer -----

( Serial No. at the top should correspond to that in the Register for Recipients of Cooked Food)

**17.9. Muster Roll:**

A Muster Roll of persons served with cooked food from each gruel kitchen should be maintained in the following form:

**Muster Roll of persons fed at the gruel kitchen**

Village\_\_\_\_\_

Gram Panchayat/Ward No.\_\_\_\_\_

Block/Municipality\_\_\_\_\_

Serial No.	Date	Name Head of the Family	Serial no. in the card as at Rule 17.8	No. of persons served with cooked food			Signature of Head of the Family
				Adults	Minors	Total	

**17.10. Form of Accounts**

Accounts should be kept at a gruel kitchen in the following form:

**Form of Accounts to be kept at Gruel Kitchen**

Name of site:

Name of Gram Panchayat/Ward No. :

Name of Block/Municipality :

Date	Receipts				Issues			Balance
	Manner of receipt	Name of article	Quantity	Value	Name of article	Quantity	Value	
1	2	3	4	5	6	7	8	9

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In column 2, in case of receipt from higher authority, the name of the authority should be stated.

In column 9, balance should be shown for each item of article separately.

### 17.11. Dead Stock Register and Ledger

A Dead Stock Register in the following form should be kept at all gruel kitchens:

#### Stock Register of Furniture/Tools/Plants etc.

**Name of Site :**

**Name of village :**

**Name of Gram Panchayat/Ward No. :**

**Name of Block/Municipality :**

Sl. no.	Particulars of articles acquired			How acquired	Cost price	Disposals			Sale proceeds realised, if sold	Deposited to Prodhan/BDO/Ward Councilor or Chairperson	Re-marks
	Name	Number	Date			Date	Manner	No. of items			

### 17.12. Workers at the Gruel Kitchen

Two cooks and three water carriers should be engaged from among the beneficiaries by the committee for each Gruel kitchen. They will be given in addition to their share of cooked food a sum equivalent to the prevalent minimum Wages for unskilled labours.

### 17.13. Inspection

Surprise visits are necessary by the Prodhan/Upa-Prodhan/Ward Councilor of the concerned Gram Panchayat/Ward, Block Disaster Management Officer, Block Development Officer or Sabhapati of concerned Panchayat Samity. Vice-Chairperson/Chairperson. The following procedure will ensure a thorough inspection :

- I. Check the Register of Recipients of cooked food with the Admit Card and the Muster Roll,
- II. See that the recipients have their Admit Cards, understand how many of them in each family are entitled to be served with cooked food, and are actually given their food in regular groups,
- III. Enquire into any unusual contingent expenditure,
- IV. See that the cooks and water carriers have received their wages and that their numbers are not excessive,
- V. Check the Dead Stock Register,
- VI. Examine the quality of food materials and cooked food,
- VII. See that the drinking water is healthy.

## CHAPTER XVIII

### MINIMUM STANDARDS OF RELIEF ASSISTANCE AT RELIEF CAMPS AND GRUEL KITCHENS

- 18.1.** People affected by disasters, should have access to the minimum requirements (water, sanitation, food, nutrition, shelter and health care) during their temporary stay at Relief camps and Gruel kitchens. The groups most frequently at risk in disasters are women, children, older people, disabled people and people living with HIV/AIDS (PLWH/A).
- 18.2.** It has been experienced that people arrive at Relief Camps and Gruel Kitchens with minimum number of utensils. They will require a container for collecting and storing water. Each family may be provided, if required, after proper assessment, one bucket for containing five liters of clean water. Supply of disinfected water has to be ensured at each Relief camp and Gruel kitchen daily during the entire period of stay of disaster-affected people.
- 18.3.** The Department of Public Health Engineering in the State of West Bengal has been supplying drinking water in pouches in the districts in times of emergency. Drinking water should be obtained from this source in times of flood/cyclone and other natural calamities.
- 18.4.** Water should be available for livestock also in the relief camps and gruel kitchens.
- 18.5.** Relief camps should be constructed/selected on high ground where tubewells will be provided on raised platform.
- 18.6.** For evacuated people, it may not be possible to set up separate toilets per 20 people. It should be ensured that a toilet is provided for each 50 people, decreasing to 20 as soon as possible. While providing community toilet, the primary aim should be to maintain an environment free from human faeces.
- 18.7.** Particular care has to be taken for disposal of children faeces, which are commonly more dangerous than those of adults, as the level of excreta-related infection among children is frequently higher and children lack antibodies.
- 18.8.** Pit latrines and soakaways should be provided at least 30 metres from any ground water source and the bottom of any latrine at least 1.5 metres above the water level.
- 18.9.** People in the Relief camps who have to be provided cooked food from gruel kitchens, should be served a range of foods-staple(cereal), pulses and fat sources for maintaining nutritional requirement of them as far as possible.
- 18.10.** The cooked food should include 200 gram boiled rice, 50 gram pulse, 250 gram potato and other cooking items like oil, fuel, etc cost of which should be restricted to Rs.5/- twice a day.
- 18.11.** It has to be ensured that each inmate is provided secured food having more than 850 kilocalories.