Disaster Governance in India

SERIES 3

LBSNAA

CENTRE FOR DISASTER MANAGEMENT
Lal Bahadur Shastri National Academy of Administration

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Director

Director's Message

Due to its unique geographical and geological conditions India is vulnerable to various natural disasters. In India, the incidents of flood, drought and other natural disasters are on the rise and pose tremendous challenges for the Administration. Each disaster heightens the urgency to equip ourselves better in coping and managing them. In this context, the training of civil servant in Disaster Management assumes critical significance.

It gives me immense pleasure to note that Centre for Disaster Management, LBSNAA, is bringing out the edited volume "Disaster Governance in India- Series 3" under the capacity building project sponsored by the National Disaster Management Authority (NDMA). This is the compilation of best case studies, learning and experiences in the field of Disaster Management of the Officers trainees of 2013 batch of Indian Administrative Service, as part of their district training. I hope the volume will add to the knowledge-base for disaster management in the country and will be useful for both the trainees and the administrators in the field.

Rajeev Kapoor, IAS

PREFACE

Disaster have adversely affected human civilization since the dawn of our existence. Natural disasters and human induced disasters have increased both in frequency and fury over the years. India has suffered enormously, in terms of loss in lives and livelihoods and damage to both public and private property due to recurrence of major natural and human induced disasters. In response various strategies have been formulated and implemented with regard to mitigation, prevention, response, rehabilitation and reconstructions during pre-disaster and post-disaster periods. All these efforts have the same underlying goal; Disaster Management and Disaster Governance.

By virtue of the Disaster Management Act, 2005 District Magistrate/ Divisional Commissioner is the pivotal role of the District Disaster Management Authority (DDMA) and hence, it is essential that he should be well versed in various aspect of Disaster Management.

In continuation with the successful publication of the second issue of " Disaster Governance in India" under the project" Capacity Building for IAS and Central Service Officer on Disaster Management" sponsored by NDMA, Centre for Disaster Management (CDM), LBSNAA is coming with the third series of the book named " Disaster Governance in India- Series 3" compiled from case studies based on the inputs received from young IAS officers of 2013 batch during their district training. The book will be useful to administrators, at various levels, who are handling the subject of Disaster Management. It can also serve as a good reference material for ATIs and CTIs for their in- house courses.

The book "Disaster Governance in India - Series 3" will delve into the emergency management and Disaster Governance issues in various districts of India. The book will also provide perspectives of IAS officers posted across India on the subject of Disaster Management.

I would like to place on record the contribution made by faculty and staff of CDM who have contributed in various capacities for bringing out this Journal.

Saurabh Jain, IAS
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CONTENTS

Disaster Management Framework, South Delhi

Anjali Sehrawat, IAS

Chapter 1

INTRODUCTION

District Disaster Management Authority working under the ages of Office of the District Magistrate (Revenue), South is primarily responsible for disaster management in South Delhi. The District Authority is responsible for planning, coordination and implementation of disaster management and to take such measures for disaster management as provided in the guidelines. The District Authority also has the power to examine the construction in any area in the district to enforce the safety standards and also to arrange for relief measures and respond to the disaster at the district level.

The basic objective of the District Disaster Management Plan of South District is to protect all the residents of the district and all property from all sorts of untoward incidents through the following sectoral objectives:

- Institutionalization of Disaster Management in District Administration.
- Encouraging a culture of Disaster Preparedness in the district.
- Vulnerability Reduction and disaster mitigation through better planning process.
- Creation of the best government mechanism to handle any unprecedented events.
- Instant response and effective decision making in disasters.
- Better coordination of relief and rehabilitation after a disaster.
- Better coordination of all line departments in Disaster Management.
- Encouraging and empowering the local community to own Disaster Management.
- Regular updation of resources available in and around the district.

The various aspects covered in the Draft Disaster Management Plane for South District are highlighted in this note. A critical evaluation follows at the end. The note begins with the Vulnerability assessment of the district followed by the Institutional Framework in the district as per the DM act 2005, Mitigation and Prevention measures, Response Mechanism in the district involving Co-ordination among departments during pre and post disaster and fund provisions.

1. HAZARD, RISK AND VULNERABILITY ASSESSMENT

The district has been traditionally vulnerable to different natural disasters on account of its unique geo-climatic condition. Like other districts of Delhi, South district is highly prone to Earthquakes, Fire incidents, Bomb Blasts and Terrorist Attacks.

S. No	Hazard Risk	Hazards	Who/ What is at risk	Remarks
1.	High Risk Hazards.	Earthquake.	Human Life, House and property, Slums, Community Infrastructure.	The whole district comes under Earthquake zone IV and is prone to high intensity Earthquake.
		Fire.	Human Life Houses and Property.	Fire Incidents are more frequent in the slums and generally occur during the summer season. Most of the fire incidents have been identified to occur from the gas leakage, small commercial units etc. The areas which have frequent incidences of fire are Sangam Vihar, Neb Sarai, Fatehpur Beri & Chirag Delhi etc.
		Terrorist Attack.	Human Life, Monuments, Religious Places.	Hauz Khas Market, Malviya Nagar Market, M-Block Market-GK-1, Chattarpur, Asola etc.
		Building Collapse.	Human Life House and Property Community Infrastructure.	Building collapse is more frequent in Slums and Unauthorized colonies. The cases of building collapse occur more frequently in Sangam Vihar, Lado Sarai etc.
2.	Moderate Risk Hazards.	Road Accidents.	Human Life, Road Side.	IIT Hauz Khas, AIIMS, South Ex Part-II etc.
3.	Low Risk Hazard.	Religious riots.	Human Life, Community Infrastructure.	Hauz Rani, Khirki Extension, Sangam Vihar, Sheikh Sarai etc.

2. INSTITUTIONAL FRAMEWORK AS PER DM ACT 2005

Delhi Disaster Management Authority (DDMA)

Delhi has constituted the Delhi Disaster Management Authority (DDMA) in exercise of the powers conferred by sub-section (1) and (2) of section 14, read with clause (s) of section 2 of the Disaster Management Act, 2005 (53 of 2005) through the notification No.F.DRM/ADM(HQ)/ DM/Rules/2006/698, dated 19-03-2008. The Lieutenant Governor is the Chairperson of Disaster

Management Authority and the Chief Minster as its Vice Chairperson and the other members (Ex-officio) from the Government of National Capital Territory of Delhi include Minister-in-Charge (Revenue), Chief Secretary (also the Chairperson of the State Executive Committee), GOC (H.Q.), Principal Secretary (Home), Commissioner of Police, Commissioner (MCD), Joint Secretary (Disaster Management) and Principal Secretary (Revenue) – cum – Divisional Commissioner (who also is the convernor). In Delhi, the Department of Revenue has been identified as the nodal department for Disaster Management and the Divisional Commissioner as its nodal officer and convener. The Lieutenant Governor, further, appointed the Chief Secretary, Government of NCT of Delhi, to be the Chief Executive Officer of the State Authority, ex-officio, in pursuance of sub-section (4) of section 14 of the Disaster Management Act, 2005.

District Level Mechanism in South District

Through the notification No.F.DRM/ADM (HQ)/DM/Rules/2006/698, dated 19-03-2008, the Lieutenant Governor of Delhi has established the District Disaster Management Authority for each district in the National Capital Territory of Delhi. Every District Disaster Management Authority has the District Magistrate of the District as its Chairperson, ex-officio, elected representatives (MLAs/Councilors) of the District nominated by the Lieutenant Governor as the Co-Chairperson, ex-officio, the Additional District Magistrate of the District as a member as well as ex- officio Chief Executive Officer of the District Disaster Management Authority and the other ex- officio members from the District includes Deputy Commissioner of Police, Zonal Deputy Commissioner (MCD), Chief District Medical Officer (Directorate of Health Services), and the Superintending Engineer (PWD).

After the notification, the District Disaster Management Authority in South District was convened on 22nd of May 2008. As in other Districts, all the disaster management initiatives in South Delhi have been undertaken by the District Magistrate, along with the support of the Additional District Magistrate, Sub Divisional Magistrates, District Project Officer and all the other line departments. The District Disaster Management Authority is setup to act as the district planning, coordinating and implementing body for disaster management and to take all measures for the purposes of disaster management in the district in accordance with the guidelines lay down by the National Authority and the State Authority.

District Crisis Management Group

A Crisis Management Group has been functioning as the core group to take emergency decisions in disaster situations. The Crisis Management Group comprises members from both the DDMA and DDMC and takes necessary actions when there is an emergency situation in the district. In normal time, the District Crisis Management Group is expected to meet biannually to chalk out plans to strengthen the systems.

District Disaster Management Committee (DDMC)

The District Disaster Management Authority has instituted a District Disaster Management

Committee that is a high-powered committee at the District level to look after disaster management and emergency response on a very regular basis. This high-powered committee is chaired by the DM(S) and in his absence the ADM(S). The other members include the Nodal Officers of all line departments, SDMs and nodal officers from various organizations. Members from RWAs and NGOs are also nominated on rotation basis. ADM(S) is the convener of District Disaster Management Committee.

A District Project Officer has been appointed in the district to look after the day-to-day affairs of disaster management in the district. Two Project Coordinators are also appointed to assist District Project Officer in his day to day work.

The DDMC members meet once every month in normal situation and more than once in a month in case of a crisis situation. The minutes of DDMC meeting is circulated among its members.

DDMC-South is an apex planning body and plays a major role in preparedness and mitigation planning. Each nodal officer will be accountable to his/her own department in terms of disaster management. The major functions and responsibilities of the District Disaster Management Committee members are given the following:

- Evaluation, approval and updation of District Disaster Management Plan (DDMP)
- Dissemination of District Disaster Management Plan
- The committee would meet one in every year to review the overall mitigation and preparedness activities in the district.

The responsibility for dissemination of District Disaster Management Plan will lie with DDMA. In order to make disaster management process more effective, in the district, it is important to disseminate the District Disaster Management Plan at all levels i.e. the district authority, government departments, non-government/private organizations and general public. Effective implementation of the DDMP would be done through training programmes and awareness activities that are being organized for different levels of functionaries. Updating of the plan will be the major responsibility of DDMA in order to keep it a “living document” with the changing situations.

3. PREVENTION AND MITIGATION MEASURES

Disaster management in the contemporary times focuses a lot on prep a redness and mitigating measures-the idea being to reduce or lessen the vulnerabilities and therefore the impact of any calamity. The more we are prepared for disaster, the lesser we are prone to vulnerabilities. In the district there are two types of approaches in disaster mitigation viz. structural mitigation and non-structural mitigation.

1. Structural Mitigation Measures

It is immensely important for the planning community to respond towards disaster management positively. The Third Master Plan for Delhi-2021, which is under preparation, should clearly come

out with provisions prescribed in the amended legislations related to disaster management. Urban disaster management is intimately connected to the wholesome process of urban development and therefore needs a sincere incorporation in the development planning itself. The industrial relocation/location, unauthorized-regularization issue, slumming, over densification and continuous influx of population to Delhi are some of the open concerns and these besides being a planning challenge are a concern for disaster management.

(a) Retrofitting

For an existing building, retrofitting or seismic strengthening is the only solution to make it disaster resistant. In the district, all lifeline buildings such as major hospitals, Schools, Colleges, District Administration offices and other vital installations shall be retrofitted. For retrofitting, a panel of experts shall be approached for assessing the structure and to suggest the type of retrofitting required.

(b) Earthquake Resistant Construction

Promotion of Earthquake resistant construction mainly includes construction safety, quality control and proper inspection. Previously there were no specific guidelines on earthquake resistant constructions and seismic strengthening. Due to this very fact, most of the buildings till 1990s were built without any safety measures. But in the present scenario, there are building byelaws and guidelines to construct earthquake resistant structures. Civic bodies like MCD, DDA and PWD in the district shall try to enforce these laws. In addition to these the following points have been found in the context of Delhi.

2. Non-Structural Mitigation Measures

The entire Delhi state falls in earthquake Zone-IV, which indicates it is at high risk to earthquake. In addition to this fire is also a major concern for the district. The non structural mitigation is basically framed in such a way that the whole population of the district will be sensitized on disaster management and their capacity shall be developed to cope up with hazardous situations.

(a) Preparedness Methodology

In the disaster management cycle, preparedness shall be the first step, instead of waiting for a disaster to occur and then manage it. The plan contains a series of measures for preparedness in schools, colleges, hospitals and communities.

(b) Awareness Generation Programmes

Disaster strikes everywhere and everyone irrespective of caste, creed or gender. It doesn't differentiate the rich from the poor. The district administration has been trying to generate awareness at all levels in the district. A series of awareness programmes has been organized to reach out to the local residents and general public of the district and the programmes are continuing throughout the district. Awareness/sensitization programmes have been conducted at schools, colleges, communities, malls, cinema halls, hospitals etc. Basic information related to different kind of disasters is given in the form of Information, Education and Communication (IEC)

materials. Different kinds of strategies are being evolved to address different audiences. Special efforts are being made to address the most vulnerable groups during disasters e.g. women, children, the disabled and the old. The total population of the district is 27 lakhs and the district administration intends to reach as many people as possible and different methods are being adopted to spread awareness i.e.

- Public meetings.
- Mock-Drills.
- Distribution of reading materials/ pasting of posters.
- Street plays/Nulkkad Nataks.
- Involvement of Electronic media.
- Audio/video shows.
- Banners and Public Hoardings.
- Painting/ quiz competition especially in schools, rallies involving students.
- Observing Disaster Management Week, Fortnight, Month etc.

The objectives of the programmes are –

- To create awareness about disasters among the inmates of all institutions and residents of all communities in the district.
- To pave way for strict enforcement of building rules in construction department and by contractors.
- Preparation of Building evacuation plans and training the general public to save their lives at the time of earthquake, fire accidents or any other major disaster.
- To sensitize the district administration, other line department officials and other associated agencies.

(c) Training and Capacity Building

A number of training programmes shall be and are already being organized for specialized groups like, district DMTs, sub division and community level office bearers, school teachers and principals, architects, engineers, doctors, masons, etc. The professionals from all departments and sections shall be trained.

All the volunteer based organizations (VBOs) like Civil Defence, NYKS, NSS, NCC, etc., in the district, which have thousands of volunteers working with them will also be sensitized and given training on disaster management. Besides RWAs, NGOs in the district will also be given training on disaster management. All the VBOs, RWAs and NGOs shall also be encouraged and supported to organize awareness campaigns in their areas. These have been identified as organizations which can help percolate the idea deeper into the society.

4. RESPONSE AND RELIEF MEASURES

The need for an effective disaster management strategy is to lessen disaster impact which can be achieved through strengthening and reorienting existing organizational and administrative

structure from district – state to national level. The emergency response plan is a first attempt to follow a multi-hazard approach to bring out all the disasters on a single platform and incorporates the *'culture of quick response'*. Under the plan, common elements responsible for quick response have been identified and a set of responsible activities has been articulated. It provides a framework to the primary and secondary agencies and departments, which can outline their own activities for disaster response. The plan also includes specific disaster action plans along with modal scenarios in detail to conduct practice drills at district administration level.

Most of the disasters are to be managed at the state and district level. The centre plays a supporting role in providing resources and assistance. It will mobilize support in terms of various emergency teams, support personnel, specialized equipments and operating facilities depending upon the scale of the disaster. Active assistance would be provided only after the declaration of national emergency level. (National Disaster Response Plan, 2001)

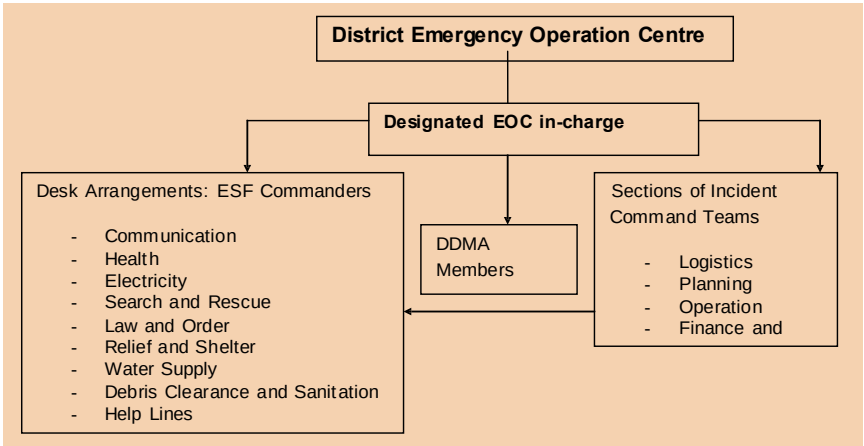
In case disaster may be managed at the district level, district emergency operation system would be activated where state and national level authorities would be on guard in case of assistance needed. Incident Commander (IC) of the district would activate the emergency support functions and Incident Response System and similarly according to the guidance disaster management teams and quick response teams would respond.

Operational–Coordination Structure

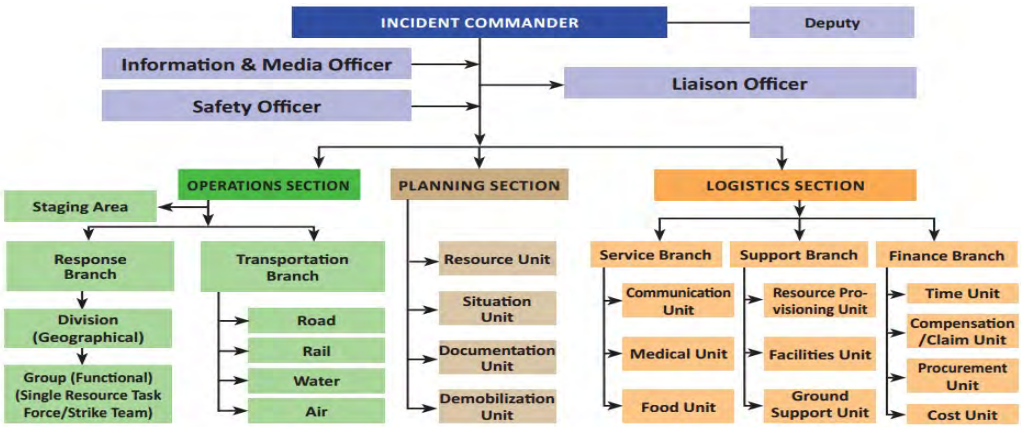
Trigger Mechanism

As soon as Emergency Operation centre would get the information about any emergency, the staff on duty in EOC will pass the information the DM-S and seek for his instruction for further actions. If the information pertains to the occurrence of a disaster in any part of the district, the staff on duty will also try to inform DDMA members, Emergency Support Functions-team leaders, major hospitals and State Disaster Management Authority etc. The staff on duty will also be responsible to reclaim information related to type, magnitude and location of the disaster and also inform it to responsible authorities. The EOC in-charge will also inform all the details to Divisional Commissioner and State EOC. All the desk officers/team leaders and Incident Response Team members will also be informed to immediately report at District EOC. Incident Response team and Desk officials would respond as per their standard operating procedures and directions of Incident Commander (IC).

Trigger Mechanism for District EOC

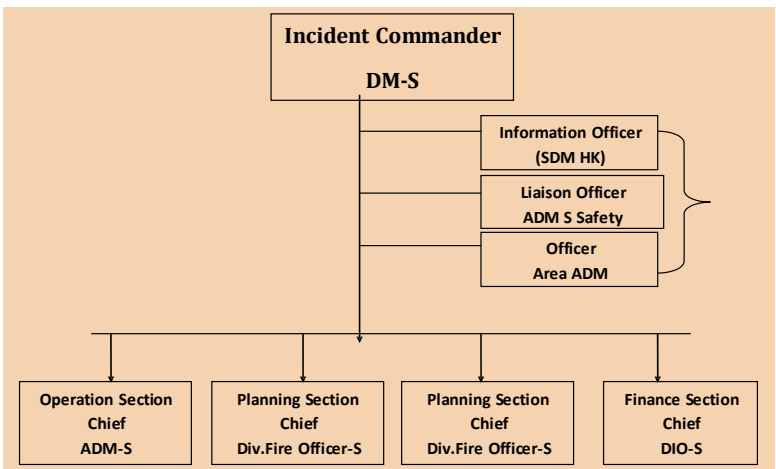


Activation of Incident Response System



Structure of Incident Response Team

During emergency period DM-S would be designated as Incident Commandant (IC) and shall take up following immediate actions



Rank for District level Incident Response Team

S. No	IRS Position	Suggested rank and position for District level IRS
1.	Responsible Officer	District Magistrate-South
2.	Incident Commander	Additional District Magistrate-South
3.	Liaison Officer	District Information Officer
4.	Information and Media Officer	District Information Officer
5.	Safety Officer	Specialist from DDMA/NDMA
6.	Ope rations Section Chief	Additional District Magistrate-South
7.	Staging Area Manager	Area Tehsildar
8.	Response Branch Director	Divisional Fire Officer
9.	Transportation Branch Director	Motor Licensing Officer (South)
10.	Planning Section Chief	Divisional Fire Officer (South)
11.	Situation Unit Leader	Respective Tehsildar and SHO of Police Station concerned
12.	Resource Unit Leader	Area Tehsildar
13.	Documentation Unit Leader	DPO (South)
14.	Demobilisation Unit Leader	Area Tehsildar
15.	Technical Specialist	Specialist from NDMA/DDMA
16.	Logistic Section Chief	Area SDM
17.	Service Branch Director	SDM (Election)
18.	Support Branch Director	Tehsildar (Hauz Khas)
19.	Communication Unit Leader	SDM (Election)
20.	Food Unit Leader	Tehsildar (Saket)
21.	Facilities Unit Leader	Tehsildar (Mehrauli)
22.	Ground Support Unit Leader	Tehsildar (Hauz Khas)
23.	Medical Unit Leader	CDMO, Distt. South
24.	Finance Branch Director	Account Officer (South)
25.	Time Unit Leader	SDM (Election)
26.	Cost Unit Leader	Accounts Officer, O/o-Dy. Commissioner (South)

Responsibilities under Incident Response System- Responsibilities of some are listed below:

Incident Commander: DM (South)

- Incident Commander (IC) shall rush to the Emergency Operation Center (EOC) where technical experts and section chiefs shall join him. He shall remain in the contact of EOC to know the updated status of incident.
- In consultation to technical experts Incident Command Post (ICP) shall be selected near incident site. Site selection shall be on the basis of the wind prevailing directions and probability of secondary hazards etc.

- Obtain updates of the incident situation from ICP and establish a link for continuous communication through dedicated telephone lines with speaker phones, set of walkie - talkies, computer link etc. with the help of coordinator
- Supervise the overall management of each function through respective members of DDMA and expediting response whenever required
- Identify the hazardous and threatened areas based on map and information received ICP
- Take a decisions on requirement and priorities of evacuation and organize the resources to execute the same
- Based on the inputs from the first responders, and experts available at ICP, identify the additional resources requirement and initiate mobilization with the help of section chiefs.
- Coordinate with the other district authorities and state authority
- After making required arrangement, IC shall visit incident site to supervise the situation
- He shall also take decisions in demobilizing the resources after the incident

Emergency Support Functions

ESFs shall be activated under Operation Chief. On the receipt of information Team Leaders (TLs) would take up following actions

a. On the receipt of information about the off-site emergency Team Leaders (TLs) will activate their own Emergency Support Functions (ESFs).
b. TLs will join IC and Operation Chief (ADM-S) in EOC to ensure coordination and to provide assistance.
c. TLs would also move to the site for better operational control.
d. TLs will call the nodal officers of supporting agencies and immediately deploy the quick response teams (QRTs) from the location of nearest to the incident site.
e. They further reinforce their teams by deploying additional resources from surrounding areas so the effective first respond can be rendered at site.
f. A high alert would be notified to move additional resources and manpower to the incident site.
g. According to the feedback report additional TLs will take decision of movement of more team and manpower. In some of cases TLs may need to mobilize resources from nearby districts or states. In such cases chiefs will organize this through respective head quarters.

Communication Unit Leader:

- Prepare & implement incident wireless communication plan.
- Ensure that incident communication centre & Message centre are established.
- Establish appropriate communication distribution/ maintenance locations within base/ camps.
- Ensure communication systems are installed and tested.
- Ensure equipment accountability system is established.

- Ensure personal portable wireless sets from cache is distributed as for incident wireless communication plan.
- Provide technical information required on:-
  - Adequacy of communication system currently in operation;
  - Geographic limitation on communication system;
  - Equipment capabilities / limitations;
  - Number and types of equipments available;
  - Anticipated problems in the use of communication equipments;
  - Ensure equipments are tested and repaired;
  - Recover equipments from released units.
- Responsible to receive and transmit wireless and telephone messages among & between personnel to provide dispatch services at the incident.
- Set up message centre location as required.
- Receive and transmit messages within and external to incident.
- Maintain files of general messages.
- Maintain a record of unusual incident occurrences.

Medical Unit Leader:

Responsible for:-

- Development of medical response plan;
- Respond to requests for medical side and transportation for injured & ill incident personnel medical supplies.

Emergency Support Functions

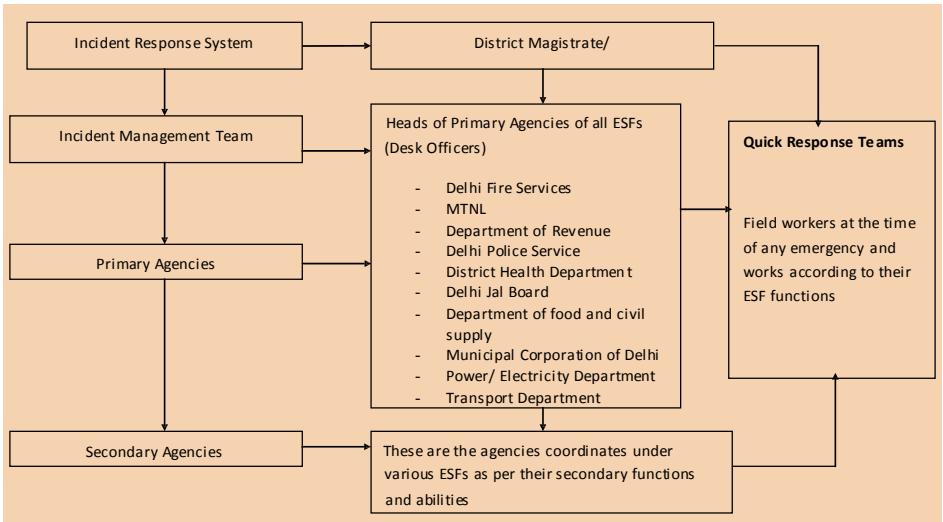
Emergency Support Functions (ESFs) are the essentials of Emergency Management comprising of various coordinating agencies, which manage and coordinate specific kinds of assistance common to all disasters types. The plan establishes an organized set-up to conduct ESF operations for any of the Natural and Manmade Disasters. It outlines an implementing framework of sharing resources and co-coordinating, preparedness, Mitigation, response and recovery as per the requirement. The Plan has structured the activities of concerned agencies i.e. primary/ nodal and support agencies into an organized manner according to their capabilities, skills, resources and authorities across the state and district government. It also attempts to unify efforts of state departments so that they are involved in emergency management comprehensively to reduce the effects of any emergency or disaster within the state.

(i) Organization Setup of the ESF at District Level

The Revenue Department of the district, which may be renamed as 'Department of Revenue and Disaster Management', as directed by the Ministry of Home Affairs, is the prime co-coordinating agency for disaster risk management efforts. However there will be other agencies involved in-

charge of different ESFs. Each ESF is headed by a lead organization and assisted by supporting organizations for coordinating the delivery of resources and services to the disaster-affected area.

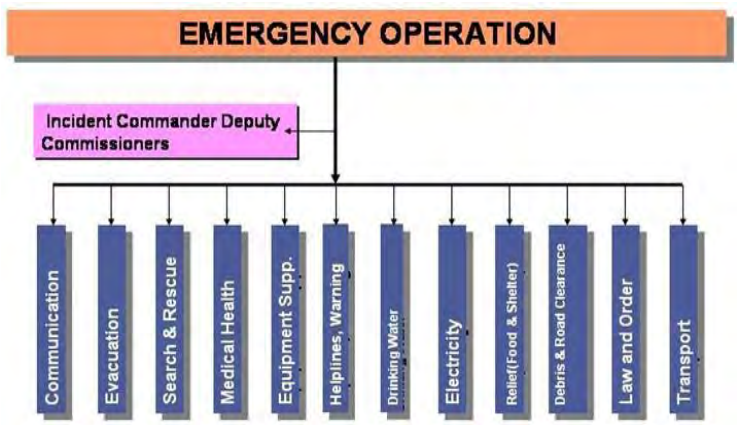
Emergency Support Functions in Response Mechanism



These ESFs form an integral part of the EOC and each ESF should coordinate its activities form the allocated EOC. Extension teams and quick response teams (QRTs) would be required to follow their response procedures at the affected site. Nodal officers of all the ESFs would constitute Incident Management Team. Nodal officer would also nominate names for the QRT members who will accomplish disaster management related work at the field level. Similarly supporting agencies would also nominate their nodal officers and QRT members who will assist to the primary officers during response phase. Additional names should also be proposed to backstop the requisite positions.

A detailed organizational setup of all ESFs and team leaders has been given below:

In any case of any disaster Police, Fire, Medical and revenue department have been identified as first responder.



Emergency Support Functions

A set of clearly defined responsibilities for all the ESFs have been mentioned below:

ESFs Teams

ESF	Function	Coordinator	Membe rs
ESF1	Communication	MTNL	NIC, Police, Revenue Wireless, Private Telecom
ESF2	Evacuation	Police Department	Army, Health Dept, Civil Defence, Delhi fire Service, NCC
ESF3	Search and Rescue	Secy. Home	Fire Deptt, Police, Civil Defence, Army
ESF4	Medical Health/Trauma	Secy. Health	Major Hospitals, CATS, St. John Ambulance, Civil Defence
ESF5	Equipment Support	Secy. Urban Development	MCD, PWD, NDMC, Cantt. Board, DDA, JAL Board
ESF6	Helplines, Warning Dissemination & coordination Media coverage	Pr. Secretary (Revenue/Disaster Management)	All Emergency S upport Functionaries (ESFs), Media Agencies
ESF7	Drinking Water	CEO, Jal Board	DJB
ESF8	Electricity	Secy. Power	Transco, Power Companies (NDPL/BS ES)
ESF9	Relief (Food and Shelter)	Pr. Secretary (Revenue/Disaster Management)	Civil Supplies Corporation, Civil Defence, Volunteer Organisations
ESF10	Debris and Road Clearance	Commissioner, MCD	PWD, NDMC, Cantt. Board, DDA, MES, CPWD
ESF11	Law and Order	Commissioner, Police	Civil Defence, Home Guards
ESF12	Transport	Secy. Transport	DTC, DMRC

Incident Command Post

In case of emergency IC should propose an incident command post as a complimentary unit to EOC, which will operate close to the disaster site and shall be linked directly with the District Emergency Operations Centre. Concerned SDM shall be the nodal officer from district administration responsible of coordinating with emergency response teams at field level. The Incident Commander shall also appoint an administrative officer to monitor and co-ordinate the activities of Incident Command Post. All information shall be conveyed to the Collector from the SDM and administrative officer appointed at SOC. The QRT unit of the respective vital departments would be responsible to execute activities at disaster site; however the tasks would be controlled and coordinated from EOC through nodal desk officers/ESF team leaders.

Overall Role of District Magistrate (South District)

The DM (S) will be the focal point at the district level for directing, supervising and monitoring relief measures for disasters and for preparation of district level plans. He will exercise coordinating and supervisory powers over functionaries of all the departments at the district level. During actual operations for disaster mitigation or relief, the powers of all DMs are considerably enhanced, generally, by standing instructions or orders on the subject, or by specific Governments order, if so required. Sometimes, the administrative culture of the concerned state permits, although informally, the DM to exercise higher powers in emergency situations and the decisions are later ratified by the competent authority.

The DM (S) will maintain the close liaison with the central government authorities in the districts, namely army, air force and ministry of water resources etc, who supplement the effort of the district administration in the rescue and the relief operations. The DM (S) will also coordinate all voluntary efforts by mobilizing the non-government organizations capable of working in such situations.

In the event of a serious disaster, the DM (S) will have sole right to appoint senior officers of any State Government Department, posted in the district as *'Field Relief Managers'* for monitoring and coordinating the relief operations in the affected area.

Duties at the time of disaster

- Maintenance of law and order; prevention of trespassing, looting, keeping roads clear from sightseeing persons so that free movement of rescue vehicles is assured, etc.
- Evacuation of people.
- Recovery of dead bodies and their disposal.
- Medical care for the injured.
- Supply of food and water and restoration of water supply lines.
- Temporary shelters like tents, metal sheds.
- Restoring lines of communications and information.
- Restoring transport routes.
- Quick assessment of damage and demarcation of damaged areas according to grade of damage.
- Cordoning off of severely damaged structures that are liable to collapse during aftershocks.
- Temporary shoring of certain precariously standing building to avoid collapse and damage to other adjoining buildings.

5. BUDGET & FINANCIAL ALLOCATIONS

In most countries where relief activity is primarily the responsibility of State/Provincial Governments, assistance from the Federal/Central Government to the lower levels of government is mostly in the form of case-specific grants / reimbursement. These are more in the nature

of the NCCF scheme of our country and, in that sense, the CRF scheme that provides for a structured fiscal transfer from the Central to State Governments for the purpose of financing relief expenditure is unique. Through the CRF scheme, successive Finance Commissions have built in the requirement of relief expenditure financing in the overall scheme of fiscal transfers. In the case of the NCT of Delhi, even calamity relief fund is not available. Fortunately, the concept is developing in such a way that the Planning Commission has conceptually agreed to have an exclusive mechanism to fund and to monitor the financial arrangements of disaster management.

RECOMMENDATION BY 13TH FINANCE COMMISSION

The Thirteenth Finance Commission (2010-2015) has responded very positively to the long pending request for greater allocation of fund for disaster management. The finance commissioner suggested various recommendations to solve the issue in state and district level.

Every state has a State Calamity Relief Fund (CRF) for immediate action in the aftermath of a disaster. But in the case of the state of NCT of Delhi, there is no CRF. There is police modernization fund, which is utilized mostly to modernize the police department to fight against disaster.

An alternative mechanism is to be constituted in all the districts of Delhi to tackle the disasters. As the 13th Finance Commission recommends it, District South shall set apart 10% of its development fund for disaster preparedness and mitigation measures. Every year, the annual allocation of 10 per cent will be a relief to the administration to organize various disaster preparedness activities in the district. Similarly each line department in the district shall allocate minimum 2 per cent to 10 per cent of its developmental fund with the same purpose.

DISTRICT CALAMITY RELIEF FUND

Besides, the DDMA (S) South Delhi shall constitute a District Calamity Relief Fund (DCRF). This amount shall be raised purely from the General Public through donations. There can be a committee under the leadership of the District Magistrate South, to operate the fund. Once the fund is created, every year the DDMA (S) shall prepare reports on the utilization of fund, disasters faced in the previous financial year as well as potential programme planning for utilization of this fund.

STATE ALLOCATIONS

As an alternative option, the DDMA (S) shall forward a request to the Government of NCT of Delhi to grant 50 per cent of the targeted DCRF as one time grant and a matching amount shall be collected from the general public through donations.

Section 46 to section 49 of Disaster Management Act, 2005 seeks to provide for the constitution of the following funds:

- Section 46, Constitution of National Disaster Response Fund;
- Section 47, Constitution of National Disaster Mitigation Fund;

- Section 48, Seeks to provide for the establishment of State & District Disaster Response Fund and Disaster Mitigation Funds;
- Section 49, Seeks to enjoin upon every ministry or department of Government of India to make provision of funds in its annual budget for the purposes of carrying out the activities or programmes set out in its Disaster Management Plan.

DISTRICT ALLOCATIONS

The district authority gets 100% financial assistance from Govt. of NCT of Delhi for carrying out various activities such as sensitization programmes, trainings, street plays, mock drills etc.

The budgetary details of DDMA(S) for the year 2012-13 are as under:

Budget allocated	Rs. 50,00,000/-
Utilized	Rs. 42,67,000/-

The scales for grant of ex-gratia relief in various eventualities after Cabinet decisions No. 1005 of 31.10.2005 and No. 912 of 11.09.2004 are as per details given below:-

(i) Fire & Other Accidents (caused by individual or natural calamities):

a) Death (Major) : Rs. 2,00,000/- in each case.
b) Death (Minor) : Rs. 1,00,000/- in each case.
c) Serious Injury : Rs. 50,000/- in each case.
d) Minor Injury : Rs. 10,000/- in each case.
e) Orphaned children : Rs. 1,00,000/- in each case.

(ii) Bomb Blasts, Communal Riots & Other Riots, Terrorist Attacks:

a) Death (Major) : Rs. 3,00,000/- in each case.
b) Death (Minor) : Rs. 1,50,000/- in each case.
c) Permanent Incapacitation : Rs. 1,50,000/- in each case.
d) Serious Injury : Rs. 1,00,000/- in each case.
e) Minor Injury : Rs. 10,000/- in each case.
f) Orphaned children : Rs. 1,00,000/- in each case.

(iii) Loss of Moveable Property (in riots):

a) Animals (Source of Income / livelihood) : Rs. 2,000/- each.
   i) Farm Animals : Cows, Buffaloes, Sheep.
   ii) Cart Animals : Hoses, Oxen, Camel.
b) Rickshaw : Rs. 1,500/- each.

(iv) Damage to residential unit (In riots / fire / natural calamities [other than Jhuggies]):

a) Total Damage : Rs. 50,000/-.
b) Substantial Damage : Rs. 25,000/- .
c) Minor Damage : Rs. 5,000/-.

(v) Damage to uninsured commercial property / commercial articles (In riots / fire /natural calamities etc.):

50% of the loss up to a maximum of Rs. 1,00,000/-.

(vi) Damage to Jhuggies (In case of fire / riots etc.):

Total damage of Jhuggies : Rs. 5,000/- in each case. (Rupees Five thousand only)

AN ANALYSIS

The draft District Disaster Management Plan of South Delhi basically talks of emergencies emerging out of earthquakes, fire or terrorist attack in the form of bomb blast. But chemical disaster plan is conspicuous by its absence. Given the fact that Delhi is highly prone to latest kinds of attacks, the district plan must incorporate these aspects too.

The Disaster plan is more of a top-driven exercise with almost no scope for participation by general public and the civil society to give its input. In my opinion the District Disaster Management Plan can be made more inclusive so that the needs of poorest of the poor, women, children, physically challenged, old aged, dalits etc. are better catered to during emergencies.

The District Disaster Management Plan does not elaborately delve on describing unique features of the district with statement on hazards and their impacts on life and property. The socio - economic, demographic, geographic, key resources and critical infrastructures of the district are not adequately mapped in the District Disaster Management Plan.

There is no mention of training of regular staff of the different stake holding offices to contribute positively in an event of disaster. A culture of disaster preparedness cannot develop unless and until it is deliberately made an active part of the professional lives of the government functionaries as well as other volunteers. National Disaster Management Authority (NDMA) organizes training for government officials, institutions and the community in mitigation for and response during a crisis situation or a disaster. It operates the National Institute of Disaster Management, which develops practices, delivers hands-on training and organizes drills for disaster management. It also equips and trains disaster management cells at the state and local levels. I believe that training should be received by officials on a rotation basis and if need is felt, it can be made a necessary condition for availing increment benefits.

The District Disaster Management Plan does not identify school buildings/safe places in the district which may be used for the purpose of rescue and relief operations during sudden crisis in the area. The mapping of hospitals in the district with strength of casualties that can be accommodated is also missing. Another important feature is the identification of 'Disaster Lanes'

which can be used to immediately provide rescue and relief given the reality that Delhi roads remain choked most of the time hampering the relief work.

The communication is reliable only with Tetra wireless. The proposals for installation of Satellite phones and HAM equipments in the EOC are still on paper. Disasters usually come unannounced and lack of reliable communication system can severely affect the management of the same.

There was an incident of reported fire in a restaurant in a mall 'Select City Walk' in Saket, South Delhi in the month of November 2014. Even the District Magistrate got to know of the event through news channels. It was more of a panic as smoke filled the restaurant during cooking of a particular dish. But the point worth mentioning here is that despite being located within one kilometer from the Office of the DM and being the centre of countless number of street plays for disaster preparedness awareness generation, the mall authorities failed to inform the DDMA.

This highlights the sheer ineffectiveness of the money being spent on awareness generation. Disaster Plan has to creatively devise ways to make Disaster management an active part of the psyche of all individuals. People must know their expected behavior or response if a disaster strikes. People must follow all laws and rules and shun the culture of open flouting of the building bye-laws.

As far as the insuring against disaster is concerned, the pooling of disaster risk at the individual level poses huge administrative challenges in a country like India where the majority impacted by disasters are primarily the poor who have, consequently, very little capacity to pay the risk premium involved. Apart from the fact that payment of risk premium towards insurance against natural disasters could be a highly unpopular step, the administrative cost of collection of such premium from a large number of potential beneficiaries spread over a wide geographical area would, indeed, be daunting. Disaster relief has long come to be viewed as a public good, to be delivered gratis by the state, and in the very likely event that no (or an insignificantly small) insurance premium can be levied, the very concept of risk pooling would become effective. However, given the low level of insurance penetration in India, insurance products covering disaster events may only materialize sometime in the future.

CONCLUSION

The United Nations defines a disaster as a serious disruption of the functioning of a community or a society. Disasters involve widespread human, material, economic or environmental impacts, which exceed the ability of the affected community or society to cope using its own resources. The Red Cross and Red Crescent societies define disaster management as the organisation and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response and recovery in order to lessen the impact of disasters. The District Disaster Management Plan should constantly evolve and endeavour towards achieving the same.

Disaster Management Framework, South Delhi

MATRIX OF PAST DISASTERS

Emergency Operation Centre (EOC) working under the aegis of District Disaster Management Authority (South) has successfully handled a large number of incidents of various kinds and magnitudes occurring in south district. The table given below shows the information pertaining to the incidents occurred in south district from May, 2012 to August, 2014:

S. No.	Incident	Date	Time	Place	Sub-Division	Casualty	
						Dead	Injured
1	Fire	10-May-2012	12:25am	Khel Gaon	Hauz Khas	0	0
2	Fire	11-May-2012	08:30pm	Fatehpurberi	Saket	0	0
3	Fire	16-May-2012	01:00am	Chirag Delhi	Hauz Khas	0	0
4	Fire	20-May-2012	11:10am	Malviya Nagar	Hauz Khas	1	10
5	Fire	23-May-2012	02:30am	Green park	Hauz Khas	0	3
6	Fire	25-May-2012	01:30pm	Neb Sarai	Saket	0	0
7	Fire	16-Jul-2012	02:28pm	Lado Sarai	Saket	0	0
8	Fire	20-Jul-2012	08:32pm	Chattarpur	Saket	0	3
9	Fire	26-Aug-2012	04:00pm	Maidan Garhi	Saket	1	0
10	Roof collapse	2- Sep-2012	02:46pm	Jamrudpur	Hauz Khas	0	2
11	Fire	4-Oct-2012	04:54pm	Hauz Khas	Hauz Khas	0	0
12	Fire	9-Nov-2012	02:50pm	Shahpur Jat	Hauz Khas	1	3
13	Fire	21-Nov-2012	06:10pm	Lado Sarai	Saket	0	0
14	Wall collapse	5-Feb-2013	08:55am	Sultanpur	Mehrauli	1	0
15	Fire	10-Mar-2013	01:46pm	Maidan Garhi	Mehrauli	0	0
16	Fire	23-Mar-2013	01:23pm	Chirag Delhi	Hauz Khas	0	0
17	Fire	30-Mar-2013	06:32am	G.K.	Hauz Khas	0	0
18	Fire	01-April-2013	02:30am	Tigri khanpur	Saket	0	1
19	Fire	13-April-2013	12:47am	Fire in intex Optic Clinic. F-22, Hauz Khas	Hauz Khas	0	0
20	Drawing pond	07-May-2013	04:45 pm	E-1/A Phero Farm Asola-1	Mehrauli	1	0
21	Tentage collapse	19-May-2013	04:17pm	Aarone Farm House 100 Futa Road Chhatrpur	Mehrauli	1	5
22	Wall collapse	06-June-2013	05:26pm	H.no-793, Kuber Building Maidanghari	Saket	0	3

S. No.	Incident	Date	Time	Place	Sub-Division	Casualty	
						Dead	Injured
23	Fire	14-June-2013	06:28pm	Chhata Park Gautam Nagar Hauz Khas	Hauz Khas	0	3
24	Fire	01-July-2013	08:37pm	E-35 Chhatarpur Extn. Mehroali	Mehrauli	0	1
25	Wall collapse	11-July-2013	10:36am	C-18 Sultanpur Colony near Masjid Fatepurberi	Mehrauli	0	1
26	Drop in pond	27-July-2013	08:32pm	Chhaterpur Red Light to Vasantkunj Road	Mehrauli	0	1
27	Wall collapse	28-August-2013	09:25am	8-Block Near Market Mother Dairy Dakshinpuri	Saket	0	1
28	Fire	26-Sep-2013	10:29am	Ward no.1 Pehlwan Dhaba Mehroali	Mehrauli	1	0
29	Drowning in pond	28-Sep-2013	07:32pm	Chhatarpur Metro Parking	Saket	0	2
30	Roof collapse	14-Oct-2013	11:12am	H. no. R-102 Khirki Extn Malviye Nagar	Saket	0	1
31	Wall collapse	14-Oct-2013	09:18pm	H.no.-114 M.G Road Sultanpur	Mehrauli	0	3
32	Wall collapse	23-Nov-2013	04:12 pm	Bihaind the Chhatarpur m/s Shopit	Mehrauli	0	2
33	Wall collapse	17-Dec-2013	03:13pm	H.no-317 A/1 Chirag Delhi	Hauz khas	0	3
34	Fire	5-Jan-2014	07:00am	Guard room Fathepurberi	Mehrauli	0	1
35	Wall collapse	6-Jan-2014	02:00pm	H.no-B-65 Chhatarpur	Mehrauli	1	0
36	Fire	27-Jan-2014	06:32pm	F-5, Shapur Jat, Hauz Khase	Hauz Khas	1	4
37	Wall Collapse	27-Jan-2014	06:32pm	H. No-24 Police Colony	Hauz khas	0	3

S. No.	Incident	Date	Time	Place	Sub-Division	Casualty	
						Dead	Injured
38	Wall Collapse	01-Feb-2014	6:04pm	H.No 431/39 Chhattar Pur	Mehrauli	0	1
39	Wall Collapse	26-Mar-2014	10:55pm	F-11/3 Gautam Nagar	Hauz khas	0	1
40	Road Accident	28- Mar-2014	09:23pm	Arjan Garh Metro Stn. MG Road	Mehrauli	0	1
41	Wall Collapse	11-Apr-2014	09:20am	Maidangari Bus Stand	Saket	0	1
42	Wall Collapse	08-May-2014	07:36pm	Vikash Hospital Word No.3	Mehrauli	0	2
43	Fire	23-May-2014	02:02pm	H-394, Sangam Vihar	Mehrauli	1	0
44	Wall Collapse	01-June-2014	06:18am	E-2, Maidan Gari	Saket	0	5
45	Wall Collapse	26-June-2014	03:11pm	H.No-878, Word No-6	Mehrauli	0	1
46	Road Accident	01-July-2014	09:43pm	In-Front-of Temple, Dera Goun	Mehrauli	0	11
47	Road Accident	4-July-2014	11:20am	T-613 Khirki Ext. Malviya nagar	Hauz Khas	1	1
48	Building collapse	6-July-2014	12:25am	B-C JVPS Garden near Arya Samaj Mandir Chattarpur Ext.	Mehrauli		1
49	Building Collapse	06-July-2014	02:05pm	C-692, SSC Public School, Sangam Build.	Saket	0	3
50	Wall Collapse	06-July-2014	03:55pm	E-44, Gali No-1, Neb Sarai	Saket	0	6
51	Fire	09-July-2014	06:14pm	In-Front-of Mary Scl. Neb Sarai	Saket	0	1
52	Fire	10-July-2014	06:14pm	St. Mary school 4 in Front of Plot Fire	Saket	0	4
53	Wall Collapse	17-July-2014	12:12pm	H.No-103E, Malviya Nagar	Hauz Khas	0	1

S. No.	Incident	Date	Time	Place	Sub-Division	Casualty	
						Dead	Injured
54	Fire	26-July-2014	04:44pm	Green Park Metro Stn.	Hauz Khas	0	4
55	Wall Collapse	26-July-2014	06:55pm	B-14, Amb. Colony Chhatterpur	Mehrauli	0	4
56	Fire	08-Aug-2014	07:13pm	F-283, Ambedkar Nagar	Saket	0	1
57	Wall Collapse	10-Aug-2014	01:12pm	Maidan Gari Bus Stand	Saket	0	3
58	Wall Collapse	16-Aug-2014	09:17pm	H.No-705/7E, Word No-3, Mehrauli	Mehrauli	0	1
59	Wall Collapse	22-Aug-2014	11:42am	K-89, Aurobindo Mrkt	Hauz Khas	0	4
60	Road Accident	28-Aug-2014	01:14am	Chhatterpur	Mehrauli	0	1

It can be seen from the matrix of the disasters/incident that occurred in the past financial year that the frequency of fire is the most. Though no big fire incident took place in the last financial year but high frequency of fire is still resulting in enormous loss of material and infrastructure. Moreover, few incidents of wall/roof collapse also took place. The reason behind such incidents is poor quality of construction and no repairing of the old structures. In order to save money, most of the houses constructed in un authorized colonies and slums are weak and hence they collapse due to heavy rain or even due to mild tremors of earthquake.

Geographically, the sub-division that faced minimum number of incidents was Mehrauli. Sub-Divisions Saket and Hauz Khas faced almost the same number of incidents. There is a need to raise the awareness regarding fire and safe construction in the slums/unauthorized colonies.

Chapter 2

Analytical Note on Disaster Management Framework, Varanasi

Apurva Dubey, IAS

ABSTRACT

Different parts of the country have been witnessing flood fury with the loss of lives and property. In Uttar Pradesh, the swollen Ganga had flooded many districts of eastern region, including Varanasi, Allahabad, Mirzapur, Ghazipur and Ballia.

The report of the ministry of water resources admits that the approach to flood management presently exercised in India need to get a re-look and have an integrated strategy. Floods have been recurrent phenomenon in many parts of India, causing loss of lives and property and bringing untold misery to the people, especially those in the rural areas.

According to the Preliminary Consolidated Report on Effect of Climate Change on Water Resources, UP has 73.4 lakh hectares flood-prone area, the highest in the country, of which only 17.03 lakh hectare area is protected (as reported up to March 2006). The report says that as the flood events and intensity are likely to increase due to climate change phenomenon, the flood prone-area is further likely to increase. The likely increased sediment flow may affect the morphology of rivers.

The background to disaster management plan is reviewed every year and a new plan for each year is developed but it actually encompasses disaster of only one kind i.e. flood which is owing to the geographical location of Varanasi which makes the district prone to floods. There have been occurrences of disastrous floods in Varanasi in the past. One of the most destructive floods happened in 1978 but after that in 2013 also a flood was witnessed which alarmed the people and the administration and conscious and cautious efforts have been taken up in this regard thereafter.

In Varanasi city there are three rivers which flow – ganga, varuna and gomti. The lowest level/ mark of ganga river is 71.262 mts and the highest level is 73.901 mts. As soon as the level of ganga touches 70 mts, an alert signal is sent across and all the necessary arrangements are made. Since last year the flood affected villages went as high upto 168 and consequently many flood shelter homes were established. The aid from the government for flood relief till date has been 25,00,000.

However, Today is the time when it calls for a move in approach towards the disaster management. It has to move from reactive and relief centric approach towards a holistic and integrated approach which must comprise prevention, preparedness measures in pre-disaster phase; and mitigation, rehabilitation and reconstruction measures in post-disaster phase. Disaster Management must be viewed as a development process and thus preparedness and mitigation planning has to be done in perpetuity and in tandem with environmental and development concerns.

INSTITUTIONAL FRAMEWORK AS PER DISASTER MANAGEMENT ACT, 2005

Government of India enacted the Disaster Management Act, 2005. The Act provides the legal and institutional framework for the effective management of disasters; under its provisions, the National Disaster Management Authority (NDMA) headed by the Prime Minister, State Disaster Management Authorities (SDMAs) headed by the Chief Ministers, and District Disaster Management Authorities (DDMAs) headed by the Collectors have been established. Further, the Act also provides for Disaster Management Plans at the national, State and District levels, as well as the creation of a National Disaster Response Fund and a National Disaster Mitigation Fund. The State Disaster Management Plan establishes the policies and structure for state government management of disasters; Prevention, Mitigation, Preparedness, Response, Relief and Recovery.

At the state level, anodal officer is appointed to coordinate and respond to emergent situations. At the District Level, the District Collector is responsible for overall coordination and implementation of disaster management at the district level. The Collector prepares the District Disaster Management Plan for the district, and monitors and ensures that the guidelines for prevention, mitigation, preparedness and response measures laid down by the SDMA are followed by all the line departments and the local authorities in the district.

It is already recognized that it is possible to take preventive, mitigation, preparedness measures along with the capacity building of the stakeholders so that the negative impact of a disaster can be minimized. Hence, there is a need for good planning. Under the Disaster Management Act 2005, it is mandatory on the part of District Disaster Management Authority (DDMA) to adopt a continuous and integrated process of planning, organizing, coordinating and implementing measures which are necessary and expedient for prevention as well as mitigation of disasters. These processes are to be incorporated in the developmental plans of the different departments and preparedness to meet the disaster and relief, rescue and rehabilitation thereafter, so as to minimize the loss to be suffered by the communities and are to be documented so that it is a ready reckoner and is easily accessible to the general public.

Section 31 of Disaster Management Act 2005, makes it mandatory to have a disaster management plan for every district. DDMP shall include Hazard Vulnerability Capacity and Risk Assessment, prevention, mitigation, preparedness measures, response plan and procedures, to enhance disaster resilience of the people in the district by way of capacity building and to develop the standardized mechanism to respond to disaster situation to manage the disaster efficiently.

RESPONSE MECHANISM IN THE DISTRICT

Motorboats launch and arrangements for boats:

The revenue department of the city has few motorboats and the related tehsildars have the onus to place the boats at such places so that they can be put to use when the flood happens. Tehsildars also have a list of all the private boats which are approximately 500 which seems to be sufficient for the Varanasi city. The proper usage of boats is the responsibility of sub-divisional magistrate and the tehsildar. Every boat mandatorily requires having a homeguard and PAC can

be deployed when the necessity arrives. Bhulanpur battalion no-34 and Ramnagar battalion no-36 is placed there under the control of DIG-range which has motorboats, boats, life jackets, fibre which is specially trained for the purpose of managing floods.

Company	Number	Motor boats	Boats	Life jackets	Fibre
Bhulanpur battalion no-34	01	16	16	90	46
Ramnagar battalion no-36	02	11	16	90	43
Total	**03**	**27**	**32**	**180**	**89**

Provision for availability of necessary items:-

The stock of 50-50 tonnes wheat and rice is to be stocked at each tehsil. For other necessary items such as kerosene, matchstick, candles, etc weekly verification has to be done and has to be reported at the head quarter. These things are to be distributed by the tehsildar/SDM as soon as the alert signal is received. Similarly the items required for animals such as first aid box/ medicines are to be distributed amongst all. And as soon as the flood subsides, the flood victims have to be rehabilitated in their respective homes and construction of their houses. For this purpose tehsildar/SDM have to distribute the sanctioned money to the flood victims with utmost immediacy as possible. Provided that where the destruction has been such that the rehabilitation of victims is not possible at their respective places, then the land of gram sabha has to distributed amongst them. And in cases of non-availability of land, the land can be acquired for the same under Uttar Pradesh property acquisition act flood relief 1952 is to be done and distributed to the victims.

Provision for water clogging in the city area:-

Since the city area is not very organised, the problem of water clogging in city area is very important as the populace that it affects has the full potential of inviting an epidemic. So specific provision has been made in this regard. For the clearance and discharge of such cogged water, **Uttar Pradesh Jal Nigam and Nalkoop department (tube well)** jointly. Nagar Nigam has to be set up flood control cell. Since heavy rainfall flares up the problem of flood, so where the nagar nigam can discharge water by placing pumps etc they are to make a proposed list of such works. In this regard the municipal commissioner is to coordinate between the irrigation department and Jal Nigam.

In the rural areas, the water clogging has to be removed so that the fields can be put to use. And for this irrigation department has the onus. And Railway department has to clear its own areas by making a plan at its own level.

The assistance of self help groups:-

Every year the self help groups as well as citizens have been providing assistance. **Nagrik Suraksha Department (Civil Defence)** has trained approximately 120 SHGs in this regard. Such arrangement has been done to protect people and evacuate them to a safe place. They also assist in the distribution of the food items. For such assistance, a flood control and monitoring cell

has be set up by the ADM (finance) in the townhall to make it more organised. The experiences of the past has brought out the fact that all the SHGs get restricted to only one area and thus the flood relief work becomes skewed in its approach. So to make the assistance more fruitful, the monitoring cell under ADM (fin) can decide on the areas of operation for such SHGs and to provide them also with the necessary guide in this regard. Since at such times shortage of staff also becomes a hindrance since the work is enormous, all SDMs are required to keep a list of citizens, students and teachers in their areas and when required they are to be roped in for the necessary work. Training to self help groups and revenue staff has been given in the month of November by the NDRF which was coordinated by the DM. Such training has to be done timely and regularly:-

Training imparted to revenue staff and SHGs as to how first aid is to be given to the victim

Training given to revenue staff and SHGs for the usage of life jackets

Training given for the protection of victims by the use of locally available items.

Training to use the containers which are locally available and can assist in rescue of victims

Here the importance of training needs to be emphasised that by merely allocating duties to staff is a complete no if one needs an effective handling of the crisis. In this regard DM of Varanasi has done a commendable job by rendering training to all the staffs so as to enable them to perform their duties and as well as have the confidence to tackle with crisis situation.

Modus operandi:-

As soon as the water level of ganga reaches 70mts, a flood control cell is set up at the collectorate under the deputy controller civil defence dept, Varanasi and the cell would be under the supervision of one ADC and a staff from the collectorate jointly.

In 2014 for regulation and coordination of information in an organised way, a flood control room has been set up by the irrigation department in varunapuram, sigra where the police department also coordinated with. The daily reporting of water level is monitored and thereby the administration is informed.

The times of flood can only be anticipated and similarly the problems arising due to it. So the regular work of drainage cleaning has to be regulated and monitored well so that the damage can be minimised. So every year the report of proposed work is given to the administration and in 2014-15, the proposed work for cleaning of drainage is approximately for around 19.60 kms which is to be done by Bandhi prakhand, Varanasi.

There are also a list of work which has proposed in order to mitigate the problems and disastrous consequences arising due to flood:-

1. Jal kal department, Nagar Nigam Varanasi has to timely and adequately monitor and maintain the sewage system in place.
2. Currently there is a 20km trunk sewer line 810 kms branch sewer lines.
3. The Problem of water clogging owing to heavy rainfall has to be regulated by the Nagar Nigam by setting up temporary pumps.
4. Similarly sewage pumping station has to be maintained by Jal Nigam as well as the the gates of all drains and pipelines have to be monitored by it.
5. A dedicated number 08935000976 has been created for the control room of Jalkal department which is a 24*7 facility.

The provisions for livestock during the times of flood:-

During the times of flood/heavy rainfall the natural resources of water gets polluted which is not fit for consumption. It results in different kinds of diseases of animals. For such times the vet nary doctors have been instructed that they must coordinate with each gram sabha's jal prabandhan committees and the hand pumps must be fixed in advance itself.

Other arrangement which they have to do is to select safe rescue places for animals to be kept and in this regard 30 chowkis have been already selected. Secondly, the arrangement for the fodder also is also done whereby different ways have been adopted in order to make the fodder more nutritious such as by urea treatment. This information is also dispensed to the breeders via Block development Committee. In the flood affected areas the seeds for the same are distributed free of cost during rabi cycle.

For the health and disease control, there are 15 animal clinics, 15 centres for distribution of medicines (aushadalay) and 15 animal service centres in Varanasi. It provides for adequate

vaccination. The vaccination is done in a way that it first addresses the areas which are more prone to flood and subsequently in other areas.

Stocks of medicines are also to be preserved by the medical officers for unforeseen circumstances. It also comprises of mineral mixture, antibiotics, electrolyte, fluids etc.

A nodal officer has already been appointed for the flood related works and the coordination of the same. (Deputy chief animal medical officer).

The provisions for Health issues- Health department

The proposed works of the health departments can be listed as following:-

1. Super chlorination of drinking water in the rural areas- The chlorination of drinking water is done during rainy season and this work is taken up in a campaign mode during flood times as well. As soon as the water level in the rivers touches the danger level, the work is done in a systematic way. The verification of such chlorination of all handpumps is done by a certificate which is to be issued by the gram pradhans in three forms and 2 amongst them is deposited at the district level.
2. Super chlorination in the city areas- since the city areas have huge population and no one point authority is at the ground level to monitor, Jal nigam monitors it. The report of completion of chlorination is done by a team comprising of officers from Nagar Nigam, health department, and the jal sansthan.
3. To monitor the sale of polluted drinking items and the eatable items.
4. Stocks to be kept with every medical officer and strict monitoring of conjunctivitis during the times of flood. Special emphasis has been given on conjunctivitis as in the recent past it has been observed that conjunctivitis becomes widespread during the times of flood.
5. Daily reporting is to be done regarding the diseases detected at every level- primary health centres, community health centres and CMO devises a strategy accordingly.
6. There are already flood chowkis (nominated) for the emergency services which is to be manned by the nominated medical officer .

Provisions made by the Nagar Nigam:-

As already mentioned in the various provisions by the other departments, Nagar Nigam is a very significant organisation in order to effectively and efficiently tackle the disasters. Nagar Nigam has come up with 4 plans:

1. Drainage plan
2. Allocation of duty for execution of drainage plan
3. Plan for setting up of Pumps
4. Emergency provisions during heavy rainfall

The details of all pumps provide for an arrangement of drainage in the city. With overflow of water, these lists are of great use if any diversion is to be done.

It also provides for the requirements of pump and thus mitigating plan for flood is here incorporated when any establishment of new pump is done. This kind of planning is required at every level and field in order to make disaster management a part of developmental process which in fact is the need of the hour.

Purvanchal Electricity distribution corporation:-

With the anticipation of drought, the supply of electricity is increased according to schedules in order to avert drought. But since the corporation is already running in deficit so it is still grappling with the normal supply that is to be given in the district. So a more long term planning is required and a mix of renewable and non-renewable resources of energy seems to be the answer. Recently, it has taken up the campaign in order to regulate the usage of electricity and awareness generation programmes are being conducted in order to regulate demand.

In times of flood the supply to flood affected areas are cut in order to avert danger ad hazards.

Learnings from the district and challenges in the disaster management

The attachment brought out certain issues at fore and it highlighted the problem which is very baffling particularly in U.P. The problem is of coordination. We are still making plans but the attempt is a futile one as the plans are very disparate in the way they are made. Sporadic instances do exist where we see as to how the plan is being made holistically and integrated with the development but still to a large extent the plans are made in isolation with each other. Still there is a system which sees disasters only as something whereby we need to provide relief but the mitigation plans although made, largely remain on paper.

Disaster Management plan should be taken up as an exercise and at least 10 days should be completely dedicated at the level of planning itself. If the planning per se is faulty, execution is bound to even more faulty. In cities like Varanasi which has had a past of floods and is in fact fault prone, a scientific exercise must be taken up in order to avert the danger. To my notice, there were no records of past floods, as to have a systematic experiential learning. Needless to say but the information about the past floods to the officers is only verbal and which has spread as word of mouth. A systemic and structural change is required. The EARLY WARNING SYSTEM needs to be in place. At district level, monitoring is poor as the coordination is weak. There must be a one nodal officer in each department and a meeting in two months should be mandatory so that there is a flow of information and the bottlenecks can be done away with.

The challenges which exist are:-

Issue-1: thorough and updated knowledge of geographical and socio-economic indicators as until and unless we have an understanding of all tehsils, villages and uniqueness or particularities of each habitation, we will continue to be reactive in our approach and there by entire effort would be futile.

Issue-2: timely revision of data is something which we need to focus upon. Herein lies “trust but verify” strategy which can be done by effectuating and re-invigorating the village level democratic organisations.

Issue-3: Coordination amongst various departments which should be timely as well as regularly is the need of the hour. It should be taken up not only at the district level but also at the state level.

Issue-4: The staff also needs to be trained at least once in a year so that they can effectively discharge their duties.

Issue-5: Knowledge of technical know how requires monitoring and reviewing, and more pertinently, planning and reassigning priorities, to meet the dead lines and ensuring that power reached all habitations and services necessitates an open mind to learn, unlearn and relearn new domains that can be demanded from us at any point of our careers.

Issue-6: Working within a stipulated time should be the way of functioning and which can be prioritised by the nodal officers. Such monitoring can be taken up by infusing technology and by the system of online monitoring.

CONCLUSION

One needs to realise, reorient and internalize paradigm shift in disaster management. Integrating preparedness into the developmental plans of the entire government department and a special thrust to the capacity building policies of the department in this regard has to be taken up. Disasters are the time where one realises the importance and significance of the civil society and a more aware pubic at a large. For a sustainable development model of the state it is a pre-requisite to assimilate the disaster management plan in the developmental model so as to achieve the desired goals of the state to ensure social and economic development. Especially in a state like Uttar Pradesh, which has a huge population to cater services to, it is pertinent that it focuses and evolves in this regard. A Disaster Code of Conduct can be brought into existence for more specialised and effective management. It will provide the much needed impetus and such structural changes would not only assist in effective monitoring of daily targets but also inculcate the sense of gravity and much needed importance to the disaster management. Such structural adjustments would bring out systemic changes which are the need of the hour.

Analytical Note on Disaster Management Framework, Gasa Dzongkhag

Choeku Wangchuk, RBCS

Chapter 3

1. BRIEF PROFILE OF THE DZONGKHAG

Gasa Dzongkhag is situated in the extreme northwest of the country. It is bordered by Punakha Dzongkhag in the southeast, Thimphu Dzongkhag in the southwest, Wangdue Dzongkhag in the east and Tibet (China) in the north. The Dzongkhag has a total area of 3117.74 Sq. Km., covering 11 percent of the total area of Bhutan. The altitude ranges from 1500 to 4500 meters above the sea level.

The climatic conditions of the Dzongkhag range from temperate to alpine with extremely cold winter and short and pleasant summer. During winters, upper Gasa i.e. Laya and Lunana gewogs experience heavy snow fall which keep them snow bound as the mountain passes become inaccessible. The Dzongkhag revives an average annual rainfall of 2000 mm. The Dzongkhag is administratively comprises of four gewogs viz. Goenkhamtoe, Goenkhamae, Laya and Lunana. Lunana is the furthest and most remote gewog amongst the four. The Dzongkhag has a total population of 3116 (Population and Housing Census of Bhutan, 2005).

Dzongkha the national language is a widely spoken language in the Dzongkhag. People of Laya and Lunana speak their local dialect and have their unique dress code, which is different from others.

The entire Dzongkhag falls under the Jigme Dorji Wangchuck National Park and is the habitat for different species of birds and animals like the takin, musk deer, blue sheep, snow leopard, red pandas, raven, wild peasants, snow pigeons, red billed cough, Himalayan black bear, tiger, black necked crane etc. The Dzongkhag has about 33 percent of its land under forest cover, out of which about 35 percent is scrubs forest, 27 percent under fir forest, 15 percent under mixed conifer forest, 4 percent under broad leafed forest and the rest under the pasture and open space.

Historically, Gasa also occupies a important place as Zhabdrung Ngawang Namgyel, the patron and the unifier of Bhutan first came to Bhutan through Gasa.

2. INTRODUCTION

A disaster is a natural or man-made event that negatively affects life, property, livelihood or industry often resulting in permanent changes to human societies, ecosystems and environment. In the international context, disasters mean a serious disruption of the functioning of a community or society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources.

In view of the geo-physical location of the country in one of the most seismically active regions of the world and the peculiar geo-climatic conditions affecting the landmass and its people, the Royal Government of Bhutan recognizes the national priority of safeguarding the painstakingly built developmental gains, the socio-economic infrastructure, the fragile ecosystem and the lives, livelihoods, property and community assets of the people from the vagaries of the destructive forces of nature. The government has recognized the importance to develop a comprehensive disaster risk reduction strategy for minimizing the impact of both natural and manmade catastrophes.

3. EVOLUTION OF DISASTER MANAGEMENT PLANNING IN BHUTAN

The National and Local Government Plans of Bhutan are guided by the development philosophy of the Gross National Happiness (GNH). Hence the implementation of developmental plans, activities and projects by the different sectors embraces key to achieving the results set forth in the central plans.

The Disaster Management Planning and implementation at the national or local level however, could not induce much attention in the past due to absence of a dedicated and devolved Disaster Management System reinforced by legal instruments. Nevertheless, the Government has invested fair amount of resources in initiating and strengthening the Community Based Disaster Management (CBDRM) in all twenty Dzongkhags as a process to enable them to develop their own disaster management plans.

With the enactment of the Disaster Management Act of Bhutan, 2013 (DM Act, 2013), the government has started giving importance in promoting disaster management in Bhutan at the all levels. As such, every Dzongkhag is in a process of developing its Disaster Management Plans and mainstream it into the Five Year Plans for resource allocation and effective implementation at the Dzongkhag level which includes, Gewogs and municipal authorities.

4. INCIDENCES OF DISASTER IN GASA DZONGKHAG

The Dzongkhag is vulnerable to multiple hazards ranging from earthquakes to flash floods and to windstorms. Another pertinent hazard related to climate change is the risk of glacial lake outburst floods. The last disaster in the Dzongkhag happened on 18th September, 2011 from the earthquakes that has destroyed several houses, partially and fully but safely without any casualties to single life. In 2009 the Hot spring in the Dzongkhag was also washed away

completely by the flash flood due to glacial lake outburst which now has been restored by the government with better infrastructure. The Hot Spring has provided significant contribution to the society in healing numerous diseases since time immemorial. The place is widely known in any part of country for the existence of this very hot spring and besides medical treatment, people frequent this place and is now gaining popularity outside world with tourists visiting this hot spring. Therefore, it has now become very important to identify the site as vulnerable area of the impending disaster due to glacial lake outburst upstream.

The disaster management at the Dzongkhag level is still in the nascent stage due to absence of dedicated Disaster Management Officer as enshrined in the Disaster Management Act, 2013. Despite the manpower deficiency, the Dzongkhag has designated each official under various sectors for spearheading in the event of disaster. Currently the Dzongkhag Tshogdu Secretary owing to his works being seasonal (as Tshogkhag Tshogdu is convened only twice a year) is entrusted as Disaster Focal person to coordinate the mitigation, preparedness, response, relief and recovery activities in the Dzongkhag. The Dzongkhag through the Dzongkhag Disaster Focal Person in collaboration with the Department of Disaster Management, Ministry of Home and Cultural Affairs has carried out the Community Based Disaster Risk Reduction Management (CBDRM) in all the four gewogs. The CBDRM is a process of disaster risk management in which communities at risk are actively engaged in the identification, analysis, treatment, monitoring and evaluation of disaster risks in order to reduce their vulnerabilities and enhance their capacities.

The settlements are sparse but the structures and houses remain vulnerable to earthquakes as the materials mainly consists of mud, stone and timber posing threat to the life of people and other lives . The disaster is not predictable but the risk can be minimized through series of strategies. As such, the team had sensitized the community on the importance of building houses resilient to earthquakes and windstorms and also avoiding construction of houses at flood prone site and near the river banks. The CBDRM as a process for the disaster risk reduction is focused first at the community level. The result CBDRM has become visible in the community at local level as the roof of the houses is tightly fastened with base of structure to protect from the windstorms and two storied houses have one to safeguard from the earthquakes. Building structures that are resilient to disasters like earthquakes are of paramount importance as the country being located in the Himalayan ranges which is seismically active region in the world. The CBDRM team had also created awareness of stocking of non-perishable food items that should last for a month in case the disaster hit the village.

For immediate response to the disaster, the Dzongkhag has only been provided with family disaster supply kits like tarpaulin sheet and few utensils which are basic requirements in the household. The compensation on the damage caused by the disaster is being met from the National Disaster Relief fund with additional personal support from the His Majesty the King.

The Dzongkhag in the past has recorded houses being damaged partially and fully with the earthquake which occurred on 18th September, 2011. A total of 62 houses in Khamae gewog, 27 houses in Khatoe gewog, 118 houses in Laya gewog and 21 houses were recorded to have been damaged during the earthquake disaster. The massive destruction of houses with low intensity of tremor indicates that the houses are not resilient enough to stand against the earthquakes of

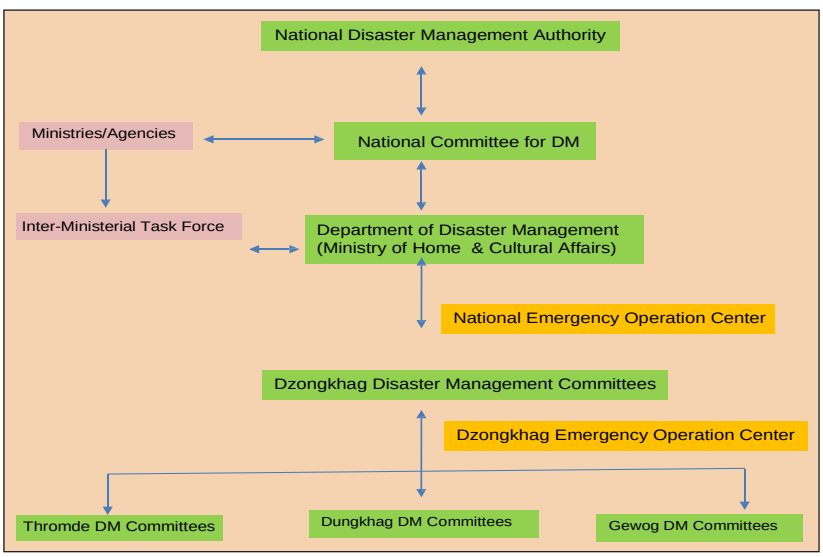
higher magnitudes. The Royal Insurance Corporation of Bhutan had made payment of Nu. 7.12 million for reconstruction of damaged houses in the Dzongkhag. Every house in the country is being insured to the Government owned corporation. As part of the reconstruction and recovery activities, the government under the Royal Command of His Majesty the King has supplied the CGI sheets and allotted rural timber permit to the affected households. The Dzongkhag until such time has been only undertaking the assessment of damages and cost estimation for the compensation in the aftermath of disasters. With the Disaster Management Act, 2013 in place, the Dzongkhag is now mandated to meet monetary compensation and reconstruction activities of Type I and Type II (refer classification of disaster in pp.12) disasters from within the budgetary allocation of the Dzongkhag. The member composition and functions of the national and local disaster management committee are provided in detail in Disaster Management Institutional Framework underneath.

Thereafter, no major disaster been occurred in schools in the Dzongkhag. Other than two gewogs of Goen Khatoe and Goen Khamae in lower regions of the Dzongkhag, the communities of in two gewogs are nomadic, depends their livelihood on livestock farming (rearing of Yak). Therefore no casualties were reported during the last disaster.

In schools across the gewog, the Dzongkhag in collaboration with the Department of Disaster Management Authority has been carrying out sensitization activities on preparedness and regular mock drill. The utmost priority is being provided in construction of earthquake resilient infrastructures in schools and other government institution like Hospital and Basic Health Unit.

5. INSTITUTIONAL FRAMEWORK AT NATIONAL AND DISTRICT LEVELS

Following the enactment of Disaster Management Act of Bhutan in 2013 during the tenure of 1st Parliamentary Democracy, it is mandated to establish institutions at various levels for the purpose of disaster management. The erstwhile Disaster Division under the Ministry of Home and Cultural Affairs has been upgraded to a Department of Disaster Management headed by a Director.



The functions of disaster management institutions and committees are as detailed hereunder.

I. NATIONAL DISASTER MANAGEMENT AUTHORITY

Membership

- The Prime Minister, ex-officio Chairperson;
- The Minister of Ministry of Home and Cultural Affairs, ex-officio Vice Chairperson;
- The Finance Minister;
- The Secretaries of all the Ministries;
- Gyalpoi Zimpon;
- The Head of the National Environment Commission;
- The Secretary of the Gross National Happiness Commission;
- President of Bhutan Chamber of Commerce and Industry; and
- Head of Department of Disaster Management, member Secretary; Functions
- Approve the Strategic Policy Framework concerning the disaster management;
- Approve national plans;
- Approve hazard zonation and vulnerability maps, standards and codes of structural and non-structural measures and direct its implementation;
- Approve resources and fund allocation
- Direct DM committees

II. NATIONAL COMMITTEE FOR DISASTER MANAGEMENT (NCDM)

Membership

- Secretary, Ministry in charge, chairperson
- Secretaries, all ministries
- Dasho Zimpon
- Head, NEC
- Dagchong, Dratshang Lhentshog
- Deputy Chief (A), RBA
- Chief of Police, RBP
- Director, Department in charge, member secretary
- Four other, basis of relevancy
- (not exceed 20) Functions of the NCDM
- Implement decisions of NDMA
- Lay down policies
- Ensure establishment of institutions
- Approve guidelines and standards

- Endorse plans
- Direct mainstreaming
- Advise NDMA
- Identify and secure resources
- Allocate funds from the NDPMP Fund
- Allocate emergency response fund at dzongkhag and gewog levels
- Determine allowances and compensation
- Advise and coordinate DM activities
- Direct disaster operations

III. INTER-MINISTERIAL TASK FORCE

Membership

- Technical experts prescribed by the NCDM (National Committee for Disaster Management)
- Director, Department in-charge, Chairperson

Functions

- Assist NCDM
- Review guidelines, plans, standards
- Necessary technical assistance in formation of plans
- Assist DDM in formulation of plans, disaster communications network, EWS
- Facilitate development of hazard zonation maps, risk assessments
- Review implementation of plans, projects
- Guidance and advise

IV. DEPARTMENT OF DISASTER MANAGEMENT

Functions

- NCDM Secretariat
- Facilitate institutionalization of committees
- Formulate guidelines, codes, standards
- Formulate national plans
- Coordinate and facilitate implementation of DM plans at all levels
- Coordinate all DM activities
- Setting up of EOC and disaster communications network
- Capacity building – preparedness, response, recovery
- National Disaster Awareness
- Curriculum, training modules

- Ensure timely transmission of information, EWS, database
- Facilitate mainstreaming
- Collaborate with relevant international, regional and national organizations

V. MINISTRIES AND AGENCIES

- Formulate, review and update DM plans
- Sector contingency plans
- Hazard zonations maps, codes
- Facilitate implementation of DM plans
- Mainstream
- Provide assistance to DM committees

VI. DZONGKHAG DISASTER MANAGEMENT COMMITTEE

Membership

- Dzongda, Chairperson
- Dzongkhag Forest Officer
- Dzongkhag Health Officer
- Dzongkhag Environment Officer
- Commander, RBA
- SP/OC, RBP
- Drungchen, Dratshang
- Chairperson, DT
- Member-Secretary, TDMC
- Four others basis of relevancy
- (Not to exceed twelve) Functions
- Prepare, review and update Dzongkhag Disaster Management Plan
- Implement plan
- Promote awareness and education
- Dzongkhag Emergency Operation Centre
- Ensure EWS and regular mock drills
- Integrate DRR into development planning
- Maintain and operate Dzongkhag Emergency Response Fund
- Ensure enforcement of approved hazard zonation maps
- Disaster operations and activities – Class II disaster
- Direct Dungkhag, Thromde and Gewog disaster management committees

VII. GEWOG DISASTER MANAGEMENT COMMITTEE

Members:

- Gup, Chairperson;
- Mangmi;
- Two Tshogpas nominated by the Gewog Tshogde;
- Gewog Administrative Officer of the Gewog Administration;
- Health Assistant; and
- Three other members based on relevancy
- (not to exceed nine)

Functions:

- Formulate, review and update and implement the Gewog Disaster Management Plan;
- Monitor and evaluate measures taken for prevention, mitigation, preparedness, response and capacity building by each sector;
- Promote general education, awareness and community training
- Ensure the establishment and efficient functioning of communication system and conduct of regular mock drills;
- Ensure the integration of disaster prevention and mitigation measures into Gewog plans and projects;
- Maintain and operate the Gewog Emergency Response Fund;
- Ensure enforcement of the approved hazard zonation maps and infrastructure safety codes and standards;
- Carry out disaster operations and activities in the event of declaration of a Class I disaster;
- Provide reports and make recommendations to the Dzongkhag and Dungkhag Disaster Management Committee on matters relating to disaster management and disaster operations.

6. CLASSIFICATION OF DISASTER

The disaster is classified into three categories for the purpose of immediate and effective response and relief measure as follow:

1. Type I

The disaster of magnitude and nature which can be managed with available resources and is within the coping capacity of the Gewog/Thromde concerned.

2. Type II

The disaster of magnitude and nature which can be managed with available resources and is within the coping capacity of the Dzongkhag concerned. The Chairperson of Dzongkhag Disaster

Management Committee, subject to approval of the National Disaster Management Authority declares Type I and Type II disasters in accordance with the disaster rules and regulation.

3. Type III

Severity and magnitude which is so great that it is beyond the available resources and the coping capacity of the Dzongkhag concerned. The Druk Gyalpo (King of Bhutan) on the written advice of the Prime Minister, proclaims Type III disaster in accordance with the provision of the Constitution. In case of disaster happening during the period of Interim Government, the Druk Gyalpo on the written advice of Chief Advisor proclaims the disaster in this category for a period not exceeding 21 days on each occasion.

7. COORDINATION AMONG DEPARTMENTS DURING PRE & POST DISASTER

The Dzongkhag administration in coordination with the Department of Disaster Management and gewog authorities informs the community of impending disasters. The Disaster Management Act, 2013 is in place but due to lack of designated Dzongkhag Disaster Management Officer besides budget constraints, the Dzongkhag has currently been undertaking formation of Dzongkhag Disaster Management Committee as required by the DM Act. In anticipation of disaster the DDM has supplied and stock the emergency family extension kits for immediate relief of the affected families.

In the event of disaster happening in the Dzongkhag, the Royal Bhutan Army and Royal Bhutan Police being the member of Dzongkhag Disaster Management Committee and other civil employees jointly undertake the rescue and relief operations in the aftermath of disaster. The Royal Bhutan Army under the royal command of His Majesty the King then continues with recovery and reconstruction activities. The Dzongkhag doesn't have specific budget as of now although the DM Act, 2013 requires such budgetary allocation for the disaster. Therefore, the Department of Disaster Management under the Ministry of Home and Cultural Affairs released budget based on the estimates submitted by the Dzongkhag from the field verification.

8. RESPONSE MECHANISM IN THE DISTRICT

Although the Dzongkhag currently doesn't have adequate disaster response mechanism other than maintaining to stock of emergency kits for providing immediate shelter to those affected families by the natural catastrophes. However, in consonance with the Disaster Management Act, 2013 the Dzongkhag is in the process of forming disaster management committees at the Dzongkhag and Thromde/gewog levels as detailed hereunder:

Dzongkhag level

The Dzongkhag Disaster Management Committee is responsible to manage response and relief operations under the direction and supervision of the Authority as mentioned below:

(a) activate the Dzongkhag Emergency Operation Centre;

(b) activate Critical Disaster Management Facilities in coordination with the notified agency;

(c) establish immediate contact and line of communication with the disaster site;

(d) direct evacuation of the disaster affected communities or communities at further risk;

(e) provide regular updated information to the National Emergency Operation Centre;

(f) conduct needs assessment for humanitarian assistance; and

(g) perform such other function as may be prescribed under these regulations or any law in force or as directed by the Authority.

The Chairperson of the Committee, the district administrator, Dzongdags in ex-officio capacity is also responsible for:

(a) operationalize the incident command system for effective response and relief operation;

(b) maintain the Dzongkhag Emergency Operation Center on a 24 hour basis;

(c) deploy Search and Rescue Teams or other specialized agencies, if necessary; (d) manage immediate response and relief operations;

(e) manage national and international disaster assistance and other human resources in the field for response, relief and early recovery;

(f) perform such other function as may be prescribed under these regulations or any law in force or as directed by the Authority, Department of Disaster Management or Committee concerned.

The Chairperson of a Committee is required to oversee the distribution and use of relief items including the distribution process to determine equitability, adequacy and appropriateness of the relief items.

Gewog/Thromde Level

At the grass root levels, the Gup (Elected leader) at the gewog and Thrompon (Mayor) will coordinate the disaster management activities as mentioned below:

(a) conduct disaster response, relief and recovery operation under the direction and supervision of the Dzongkhag Disaster Management Committee;

(b) coordinate the functioning of various agencies in their respective jurisdiction; (c) facilitate efficient functioning of Critical Disaster Management Facility;

(d) identify and mobilize local resource that may be required during response and relief operation;

(e) assist the Chairperson of the Dzongkhag Disaster Management Committee; and

(f) perform such other function as may be prescribed under these regulations or any law in force or as directed by the Authority, Department of Disaster Management or Chairperson of a Committee

9. EARLY WARNING SYSTEM

To synthesize existing information on hazards, vulnerabilities and risks that is available with the Dzongkhag through records of past incidences of disaster in the Dzongkhag that can be utilized for decision making for disaster risk management. It is also critical to identify the existing

gaps on information and work towards filling those gaps in a prioritized manner. Under this component, the Dzongkhag has plan in pipeline although not available at the moment to set up a geo-referenced disaster database to capture disaster impacts at the gewog/block level to track existing and emerging patterns of disaster risk.

The promotion of community-based and people-centered approaches to disaster risk management is deemed part and parcel of this system. A local approach to Early Warning System needs the direct participation of those who are likely to be exposed to such hazards. Local communities are involved in all stages of EWS to reinforce the public understanding in whole range of risks they face. This will help strengthening the desired preparedness actions and warning response.

10. DISASTER MANAGEMENT AND CONTINGENCY PLAN

The Dzongkhag is in the process of formation of committees at the local government levels i.e. Dzongkhag Disaster Management Committee and Gewog Disaster Management Committee and therefore the Disaster Management and Contingency Plan has not yet been materialized. The comprehensive contingency plan is necessary for prevention, mitigation and preparedness; mainstreaming emergency stockpiles including procedures for its release, replenishment and distribution; efficient response and relief during disaster; budget projection for the implementation of the plan and activities concerning the effective disaster management.

11. EMERGENCY OPERATION CENTRE

The Dzongkhag administration need to establish an Emergency Operation Centre as provisioned under section 105 of the Disaster Management Act of Bhutan, 2013 and further establish such centre in all the gewogs on the need base. The Emergency Operation Centre should be established at a suitable location and the structure should be disaster resilient to remain functional even during a disaster. There is National Emergency Operation Centre at the national level to supervise and monitor the functioning of the Dzongkhag Emergency Operation Centre.

The emergency operation centre is to set up for the following purpose:

- receiving disaster alerts and warnings from responsible agencies and other sources and communicate the same to all relevant agencies;
- issuing incident specific information and instructions to all concerned;
- forwarding reports to all relevant agencies;
- monitoring response and relief operations;
- facilitating coordination among agencies providing Critical Disaster Management Facilities;
- requisition resources during disaster;

With this operation centres in place is expected to provide timely intervention in avoiding risk hazards to the lives and properties during the time of disaster.

12. FUND PROVISIONS FOR MITIGATION, PREPAREDNESS, RESPONSE AND RELIEF

Currently the provision of budget for the disaster management has been centralized and with

activation of Disaster Management Committees at the Dzongkhag level, the expenses for response and relief operation will have be to done from the annual budget of the Dzongkhag in accordance with the guideline formulated by the National Disaster Management Authority and the Ministry of Finance.

Although there is no budget head in the annual budget appropriation of the Dzongkhag, there will be a separate budget head to be called the budget for Disaster Management Activities. This would greatly enhance the bringing immediate relief with timely conduct of relief operation activities since the current practice fund release takes some months for the budget release as the damaged assessment has to be verified and approved by the Department of Disaster Management.

Recovery and Re-construction

Any recovery and re-construction activities has been carried out through the command and initiatives of the Department of Disaster Management and the Royal Command. For the purpose of recovery and re-construction, the Dzongkhag undertakes assessment of public assets and infrastructure within its jurisdiction and submits the assessment along with the work programme and cost estimates to the Department of Disaster Management for review and onward submission to the National Disaster Management Authority which then makes recommendation to the Government for release of fund to the Dzongkhag concerned.

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Glimpse of damage caused to the houses and properties during the disaster in the Dzongkhag on September 18, 2011.

COMPULSORY ANALYTICAL NOTE ON

Disaster Management Framework, Pondicherry

Arun. T IAS

Under the guidance of

Dr. Sundaravadivelu. S
Collector, Pondicherry.

Mr. Manasvi Kumar
Deputy Director, LBSNAA.

Chapter 4

Disaster can be defined as any occurrence that causes damage, ecological disruption, loss of human life or deterioration of health and health services on a scale sufficient to warrant an extraordinary response from outside the affected community or area. Disasters are not confined to any particular part of the world, they can occur anywhere and at any time. Though occurring from many centuries, because of increasing population, limited resources, the communities are vulnerable to hazards that cause disaster.

The main objective of disaster mitigation is to reduce the exposure of hazard, reducing vulnerability and increasing coping capacity of the community. The theory behind disaster mitigation is by making an investment of time, money and planning prior to the occurrence, there can be tremendous savings that result in reducing the impact of disaster. NDMA is a paradigm shift from relief & rescue centric approach to active, comprehensive disaster management which covers preparedness, rehabilitation, reconstruction and recovery.

DISASTER RISK MANAGEMENT PLAN

"The UNISDR defines mitigation as structural and non structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards".

Mitigation involves both short term and long term strategies. Mitigation activities should incorporate the measurement and assessment of risk environment. Finally mitigation measures include a comprehensive set of activities done in organized way.

Flow chart 1: Various stages of disaster cycle, its preparedness, mitigation, response, rehabilitation, reconstruction.

INITATIVES FOR CAPACITY BUILDINGS OF COMMUNITY AND GOVERNMENT OFFICIALS:

Pondicherry disaster management authority has taken many initiatives to create awareness about the disasters especially about tsunami and cyclones. Recently the department conducted mock drill programme in a village. This is in collaboration with 11 countries who participated in the Indian Ocean tsunami alert system. Indian national Centre for Ocean Information Services (INCOI) Hyderabad gave a warning as early as 5:30 am with the information that a earthquake of 9.1 magnitude has struck Java---- → tsunami alert message at 5:45 am------ → threat message at 6:00am →The advisory says this is only a haul-up message to the national/ State/local authorities and disaster management offices. Officials and staff of the Revenue, Police, Fisheries, Health, Public Works Departments and private medical colleges were involved in the operation, which was held under the close watch of a team from the National Disaster Response Force, Arakkonam. There were aerial survey also, health camp demonstration, rescue through boats, evacuation drill, removal of debris, breaking of doors, rope walk, etc demonstrated by various agencies. The NDRF along with district officials are creating many orientation programmes at the school level.

Photo 1: Showing tsunami mock drill in a village.

Photo 2: showing disaster awareness programme in a school in Pondicherry by NDRF.

CO-ORDINATION AMONG DEPARTMENT DURING PRE AND POST DISASTER:

The coordination among department is of paramount importance during pre and post disaster. The mock drill exercise also created a responsibility with the officials and the sense of awareness and participation in case of disasters.

Table 1: showing various departments and its responsibilities and the officer in charge of department.

ESF	Major Responsibilities	ESF Team Leader/ Primary Agency	Support Agencies
ESF #1 Communication	Establishing, maintaining, augmenting, and providing backup for all types of communication devices needed during emergency response operations	SSP (L&O)/ Police	BSNL, NIC, Electricity Dept., IT Dept, HAM radio operators, DD/AIR & private telecom operators

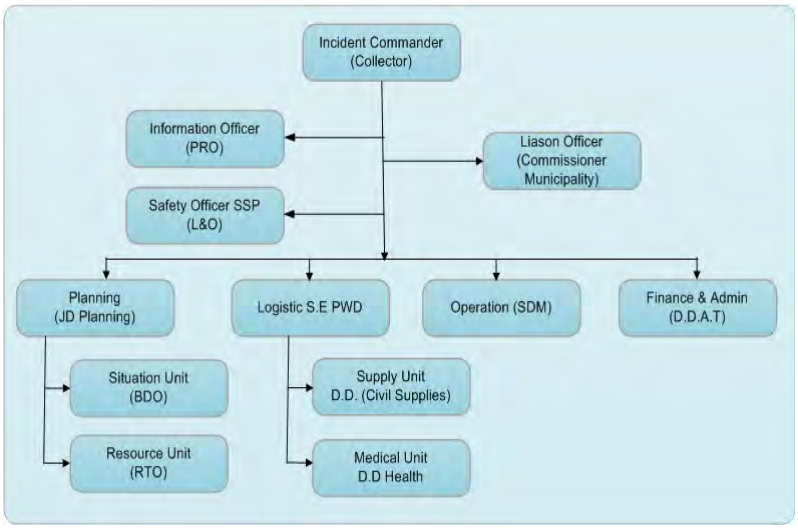
ESF	Major Responsibilities	ESF Team Leader/ Primary Agency	Support Agencies
ESF#2 Emergency Medical Services and Public Health	Mass casualty management, Public health, medical, mental health services	Director (health)/ Health Department	GH, JIPMER, PIMS, MGDCRI, blood banks, Ambulance services, Rotary, Lions Club, Red Cross, MGPIDS, MTPG RIHS, Revenue, LAD, Electricity Dept., Police, NCC
ESF #3 Emergency Warning, Public Information Help line	The flow of accurate and timely emergency information is critical to the protection of lives and property in the wake of a catastrophic event. Preparation and dissemination of notifications, updates, warnings and instructional messages making the help line operational	Collector/ DRDM	Information and Publicity Dept., Planning and Research Dept., Education Dept., NIC, media, NGOs, Dept. of Health, DD/AIR
ESF #4 Search & Rescue	Removal of trapped and injured persons from buildings collapses and other structural collapses, administering first aid and assisting in transporting the seriously injured to medical facilities. This activity involves the use of professional and voluntary search teams including the use of dog teams.	Divisional Fire Officer (DFO)/ Fire Services	Police, Home Guards (IRBn), Dept. of Health, municipality, Block development office, Taluk Office, Commune panchayat, PTDC, NCC, Fisheries, Dept., Animal Husbandry, Coast Guard, Dept. of Town and Country Planning, Electricity Dept.
Transport ESF # 5	Provides transportation out of a disaster area of people in need, and provides transportation essential to support emergency response in the event of a disaster, coordinating for resurrection of transport infrastructure	Transport Commissioner /Transport Department	Southern Railways, Dept. of Fisheries, Orient flight school, Private vehicle owner's association, PRTC, PTDC, Pasic, GAW, Under Secretary (Estt), Education Dept., PASIC, PAPSCO.
Evacuation ESF # 6	Immediately following an earthquake people may need to be evacuated from structures that have been damaged and are likely to receive more damage when hit by one or more of the aftershocks	Collector/ Revenue	LAD, (Municipality & communes), NCC, BDO, RD Department, Police, Dept. of Fisheries, Transport, Dept. of Industries, Dept. of AD welfare, PWD, Dept. of Town & Country Planning.
Debris Clearance & Equipment support ESF # 7	The identification, removal, and disposal of rubble, wreckage, and other materials which block or hamper the performance of emergency response functions and procure needed equipment from support agencies using IDRN; should be a high priority action	Chief Engineer/ PWD	LAD, Under Secretary (Works), Municipality & commune Panchayat, BDO, Police, Revenue, Forest Dept., Electricity Dept., Animal Husbandry, Taluk office, Earth moving Equipment owners Association, Builder's Association.

ESF	Major Responsibilities	ESF Team Leader/ Primary Agency	Support Agencies
Damage Assessment ESF # 8	Conduct of ground surveys to determine the scope of the damage, casualties, and the status of key facilities	Collector/ Revenue	Agriculture, AHD, LAD, PWD, DRDA, PASIC, PIPDIC, DIC, Industries Dept., Dept., of Tourism, Electricity Dept., Statistics Dept., civil society organisations.
Relief Camps ESF # 9	Accommodating homeless and affected people and providing mass care	Director of Women & Child/ Women & Child Department	Education Department, Electricity Department, Municipalities & Communes, BDO's, PWD, AD welfare, Director of social welfare, Department of Health, Contractors Association, civil society organisations.
Food and Civil Supplies ESF # 10	Optimizing Food and Civil Supplies to the needful	Director Civil Supplies/ Civil Supplies Department	Agriculture Dept., Dept. of Chamber of Commerce, PAPSCO, PASIC, PONLAIT, P Education Dept., Electricity Dept., Ad welfare, Puducherry Institute of Hotel Management, Transport Dept., Hotel owner's Association, NGOs.
Water Supply and Sanitation ESF # 11	Restoration and repair of water supply system to minimize the impact on critical service to the public	Superintending Engineer/ PWD	LAD, Municipality & Commune Panchayat, Health Dept., DRDA, NGOs.
Electricity Restoration ESF # 12	Restoration and repair of electrical power system to minimize the impact on critical service to the public	Superintending Engineer/ Electricity Department	LAD, PWD, PPCL, Electrical Contractors.
Public works and Engineering ESF # 13	Infrastructure protection and emergency repair Infrastructure restoration.	Chief Engineer/ PWD	NHAI, LAD, Housing Board, Electricity Dept., Forest Dept., Police Dept.
Fire Fighting/ Hazardous Materials Response ESF # 14	Coordinating of fire fighting operations, Hazardous materials (chemical, biological, radiological, etc.) response Environmental short-term cleanup	DFO/ Fire Services	Police, IRBn, Coast guards, NCC, Industries Dept., Inspector of Factories, Labour Dept., Dept. of Atomic Energy, Science and Technology, Dept. of Health, Port Dept.
Law and Order Enforcement ESF # 15	Law and Order enforcement for Public Safety	SPs/ Police	Judicial Dept., Revenue, NSS, NCC.
Resources Mobilization; Contracting Services; Volunteer and Donation Support; ESF # 16	Mobilizing support (human, equipment and other) from various organizations. Contracting Services, mobilizing volunteer support, facilitating donations	Director Social Welfare/ Social Welfare Department	Revenue, Education Dept., PIPDIC, NGOs, NCC, NSS

RESPONSE MECHANISM IN THE DISTRICT:

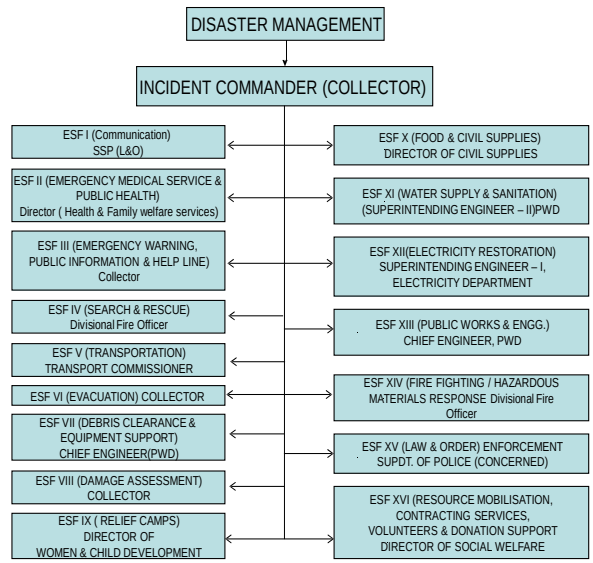
The district is the key level for disaster management and relief activities. The Collector being the chief administrator in the district has lot of importance in managing the disaster. He is the focal point in the preparation of district plans and in directing, implementing, supervising and monitoring relief. He also heads the district Level Coordination and Relief Committee. All the departments, NGO's and elected representative are part of this committee.

Flow chart 2: Incident Command System for the District



RESOURCE MANAGEMENT IN DISTRICT FOR DISASTER / EMERGENCY MANAGEMENT:

Flow chart 3: showing emergency support function and organizational structure



NDRF BATTALIONS

National Disaster Response Force (NDRF) team of 4 Battalion NDRF, Arakkonam is deputed for any disaster emergency. They also involve in creating awareness and capacity building about disaster at school level through mock drills and orientation programmes.

TECHONOLOGY INTERVENTTION FOR EMERGENCY / DISASTER MANAGEMENT IN THE DISTRICT

Geographic Information System (GIS)

GIS entails analysis that combines relational database with spatial interpretation and outposts often in the form of maps. A more elaborate definition is that of comport programmers for capturing, storing, checking, integrating, analyzing and displaying data about the earth that is spatially referenced. GIS is increasingly being utilized for hazard and vulnerability mapping and analysis, as well as for application of disaster risk management measure. GIS software uses geography and computer-generated maps as an interface for integrating and accessing massive amounts of location-based information. GIS can be used for scientific investigations, resource management, disaster and developing planning.

Puducherry Decision Support System (PDSS)

A GIS based desktop application to simulate and analyze Tsunami, Flood, Drought, Cyclone scenarios has been placed, they help in to catalyze the process of preparedness, response and mitigation. They also provide access to vital information with respect to disaster preparedness to decision makers and citizens. They facilitates emergency communication for timely relief and response measures.

Photo 3: showing EOC room connecting all the departments.

Modules

There are four modules in PDSS, which can be accessed through the respective tabs located on the left of below. The four tabs are as follows:

1. Data warehouse module
    i. Spatial Data sub module
    ii. Non spatial Data sub module

2. Preparedness module
3. Mitigation module
4. Response and Recovery module

Spatial Data sub module:

- They include data related to land Use/Land Cover, Digital Elevation Model is the elevation grid, Rainfall gauge stations Soil map Village boundary map representing the locations of all the rainfall gauges and hazard areas.

Non-spatial Data sub module

This module contains datasets that do not have location information and extremely important in disaster management. It includes Date set viz., contractor list, training program status, vulnerability data, evacuation plan, etc. All these datasets are stored as tables in Postgre SQL.

Preparedness Module

This module is responsible for activities before a disaster. It provides users the ability to define, view, and query the stored data on following information, based on user-selected area.

- Past disaster events in a geographic location
- Available temporary shelter in an area
- Equipments available
- Available resources
- Contractor list and their status
- Transportation facility available
- Backup power and water supply availability
- Food and clothing
- Evacuation plan
- Details and status of emergency exercise and training
- Details of available warning system and their status

Response and Recovery Module

Response Module This module caters to the actions required for response activities if a disaster occurs. A Current Situation Report is generated based on the information updated into the database regarding the status of Lifelines Trains shelters, food, search and rescue operations, missing persons, transportation.

Mitigation Module

This module facilitates users to use existing disaster information to gauge the impact of the disaster and define the adopted mitigation measures. The inputs provided are building codes, Hazard zones for cyclone, flood, storm surge, tsunami and droughts, Vulnerability analysis, Public education and training programs (Capacity Building Programs). Based on the hazard and

exposure selected, loss will be calculated and a 'Mitigation Analysis Report' will be generated which can be exported to PDF.

Recovery Module

This module contains activities following the disaster. This module provides the following information on user- specified area like the temporary housing, Claims processing and grants, Long term medical care and counseling, Debris management, Reconstruction, Call center details A comprehensive situation report can be generated for the area of interest incorporating all the above based on user-selected options.

Photo 4: showing emergency operation centre.

MITIGATION AND PREVENTION MEASURESIN THE DISTRICT DEVELOPMENT PLANNING FOR DISASTER RISK REDUCTION (DRR)

Common structural measures for disaster risk reduction include dams, flood wall / levies, ocean wave barriers, earthquake-resistant construction, and evacuation shelters. Common non-structural measures include building codes, land use planning laws and their enforcement, research and assessment, information resources, and public awareness programs. Note that in civil and structural engineering, the term "structural" is used in a more restricted sense to mean just the load bearing structure, with other parts such as wall cladding and interior fittings being termed nonstructural.

Examples of mitigation activities include:

Town Planning Act: Planning, adopting and enforcing stringent building codes, flood-proofing requirements, seismic design standards and cyclone wind-bracing requirements for new construction or repairing existing buildings.

Zoning Regulations: Planning and adopting zoning ordinances that steer development away from areas subject to flooding, storm surge or coastal erosion.

Development Control Regulations: Incorporate the disaster management concerns into development. This should include all Government Sponsored Developmental Programs and Schemes.

Undertaking retrofitting work on public buildings to withstand ground shaking or cyclone-strength winds.

Land use regulation: Planning and building **community shelters** and tornado safe rooms to help protect people in their homes, public buildings and schools in hurricane and tornado-prone areas.

Safety norms for economic and social infrastructures including places of worships and crowd management:

Steps taken for developing and implementing public safety norms for critical infrastructures and places of worships.

Capacity Building for Mitigation: Steps taken for human resource development and capacity building for effective disaster mitigation right from at State Level and down to ward/village level.

Table no. 2: Structural & non-structural measures in disaster mitigation:

Sl. No.	TASK	ACTIVITIES	RESPONSIBILITY
		STRUCTURAL MEASURES	
1	Land use Planning	1. Planning permission of any factory/industry should consider the land use planning in view of hazard, risk and vulnerability of the State	Dept of Labour Town and Country Planning & Puducherry Planning Authority. Local Administration Department
2	Adaption of advance technology	1. Application of Science and technology and engineering inputs to improve industrial infrastructures	Dept. of Labour, Dept. of Science, Technology and environment Union Territory of Puducherry Disaster Management Authority
3	Techno-legal Regime	1. Review and revision of Acts and Rules 2. Strict implementation of Acts and Rules	Dept. of Labour, Dept. Of science, Technology and Environment, Union Territory of Puducherry Disaster Management Authority
4	Safety Audit	1. Carry out structural safety inspection / audit I B	nspectorate of factories and oilers
5	Capacity Building	1. Establish infrastructure for onsite and offsite warning dissemination 2. Construction/Strengthening of EOC/ERC at all level 3. Procurement of all necessary equipments including PPE	Dept of Labour DDMA Dept of Labour Revenue Dept / UTPDMA

Sl. No.	TASK	ACTIVITIES	RESPONSIBILITY
		NON-STRUCTURAL MEASURES	
1.	Planning	1. Prepare an onsite and offsite emergency plan 2. Conduct mock drills as per the regulations 3. Update the plan as per the requirement 4. Monitor similar activities in all the factories/industries	Dept of Labour DDMA DRDM/ UTPDMA.
2	Capacity Building	1. Develop IEC material for Publication & Distribution 2. Awareness generation to general public and the people residing near MAH factories 3. Organize training programs, seminars and workshops 4. Ensure the student community is imparted proper education on the relevant topics by schools/ colleges. 5. Encourage disaster insurance	Dept of Labour & UTPDMA DRDM, DSE Finance Department NGOs

EARLY WARNING SYSTEM IN THE DISTRICT:

Early Warning Network with 65 VHF Radio sets in all coastal villages and line departments of Puducherry and Karaikal regions. It is proposed to extend EWS to Mahe and Yanam regions during the current financial year.

DWDS (DISASTER WARNING DISSEMINATION SYSTEM)

Disaster Warning Dissemination System (DWDs) conceived by the India Space Research Organization (ISRO) can reach the general public in local languages with early warnings of potential weather dangers.

The IMD is mainly responsible for providing advance warnings against natural hazards and developing appropriate dissemination systems. Its area Cyclone Warning Centers (ACWCs) generate special warning bulletins and transmit them every hour in local languages to affected areas.

State Emergency Operation Centre (EOC):

EOC is an off-site facility functioning from State / District HQ. The EOC will take stock of the emerging situation and assist the incident managers in mobilising the respective line

department's resources, manpower and expertise along with appropriate delegated authorities for the on-scene actions / response. State EOC will keep the DEOC and field EOC informed of the changing situation and support extended. Emergency communication, alert and warning system, decision support system, and resources management system are few of the critical components inbuilt into State EOC infrastructures. The basic functions of EOC, derived on the basis of functional framework of disaster management would be to:

- Receive, monitor, assess and disaster Disseminate information.
- Keep track of all available resources.
- Monitor, assess, and track availability of response units and resource requests.
- Manage resource deployment for optimal usage.
- Make policy decisions and proclaim local emergencies as needed.
- Provide direction and management for EOC operations through Standard Operations Guide (SOG), set priorities and establish strategies.
- Coordinate operations of all responding units, including law enforcement, fire, medical, logistics etc.
- Augment comprehensive emergency communication from EOC to any field operation when needed or appropriate.
- Maintain EOC security and access control.
- Provide recovery assistance in response to the situations and available resources
- Keep senior, subordinate and officials informed.
- Keep local jurisdictions (Village/town/City, district and State) informed.
- Operate a message centre to log and post all key disaster information.
- Develop and disseminate public information warnings and instructions.
- Provide information to the news media.
- Manage donation / aids.

EOC. State EOC shall have upstream connection with National EOC and down-stream connectivity with District

INSTITUTIONAL FRAMEWORK IN THE DISTRICT AS PER DM ACT 2005

SDMA:

Section 14 of NDM Act 2005 mandates each State to establish State Disaster Management Authority (SDMA). At the State Level the State Disaster Management Authority (SDMA), headed by the Chief Minister, lays down policies and plans for disaster management in the State. It is also responsible to coordinate the implementation of the State Plan, recommend provision of funds for mitigation and preparedness measures and review the developmental plans of the different departments of the State to ensure integration of prevention, preparedness and mitigation measures. In case of emergency the Chairperson of the State Authority shall have

power to exercise all or any of such powers of the State Authority but the exercise of such powers shall be subject to ex post facto ratification of the State Authority.

As envisaged in the DM Act 2005, the Union territory of Puducherry Disaster Management Authority (UTPDMA) has been established to discharge the powers and functions of the state authority. UTPDMA functions under the stewardship of the Hon'ble Chief Minister of Puducherry. The Members of UTPDMA shall comprise both the elected representatives, Officers and technical experts.

District Disaster Management Authority (DDMA):

The Union territory of Puducherry comprises two districts namely Puducherry and Karaikal. The composition of DDMA of the above districts is given hereunder:

1	The District Collector, Puducherry	Chairperson
2	The Chairman/Commissioner, Puducherry Municipality	Co-Chairperson-I
3	The Chairman/Commissioner, Oulgaret Municipality	Co-Chairperson-II
4	The Senior/Additional Senior Superintendent of Police (L&O), Puducherry	Member
5	The Director of Health and Family Welfare Services Puducherry	Member
6	The Director, Local Administration Department Puducherry	Member
7	The Chief Engineer, Public Works Department Puducherry	Member
8	The Deputy Collector (Disaster Management), Puducherry	Member Secretary

DDMA will act as the planning, coordinating and implementing body for DM at District level and take all necessary measures for the purposes of DM in accordance with the Guidelines laid down by the NDMA and SDMA. It will, inter alia, prepare the District DM plan for the District and monitor the implementation of the National Policy, the State Policy, the National Plan, and the State Plan concerning its own District and prepare the District Plan. The DDMA will also ensure that the guidelines for prevention, mitigation, preparedness and response measures laid down by NDMA and SDMA are followed by all Departments of the State Government, at the District level and the Local Authorities in the District.

FUND PROVISION FOR MITIGATION, PREPAREDNESS, RESPONSE AND RELIEF:

The financial assistance in the wake of natural calamities is being provided through the schemes of state disaster response fund and national disaster response fund. These funds are created under disaster management act 2005. The 13th finance commission has recommended that the existing national calamity contingency fund be merged into national disaster relief fund and the calamity relief fund be merged into state disaster relief fund with effect from 1st April 2010, whereas regarding the contributions of SDRF to union territories, there is no mention in the recommendations. Recently the ministry of home affairs, in its draft guidelines, has stated that the Government of India will contribute 100% to UTDRF and this contribution of central government to UTDRF for 2014-15 will be Rs. 10 crores.

CONCLUSION:

Humanity is too small in front of nature and we all know that natural disasters cannot be prevented completely. As the vulnerability is more and resources are very limited, these hazards could really turn into disaster if the actions are not taken. Hence the focus must be more on predisaster preparedness than post disaster management. Hence for an effective disaster management both at the policy level and at implementation level 5 C approaches should be followed.

- Community based disaster management with last mile integration of policies, plans and execution.
- Cooperation between various agency
- Consolidation of the lessons learnt, past initiatives and best practices across the globe.
- Coordination and Compliance to generate multi-sectoral synergy.
- Capacity development in all areas.

Thus the disaster mitigation policy has to reduce the physical, social and economic vulnerability of the societies. The challenge to us now is to find the right mix of actions that will manage the disaster as an integrated strategy. We must dream of a disaster free India but would happen only if we realize ultimately that while hazards are inevitable, the disasters need not be, what comes in between is the culture of prevention.

Analytical Note on District Disaster Management Plan

Frank Noble A, IAS

INTRODUCTION

As we all know that Disaster management has become an Act now in the country and the Government has decided to make serious efforts to mitigate and manage disasters. The Disaster Management Act, 2005 stipulates to put in place Disaster Management Plans aimed at reducing potential loss of life and property in disasters as well as ensuring strong preparedness, responses and recovery measures to manage any disaster situation. Disasters either natural or manmade have been main hurdles in the development of civilization since ages and affect humanity on long term basis.

The plan has been prepared with support from School of Good Governance and Policy Analysis (SGPA), the nodal agency identified by the Government of Madhya Pradesh and in consultation with district administration. The nodal agency SGPA evolved a very unique methodology for preparation of the district plans of Madhya Pradesh. The 50 interns were selected from reputed institutions for providing assistance in the preparation of 50 district disaster management plans of entire state, as part of their internship. SEEDS Technical Services was appointed as technical consultant for preparation of plans through bidding process. One intern was deputed in each district. Further, District Disaster Management Officer (DDMO) and Nodal Officer (of ADM rank or equivalent) were appointed by the Government, to provide the required support for the preparation of district disaster management plan. The orientation programmes conducted for the interns and DDMOs, to guide them for data collection and draft preparation of district DM plan, in template form. The DDMP template was discussed with all key stakeholders, including the Madhya Pradesh State Disaster Management Authority, UNDP, SGPA and with the local agencies like disaster management institute. Based on the inputs received from all concerned, including the valuable support and guidance of district administration and concerned officials, the draft plan was prepared, which was again reviewed and finalized after the consultation with all key stakeholders.

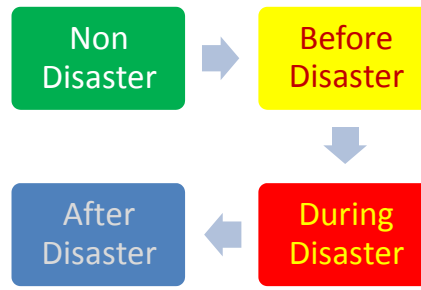
The plan starts with the general overview and profile, institutional arrangements, talks about in detail about the district hazard, vulnerability, existing capacities, risk profiling and then switches over to disaster management framework as mandated by DM Act 2005, Section 31. The plan mandates the roles and functions to be played by the District Disaster Management Authority. Later the district action plan focuses on risk mitigation, preparedness, response, recovery & rehabilitation, general & specific Standard Operating Procedures (SOPs), financial provisions, the inter-intra district coordination mechanism, and monitoring of plan.

However the key functions of all the concerned agencies are listed out in the district Disaster Management plan, the regular updating of this DDMP shall help to initiate real time management. As such, each agency/ line department/ entity requires preparing its own Disaster Management

Plan in alignment with this plan. This plan shall be reviewed periodically by the DDMA to update all activities and information.

DISTRICT PROFILE

The DDMP plan starts from with a overview of the District Profile and summarizes upon the Purpose of the plan and key objectives. The district profile consists of the Location and Administrative Divisions, Geography and Topography, Demography and Socio-economic conditions, Climate and Weather, Health, Education, Agriculture and Land use, Housing patterns, Industrial setups, Transport and Communication Network, Power stations and electricity Installations, Major historical, religious places and tourist spots. The key objectives are in the line of the District Management Act,2005. The DDMP has been organized as per the four stages of the Disaster Cycle.



Non disaster stage: Activities include disaster mitigation, leading to prevention & risk reduction. Before disaster stage: Activities include preparedness to face likely disasters, dissemination of early warnings.

During disaster stage: Activities include quick response, relief, mobilization of search &rescue, damage assessment.

After disaster stage: Activities include recovery & rehabilitation programs in disaster affected areas.

Institutional Arrangements

The Institution arrangements for any plan are very integral part. They are the agencies which help in co-ordination and co-operation and ensure the implementation of the DDMP during the emergencies.

- District Disaster Management Authority
- District Disaster Management Committee
- District Emergency Operations Centre
- District Disaster Information Centre
- Urban Area Disaster Management Committee
- Block Level Disaster Management Committee
- Gram Panchayat/Village Disaster Management Committee

The real questions over here in all these committees are :

a. Does the committee member know all its stakeholders
b. How to act in times of distress/disaster

In corporate there is a concept Business Continuity Protocol that are being followed. First of all, every quarter in year there is a drill for these committees. The details are updated such as the resource availability, changes in names/designation/contact number of manpower etc., Also, every month a single message is passed from the higher official to the person at the ground zero level . The clarity of message determines the business continuity.

Though we do have committees in paper, yet the protocol of Business continuity can be implemented after customization in order to ensure that at least various stakeholders know their responsibilities as well as each other.

HAZARD, VULNERABILITY ASSESSMENT AND RISK PROFILING

Hazard, Vulnerability, Risk & Capacity analysis (HVRC) is the most important part of the plan as the entire planning process will be based on its outcome. Any error in identifying the frequency, magnitude and projected impact leads to incorrect identification of major hazard and hence an imperfect plan. The necessary outcomes of the HVRC analysis will be the type of hazards that the district is prone to, history of hazards, impact analysis of the worst case, the area, people and infrastructure that is prone to the risk of these hazards and their vulnerability of being damaged by such disasters due to their vulnerability characteristics. Vulnerability Assessment should deal with the natural, socio-economic vulnerability, housing vulnerability and the environmental vulnerability.

The following are the excerpt taken from the DDMP plan of Hoshangabad which mentions the list of past disasters in the district.

Type of applicable hazards	Hazard prone areas in the district
1. Flood,	146 villages and 76 gram panchayats that are the low lying areas
2. Earthquake	Seoni-malwa, Budhni, Bordha, Kesla, Suplai, Matkuli, Pipariya, Bankhedi and Panchmari
3. Fire	After the cutting of *rabi* crop farmers use to burn the remains, all over the district. This is the major concern for fire hazards.
4. Industrial & chemical disasters	Areas near the SPM and ordinance factory
5. Stampede	Ghats along Narmada all over the district during the mela season.
6. Train Accident	Jabalpur-Harda rail route, Bhopal-Betul rail route. Itarsi Railway Junction.

Landslide in Pachmari during 2012 in the Nagdwari mela has been added to this list. Though there were no reports of any casualities, yet the disaster has been accounted for now.

Sl. No.	Vulnerability Type	Description
1.	Physical vulnerability	some of the areas have been identified as vulnerable by the municipal like roads connecting the vulnerable villages especially the roads connecting to Seoni malwa.
2.	Social Vulnerability	Sohagpur has been identified as being the most vulnerable in terms of social vulnerability with a total population of 18300. Population that has been identified as most vulnerable has been calculated by the relief department
3.	Economic vulnerability	it is very complicated just like social vulnerability and it varies according to the economic stratification of a block.
4.	Environmental vulnerability	livestock population that is resident in the area those are vulnerable have been calculated by the veterinary department and Sohagpur has turned out to be the most vulnerable followed by Seoni malwa.
5.	Institutional vulnerability	(i) Communication (ii) Co-ordination (iii) Training

Effect of Flood

The rivers such as Narmada, Denva, Dhundi, Hathed, Maau, Palakmathi and Tawa are the major rives in the district, covering most of the Sub-divisions/blocks. Thus this makes the district very much prone to the Flood.

- **Tehsil wise vulnerability: Floods**

Name of Tehsil	Physical/ Infrastructural Vulnerability	Environmental/ Natural vulnerability	Social vulnerability	Economic vulnerability	Institutional vulnerability
Hoshangabad	Road towards Seoni malwa submerges	10876 approx. livestock	7400 population approx.	18 villages get affected	There is absence of a proper DDMC/ DDMA. The home department is severely understaffed and short of resources.
Babai	Road towards Hoshangabad submerges	12218 approx. livestock	15150 population approx.	15 villages get affected	Limited trained personnel
Pipariya	Road towards Sandiya and Bankhedi submerges	4002 approx. livestock	14800 population approx.	13 villages get affected	Limited trained personnel

Name of Tehsil	Physical/ Infrastructural Vulnerability	Environmental/ Natural vulnerability	Social vulnerability	Economic vulnerability	Institutional vulnerability
Bankhedi	Road towards Pipariya submerges	10176 approx. livestock	9560 population approx.	10 villages get affected	Limited trained personnel
Seoni malwa	Road towards Hoshangabad submerges	15439 approx. livestock	4900 population approx.	21 villages get affected	Limited trained personnel
Dolariya	Road towards Hoshangabad and Seoni-Malwa submerges	15916 approx. livestock	5900 population approx.	18 villages get affected	Limited trained personnel
Itarsi	This is the most Developed or urbanized Place of the district having a good connectivity. As a result, this is the area that will lead to maximum infrastructural loss in case of any disaster	1059 approx. livestock	1200 population approx.	2 villages get affected	Limited trained personnel
Sohagpur	This is a highly flood prone area.	17769 approx. livestock	18300 population approx.	31 villages get affected	Limited trained personnel

* **Source: Relief department, veterinary, municipal and revenue department**

With maximum occurrence of floods more than any other disaster that is 76 times floods has occurred in the last 80 years, we can safely say that Hoshangabad is majorly a flood prone district. With some of the major rivers like Narmada, flowing across the district, during heavy rains floods become inevitable. The low lying areas especially get affected by the upsurge of the river waters or because the rain water backflows and they are more vulnerable than the other places. Within the district Sohagpur block has been identified as one of the most vulnerable blocks followed by Seoni malwa block both in terms of social and environmental vulnerability.

Since there haven't been any major earthquakes, people have a conception that Hoshangabad isn't an earthquake prone district. But the scientific or rather the seismic studies say that Hoshangabad is situated in zone 3 and some part of it are proposed to be included in zone 4. Hence Hoshangabad can be counted as one of the earthquake prone districts as well.

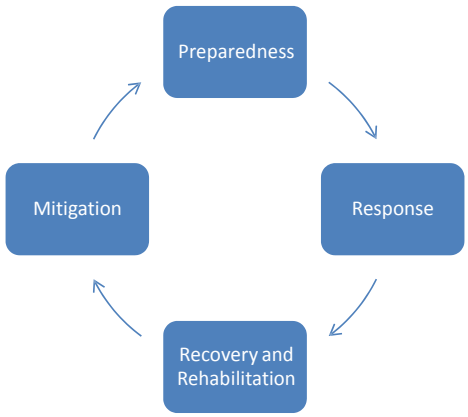
The reasons behind the occurrence of floods in Hoshangabad are excessive rainfall in short span of time, obstruction to natural drainage of rainfall water, poor maintenance of drains leading to their damage, construction of bhawans extremely near to drains, lack of standard technology in previously constructed drains, problem in drainage of water due to construction by the administrative construction agencies over the drains, lack of cleanliness lead to choking of drains by plastic and polythene. But the most important reason behind the floods are the presence of major rivers like Narmada, Tawa, etc. which overflow onto the banks and pose hazard for the people and property in there. The villages and blocks prone to floods have been attached in the annexure.

District Action Plan

The District Action plan talks about the various stages in the Disaster both pre and post.

Mitigation Stratergies

1. Structural



2. Non-Structural
   a. Use of Development Schemes
   b. Training and Capacity Building
   c. Community Initiatives

Structural

The following are the list of Structural Mitigation strategies that can be implemented in order to mitiage Disasters

a. Construction as per the norms – Ensuring strict adherence to norms and periodic reviewing
b. Drainage – Ensuring blockage free drainage for the easy drainage of waters
c. Land use Planning – Proper co-ordination between revenue, land use department and construction firms
d. Retrofitting – Classifying buildings according to the seismic resistant capacity.

Non-Structural

a. Use of Development Schemes

MNGREGA : The MGNREGA achieves twin objectives of rural development and employment. The MGNREGA stipulates that works must be targeted towards a set of specific rural development activities such as: water conservation and harvesting, afforestation, rural connectivity, flood control and protection such as construction and repair of embankments, etc. Digging of new tanks/ponds, percolation tanks and construction of small check dams are also given importance.

The employers are given work such as land leveling, tree plantation, etc. It has a very broad spectrum which can be used for the benefit of the population that are vulnerable and are likely to be affected.

IAY : This scheme can be used for the rehabilitation of the affected villages by making constructions for the affected population.

Sarva Shiksha Sbhiyan:

This scheme can be used for creating awareness about mitigation and preparedness about accidents that are in control of man, in collaboration with educational institutions to the people so that they can make use of it when required.

NRHM

This scheme can be used to facilitate for voluntary first aid during disaster and training the local population to deal with minor injuries so that they do not have to wait for professional help to help any individual. Training of nurses can be carried out as a preparatory plan.

Mukhyamantri Avas yojana:

The scheme can facilitate the rehabilitation programs among the affected villages or the ones that are likely to be affected and lie in the vulnerable zone. They can come up with collaboration with the construction norms.

Jal-Abhishekh Abhiyan

The aim of the scheme is to provide safe drinking water so it can be used to provide for clean drinking water during response and relief period .It can work in collaboration with sanitation systems during relief period and help in avoiding any kind of future epidemics in the affected region.

Samagra Swachta AbhSyan:

This scheme can also be used for providing sanitation in the relief camps to the affected population. Since relief camps are the places where lot of diseases and epidemics may break out, proper defecation and sanitation should be ensured by this scheme.

Madhyanah Bhojan Karyakram

The scheme can provide for food supply during emergency situations in the affected areas or even in the relief camps.

Training and Capacity Building

- Awareness of the risks 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 mechanism that mobilize and deploy these trained resources in a quick, efficient and systematic manner.
- Periodic review or mock drill of the emergency response mechanism.

Community Initiatives

Communities are always the first responders and hence the DDMA / District. Authority will ensure Community participation through initiatives like Community Based Disaster Management (CBDM) to promote local ownership, address local needs, and promote volunteerism.

Aim of CBDRM is to reduce vulnerabilities, and increase capacities of households and communities to withstand damaging effects of any disaster. It enhances people's participation and empowers them in achieving sustainable development and sharing its benefits. With the help of outsiders they can address issues of situational analysis, planning and implementation of risk reduction and preparedness measures. Through a thorough assessment of communities' hazard exposure and analysis of specifics of the vulnerabilities as well as capacities, CBDRM forms the basis for activities, project and programs required to reduce disaster risk. Since they are one of the primary actors and should be actively involved in the preparation of plan.

The Disaster Management Plan of the district has names and contact numbers of the identified Community disaster recovery team members and periodic mock drills will get them acquainted with the process of the Disaster management.

Preparedness Plan

Three things are of very much importance in this phase

a. Pre-disaster warning and alerts

b. Preparedness before response and dissemination of warning

c. Evacuation activities

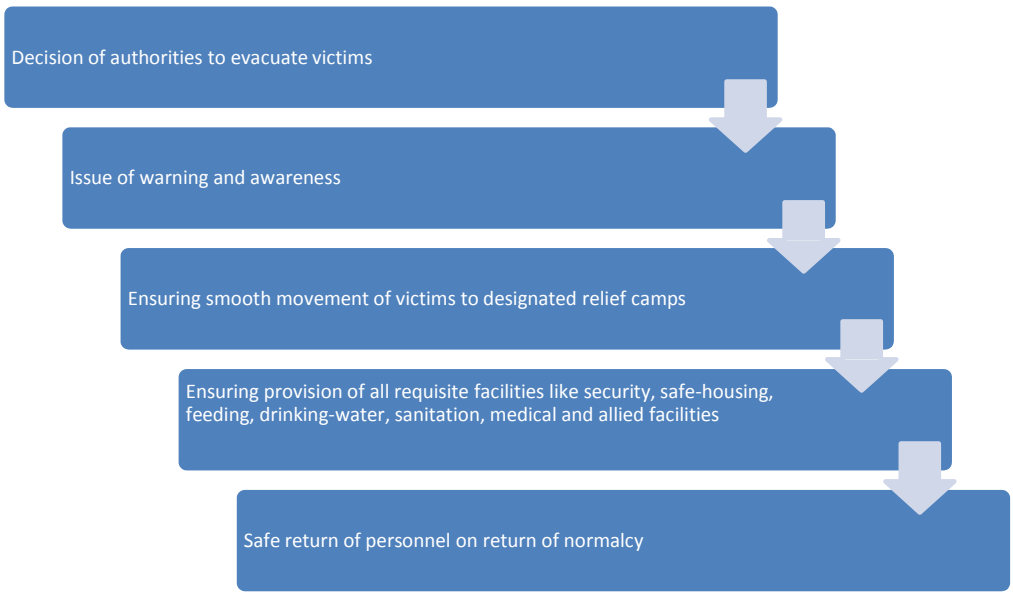
Pre-disaster Warning and Alerts

The Chief Engineer (CE) maintains wireless communication with the dam authorities of the dams about the release of upstream water. Therefore, CE will maintain a control room to obtain the information about the release of water from the dams upstream and provide flood forecast/ warning to District Collector during the rainy season.

District level control room has been set up which runs 24x7 from the start of the monsoon season. Along with the general dissemination modes of warning viz. Radio, Television, Scheduled News bulletins, Local/Regional newspapers, and public address system should be thoroughly adapted for better results. Once a warning is issued, it should be followed up by subsequent warnings in order to keep the people informed of the latest situations. SMS based alert system has been developed in which the mobile number of the people in the flood zones have been added and SMS are sent for alert.

Evacuation Stage

There are five stages of the Evacuation which needs to be taken care of :



The Drill for conducting the evacuation lies in the hands of Home Guards. The drill becomes very important because of two reasons namely,

a. To understand the gaps in the process
b. To avoid and make people acquainted with the process.

The DDMP should also maintain a register which summarizes the events/drills conducted in the district as this will help in ensure effecting evacuation during disaster periods. Block/Tehsil wise relief camps have been set up on paper but people are not aware of it as there is a huge communication gap.

Response Force

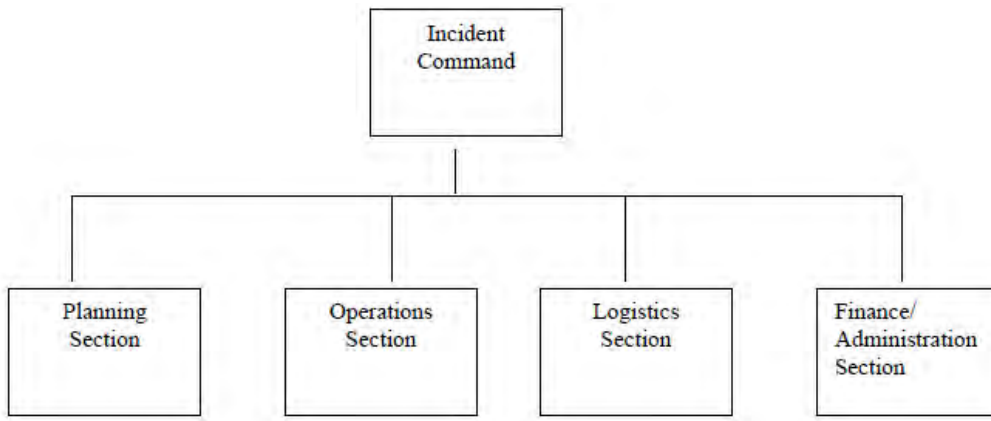
Various teams have been constituted for the response namely,

1. Warning Dissemination Team
2. Shelter Management Team
3. Evacuation and Rescue Team
4. First-Aid and Health Team
5. Sanitation and Carcass disposal Team
6. Counselling Team
7. Damage Assessment Team
8. Team for collection, storage and distribution of Relief materials.

Incident Command System (ICS)

Incident Management System is the combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, designed to aid in the management of resources during an emergency incident such as disaster. The incident command system (ICS) is a component of an overall incident management system. Incident Command Systems provides a standard approach to the management of the site of any large-scale disaster event. It is designed to be a model tool for "command, control, and coordination" of a response which provides a mean to coordinate the efforts of individual agencies as they work toward the common goal of stabilizing the incident and protecting the life, property, and the environment.

Incidence Management System has been set-up in all the Sub-divisions as per the plan.



Incident Command System Organization Chart (Source: FEMA 1998)

Damage Assessment Team

The Damage Assessment Team will access the damage on the following lines

- Human and material damage
- Resource availability and local response capacity
- Options for relief assistance and recovery
- Needs for national / international assistance

There are two types of assessment that needs to be carried out namely,

1. Initial Assessment
2. Technical Assessment

The standardized format of the Assessment Report is of very important in nature as it helps in understanding the extent of damage that has occurred due to the disaster as well as plan and send the following response teams as per the needs,

- Search and Rescue Team
- Logistics Arrangments
- Water and Sanitation
- Public Grieviances
- Management of deceased
- Role of Private Security
- Medical Response
- Communications
- Law & Order
- Animal Care
- Civil defence and Home Guards
- Role of NGOs

EFFECTIVENESS OF DDMP

Communication

The first and foremost importance in DDMP is the communication plan. The DDMP plan basically has failed to organize the data in the manner which would be easy and convenient for the user/ reader. Hence, merging of repetitive datas needs done in order consolidate the Communication plan.

Secondly, the contact numbers/ persons in the DDMP have changed long time ago and still the data has not been updated. So this basically doesn't give any sense to have volumes of contact numbers which are either redundant or not in use.

Thirdly and most importantly, though DDMP clearly states the various committees, institutions involved, still they are only in papers. The roles and responsibilities are not realized until any disaster occurs. Hence proper Business Continuity protocol or contact over phone needs to be ensured every month in order to be really prepared for the Disasters

Drill

Firstly, there are no record of any Drills that have happened in the recent past. Though there are records of the disasters that have occurred in the recent past, yet the Standard Operating Protocol has not been made aware to the people. Hoshangabad is a flood prone district and though people and villages the Standard Operating procedures. The schedule of the Drill needs to be released at the start of the year and the same needs to be adhered to and needs to be closed by the end of the year.

Meetings

People in the committees of the District have not had any meetings regarding the DDMP. The committees involves both government and non-government staff. Interaction between them is of outmost important as it helps in ensuring liasoning during the emergency situations. The log book of the attendance of the meetings along with a precise minute of meetings needs to be included in the DDMP.

Resource Inventory

The resources Inventory in the district of the various equipments have not been included in the DDMP. Though the details are available in the Resource Inventory website hosted by NIC, yet

the concise and easy detailing of the equipments, date of expiry, current status, contact numbers of the people who know to operate them are not available in the DDMP.

The most critical part of any emergency period is the golden hour when sometimes we as a system have failed in managing it. During this period, though the equipment might be available, there will not be any person to handle it and thus causing time delay.

Hence to summarize, the resource inventory should not only be precise, but also informative in all terms and should be updated periodically.

CONCLUSION

District Disaster Management Plan is one of the key important documents in any district. Any type of disaster, be it be natural or manmade, leads to immense loss of life, and also causes damage to the property and the surrounding environment, to such an extent that the normal social and economic mechanism available to the society, gets disturbed.

The Govt. of India, recognized the need to of a proactive, comprehensive, and sustained approach to disaster management to reduce detrimental effects of disasters on overall socio-economic development of country, and came out with Disaster Management (DM) Act 2005, and highlighted the role and importance of District Disaster Management Plan. The Govt. of Madhya Pradesh (GoMP) also believes that there is a need for a Disaster Management Plan in every district that articulates its vision and strategy for disaster management in the state. In this context the Madhya Pradesh State Disaster Management Authority (MPSDMA) provides guidelines to various entities involved in disaster management in the state to discharge their responsibilities more effectively. Further, as per the DM Act, the nodal agency for preparation, functioning and review of the District Disaster Management Plan (DDMP).

The scope of district disaster management plan is very wide, and it is applicable in all the stages of disasters (before, during, after & non disaster time). The DDMPs can help officials in taking important decisions and also provide guidance to direct subordinates in emergency. The DDMP helps in saving the precious time, which might be lost in the consultations, and getting approval from authorities.

It will be the responsibility of the District Disaster Management Authority members to look after the district and sub district level institutionalization activities pertaining to the disaster management, including the periodic review of district disaster management plan and allied functions.

DDMP is an operational module for district administration (owned by the DDMA) and it helps to effectively mitigate the different types of disasters with locally available persons and resources. It also ensures a checklist for all the stakeholders for an action oriented response structure and to study their preparedness level.

Jammu and Kashmir Floods, 2014 - A case study of Udhampur District

Kritika Batra, IAS

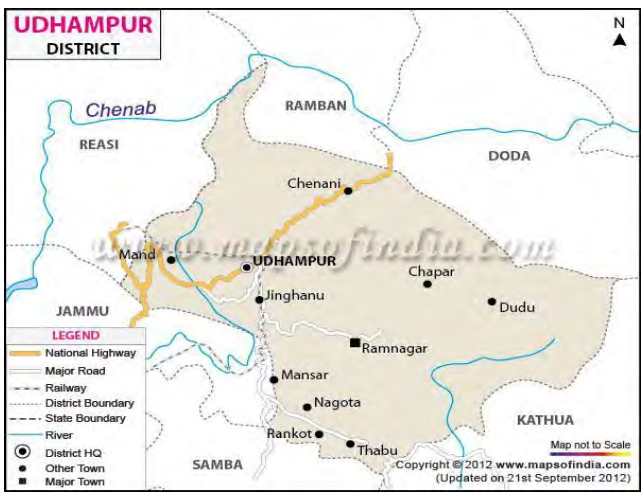
Chapter 6

INTRODUCTION

Udhampur District of Jammu and Kashmir lies between 32.34° - to 39.30° north latitude and 74.16° - 75.38° east longitude covering an area of 2380 sq.kms. The altitude of the District varies from 600 meters to 3,000 meters above Mean Sea Level (MSL) due to which the district has been notified as a hilly district. Some of the higher reaches remain covered with snow for a good part of the year. The district has 8 tehsils incorporating a total population of 5,54,895 persons(2011 Census). Population is mostly rural and only 20% of it resides in town. In terms of connectivity, Udhampur is 65 kms from Jammu and is criss-crossed by National Highway 1A and Dhar–Udhampur road. The Northern Command headquarters of the Indian Army and a Forward Base Support Unit (FBSU) of the Indian Air force is stationed in Udhampur.

MAP OF UDHAMPUR DISTRICT

Disaster Vulnerability of the District



Keeping in view the past occurrences of disasters and the prevailing geo-environmental conditions, Udhampur district can be revealed to be most prone to earthquakes. Besides, Udhampur lies between the lesser Himalayas and Shivalik ranges facing temperate and subtropical hilly terrain which makes it prone to frequent occurrences of landslides, road accidents, forest fires, hail storms, flash floods and cloudburst. In the past Udhampur has also witnessed terrorist attacks the vulnerability to which seems quite low now. Apart from these, Udhampur is also a transit point for the yatris going for Amarnath yatra in the months of June to August and those going to Vaishno Devi throughout the year. So Udhampur being a major religious tourism destination is prone to festival related disasters like stampede, food poisoning etc.

Until 2014 Udhampur did not witness any major disaster except the devastation by hailstorms in May-June 2004 when there was major loss of human and animal life. Udhampur has witnessed drought in 2010 and minor earthquake tremors in 2012 and 2013. In 2014, the entire state of Jammu and Kashmir witnessed heavy rainfall which led to floods and landslides in various parts of the state. Udhampur also faced a similar situation in which it had to tackle the twin impact of heavy rainfall and landslides. This analytical note will be an attempt to document the major events of this disaster and the lessons from it.

Early Warning System and Preparedness

Udhampur usually receives its summer rainfall in August. However this year the rainfall pattern changed and Udhampur received heavy rainfall for 4 days starting from 3rd of September. This heavy rainfall was attributed to the merging of the western disturbances and monsoon winds. The weekly press release by the Indian Meteorological Department (IMD) predicted rainfall for the entire week but did not categorise it as unusual. In the first day even though the rainfall was incessant no alarm was raised as it was not above the danger levels. However on the intervening night of 4th and 5th September the downpour was so heavy that it clogged all the low lying areas of the district and triggered landslides in the hilly part of the district. There was very high rainfall in Udhampur in a short period of time which amounted to cloudburst. While the normal rainfall for Udhampur in the week September 4 to September 10, 2014 would have been 68.4 mm, it actually received rainfall to the extent of 605.5mm which was 785 percent above the normal rainfall level. Roads caved in in some areas, some houses collapsed (both kutcha and pakka), crops got damaged, cattle sheds collapsed and there was loss of human and animal life. The NH-1A passing through Udhampur connecting the valley from Jammu was also closed stranding large number of passengers in Udhampur. Even some public buildings became dysfunctional. A lot of villages were left with no electricity and phone connections.

There was a massive landslide in Saddal village of Udhampur in the morning of 5th September. The villagers were evacuating their houses when within few seconds the entire hill on which the village was situated moved down engulfing everything that came its way. Around 30 people were estimated to have died in this landslide, the bodies of 10 of whom have still not been recovered. There were several other incidents of landslides.

There was no established system of early warning or preparedness to deal with the disaster as the situation was unprecedented in itself and nobody knew that rainfall could cause so much damage. However, on 5th September the district administration and the District Disaster Management authority immediately sprung into action to deal with the situation as quickly and as effectively as possible. The State Government has formulated the State Disaster Management Rules issued vide SRO No. 138 dated, 23rd April 2007, which amongst other provisions lays down the composition of the District Disaster Management Authority in every District, headed by the Deputy Commissioner and comprising of ADC, SSP, Chief Medical officer and members from CAPD, R & B, Fire Services, planning, education and NCC/NSS among others.

Table 1: Impact of heavy rainfall on the District

No. of Deaths	52
Missing Persons	10
Injured Person	08
Residential Houses – Fully Damaged	1007
Residential Houses – Severely Damaged	1817
Residential Houses – Partially Damaged	4728
Live Stock losses	749
Cattle Shed – Fully Damaged	1281
No. of people Evacuated	1751
No. of relief camps started	19
No. of Villages Affected	353

Table 2: Details of damages to Public Infrastructure

S. No.	Name of the Sector	Total amount of damages (Rs. in lakhs)
1.	PWD (R&B)	6594.50
2.	Public Health Engineering (PHE)	1698.58
3.	EM&RE Div. Udhampur	548.49
4.	Power (STD)	69.07
5.	PHE Mechanical	90.15
6.	PMGSY roads	1045.00
7.	Irrigation	277.50
8.	Flood Control	350.00
9.	Health	125.72
10.	Education	585.14
11.	TLMD (Power)	138.32
12.	RDD	615.00
13.	Animal Husbandry	23.50
	Total	**12160.97**

Rescue and Relief

A 24 x7 disaster emergency control room was immediately made operational on 5th September at the collectorate in district headquarters. Helpline Numbers were set up and publisised. During the rains one rescue operation was conducted at Jaganoo bridge where people were

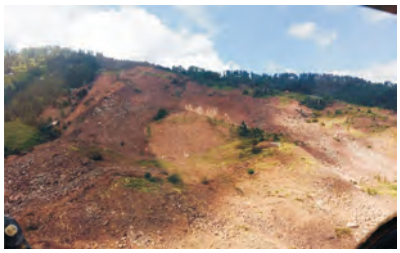
Livestock deaths

Damaged Electric Poles

Submergence of Road

Damage to Maize crop

Road repairs after landslide



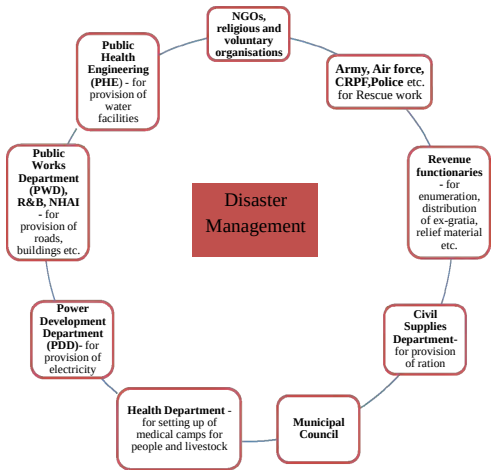
Site of Saddal village landslide

stuck. Air sorties were procured from the air force for immediate evacuation. Information was disseminated to public through loudspeakers, FM radio and Government functionaries to prevent rumour mongering and creation of panic situation. Around 1750 people were evacuated through different modes from various parts of the district. Gen Sets were installed in public buildings. The evacuated people stayed in yatri niwas, panchayat ghars, town hall and other public buildings. Their food and lodging was taken care of by the district administration which received help from Jammu and lesser affected districts of Jammu region. The neighbouring state of Punjab was also quick to respond and packed food was received from Amritsar for the stranded people. Medical camps were held at these temporary relief shelters for both people and livestock.

The army, SDRF, NDRF, NGOs, health department, police, fire brigade and all field level functionaries worked in tandem for the rescue operations. A list of Do's and Dont's was prepared to guide the various officials involved in evacuation and to avoid panic. There were no casualties or injury once the initial damage was done.

Arrangements for food and lodging were made in Udhampur for 500 pilgrims going to Vaishno Devi and later on they were transported to Katra and Jammu by Roads. Till 24th September, 2014 people being evacuated from Srinagar were provided food and water at Udhampur Railway Station (approx 30,000 persons). Restoration of NH-1A was many times done on same day by NHAI and AFCONS. Repair of the roads and bridges was completed by end of September except one road wherein the entire area had caved in and for which land acquisition was required. Repair of electrical poles and telephone connections was also completed by mid–October.

Figure 1: Various Departments involved in Disaster Management



Enumeration

The initial enumeration of the damages was completed by 11th September. The patwaris were given responsibility for their patwar halqas. Being a hilly district there were problems in enumeration as the patwari had to cover a lot of distance on foot to reach far flung areas. Also, there was no mode of communication in far flung area.

Enumeration involved taking pictures of the damaged place and categorising it as fully, severely or partially damaged. Along with that the name of the resident, nature of the house (Kutcha, pakka, hut), income status etc. was also noted. Similarly, enumeration was done for livestock, horticulture and crop damage. The lists were compiled first at niabat level and then at tehsil and district level. To ensure transparency, people were allowed access to these lists any time. File for each beneficiary was later prepared at the time of relief distribution.

Enumeration camps held in far flung villages

Post Enumeration

Relief camps were held in different parts of the tehsil to ensure distribution of relief material such as tents, tarpauline, kitchen sets, blankets, ration (rice, atta, oil, salt, sugar), water, food packets, medicines, solar lanterns, torches, woollen clothes etc. The state government declared six months free ration to the affected families at the rate of 40 kg. per family for first month and 32

kg. per family for rest of the five months. A central disaster relief team was set up for this purpose and the list of beneficiaries were those as defined under the enumeration stage. This list was updated from time to time for genuine cases.

The cash compensation was given as per the State Disaster Relief fund norms. The central government declared the Jammu and Kashmir floods as a national calamity and also announced ex-gratia of Rs. 2,00,000 per person for deceased. As per SDRF norms ex-gratia of 1,50,000 per person was given for deceased, Rs. 75,000 for fully damaged pucca house, Rs. 12,600 for severely damaged pucca house, Rs. 3,600 for partially damaged pucca house, Rs. 17,600 for fully damaged kutcha house, Rs. 3800 for severely damaged kutcha house, Rs. 2300 for partially damaged kutcha house, Rs. 1500 for cattle shed and Rs. 3000 for hut. Bank accounts were opened for each of the beneficiaries under Jan Dhan Yojana and amount was transferred to their accounts.

Various NGOs, religious organisations, politicians and Army, CRPF etc. also set up langars and relief camps in the affected areas. The focus point was the area of Saddal village which saw huge inflow of money and material from different organisations.

Food and Lodging arrangements for stranded passengers

Relief camp at Udhampur Railway station

Receipt of relief material from TATA Projects Ltd.

Distribution of relief material

Distribution of solar lanterns to inhabitants of Saddal village

Distribution of relief material

Rehabilitation

Families whose houses are fully damaged preferred to stay with their relatives or to take accommodation in Panchayat ghars or schools. Tents and tarpauline were given as initial relief. However in order to enable these families to be independent they were given the option to either take rent of four months at the rate of Rs. 2000 per month in rural areas and Rs. 3500 per month in urban areas from the state government for stay in rented accommodation or to stay in temporary structures to be constructed by the state government. Only 41 families of Udhampur district preferred to stay in temporary structures and rest availed the option of rent. These temporary structures are being constructed by PWD in the area of disaster management store as one room tenement with attached bathroom. The state government also announced allotment of 10 marla land to all those who had lost their owned land in the recent floods due to landslides or flood. The land for allocation has been surveyed for fitness by the Geological survey of India and Wadia Institute of Himalayan Geology. The land will be allotted after the plots are cut out and necessary clearances are received from different authorities.

Lessons Learnt and Recommendations

1. **The Indian Meteorological Department (IMD), the Central Water Commission (CWC) and the State Department of irrigation and flood control** failed miserably in giving any information or warning on rainfall or river flow. So people of Udhampur had absolutely no idea of the impending disaster until the landslides started occurring. An early warning system with the latest technology and professional expertise need to be developed to prevent such disasters.

2. **Training of the district officials** to deal with the disasters should be held every year to accustom them with the various legal, social and technical aspects of various disasters. In case of Udhampur, no Disaster drill or training of district officials to deal with any large scale disaster was ever held.

   District Disaster management drill needs to be carried out at least once a year involving government officers, schools, hospitals, panchayats etc. People need to be sensitised through grassroots level institutions like panchayats, village level workers, village level disaster committees and self-help groups on what needs to be done if a disaster of such proportion occurs. Though the district had a **disaster management plan** in place, those given responsibility under the plan were not aware of it. So, the district disaster management plan should be updated regularly and publicised.

3. The district was inadequately stocked with **disaster management equipment. Satellite phones and Ham radios** were not stocked with the trained personnel for timely use. They had to be borrowed from the army and police in many villages telephone connectivity was cut off. A huge **Disaster management store** is being constructed in Udhampur since last 4 years. However the construction has hit major roadblocks. Though the site of the store was disaster immune 4 years back it is not so now because of shifting of a small “nallah’

flowing besides it. Now steps are being taken to restore its safety and this store once fully constructed will be a big asset for the district disaster management infrastructure. Adequate supply of potable suction pumps and dewatering pumps needs to be maintained at least at the division level to pump out the water in case of floods.

4. The district did not have enough **stock of foodgrains** to deal with a disaster. Ration was a persistent problem and majority of the grievances of the people were related to this. So, it should be the norm that at any point of time at least two weeks stock of foodgrains should be available in all the CAPD godowns of the district.

5. People were unwilling to leave their houses after the structures were rendered unfit for stay due to the heavy rainfall. It was difficult to convince the people to move away from their homes and take shelter in relief camps. To attract them to relief shelters **inducements** like free langars etc. were given to the people.

6. **Geographical Information System (GIS) based database and satellite imagery** could have been used for preparation and rescue. Using the satellite imagery, a profile of the affected areas could have been created targeting the areas likely to be affected most.

7. Since new administrative units were carved out in Udhampur in end of August only, there was shortage of revenue functionaries like patwaris, girdawars, lambardars and chowkidars at the time the disaster occurred. This delayed the process of enumeration as there was shortage of staff for doing enumeration work thus burdening the existing staff. In such cases lower level revenue functionaries could have been temporarily deployed from less affected niabat/tehsil/district to highly affected niabat/tehsil/district so that the relief work could have been expedited.

8. Udhampur district was a transit district for relief material being transported from Jammu region to the valley. In one such instance 53,298 bags of rice being sent from Chhatisgarh were unloaded in Udhampur railway station for onward distribution by road to different districts of Jammu and Kashmir. Though it was an easy job the procedural requirements made it a huge burden, as the district had to take trucks from State Road Transport Corporation (SRTC) only which was highly under stocked and incompetent. In spite of best efforts, this procedure of distribution continued for 15 days which was a huge drag on district disaster management machinery's time and resources. A suggestion in this case would be that in exigencies like these procedural requirements should be relaxed immediately in light of bigger concerns of efficiency, effectiveness and public service. The process could have been completed in two days if the administration had been allowed to avail the services of private transporters.

9. The idea of creation of temporary structures for rehabilitation of the affected families could have been more successful if it had been floated a little earlier. Since the winters had already commenced when the idea of temporary structures was initiated very less families opted for it. Most of the families preferred to take rent for their already rented accommodation.

Good Practices

1. Immediately after the disaster a '**District Donors Disaster relief fund'** was set up by the district administration for receiving donations from various NGOs and government authorities. An amount of approximately Rs. 25 lakhs was collected in this fund.

2. The responsibility for each person in the administration was clearly defined. A **centralised Disaster relief team** headed by an SDM was temporarily set up which followed a hub and spoke model for relief distribution as follows:

3. The efforts to exhume bodies of the victims of Saddal village landslide were initially being led by the army who were doing this process manually as there was no road to enable movement of **JCBs and popland** to the site of the landslide. However, by the initiative of the district administration, PWD and RnB, the connecting road was made in record time with immediate clearances from the forest department for felling of trees to ensure construction. With the help of JCBs additional 20 bodies were recovered from the site.

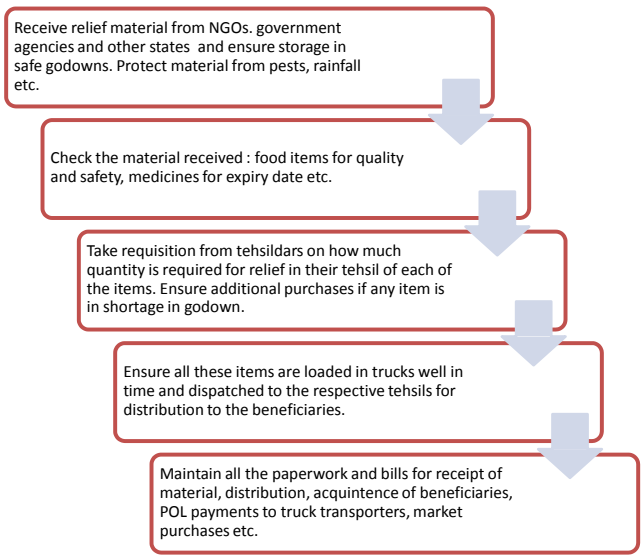


Figure 2 : Working mechanism of Disaster Relief Team

4. The **coordination among various departments** was very good as there was a single line of authority through the District Commissioner, Udhampur, Mrs. Yasha Mudgal. The leadership of the District Commissioner was a strength which kept the entire team together and did not create any misunderstanding or confusion of any sort among the different departments.

5. The **NGO's** like Lupin, Love Care foundation, TATA, Hope etc. were facilitated with immediate clearances at the check posts and easy provision of various services such as gas connections for setting up of langars, transport systems for setting camps etc. They were also given appreciation letters and adequate media coverage.

6. Being the Northern Command Headquarter of Indian Army and having an Indian Air force support unit, Udhampur did not face much problem in mobilising men and air sorties for rescue operations. The state Disaster Response force, police, army, air force, CRPF and district disaster management authority worked in coordination which helped in expediting the evacuation operations.

7. A **vulnerability mapping of the district by Geological survey of India and Wadia Institute of Himalayan Geology** has been done to identify areas which are fit for allocation to the affected families and for construction of temporary rehabilitation structures.

8. Temporary structures are being created for those whose houses have been fully damaged. These structures will act as a permanent disaster management asset for the district and will be a boon for future use.

9. During the process of rehabilitation it was realised there are a number of socio-economic reasons restricting the way the people are resettled. Even if temporary structures are made by the government, the people from the upper caste are unwilling to stay with those of the Gujjar community. Such aspects need to be kept in mind while undertaking any rehabilitation efforts. Also since most of the people are dependent on livestock or agriculture and are used to staying in the upper reaches of hills they could not be rehabilitated in urban areas. So, along with separate creation of temporary structures, sheds were also made for accommodating the livestock of the gujjars.

Way Ahead

The disaster faced by Udhampur was unprecedented as in its entire history it had faced nothing of this sort and so there was no preparedness to deal with it. A blue book should now be created documenting the experiences of this disaster enlisting which departments are to be contacted for which work, the immediate steps to be taken, rehabilitation measures etc. Since in this disaster the entire state was affected the kind of difficulties faced by the district was greater as there were multiplier effects of the disaster. However, the response mechanism was quick and very efficient which prevented any further damage. To mitigate the damage in future, illegal encroachments on government land on hills and steep slopes should be removed as these people are likely to be worst affected in any disaster. The speeding urbanisation should not be at the cost of safety and should incorporate disaster prevention measures.

REFERENCES

1. Secondary Data from District Disaster Management Plan, Udhampur.

2. Inputs from the worthy District Development Commissioner (DC), Udhampur.

3. Primary data based on personal visits, survey, scrutiny and interactions with various district officials.

Disaster Management Framework, East Sikkim

M. Bharani Kumaar, IAS

INTRODUCTION

'Disaster Management' is a comprehensive term that covers a wide range of interventions undertaken before, during and after a disaster to prevent or minimize loss of life and property, human suffering and hasten recovery. It assumes greater relevance in the state of Sikkim because it is highly prone to disasters like the earthquake measuring 6.9 on the Richter scale that devastated the state on September 18, 2011 and triggered a large number of landslides, rock falls and mud slides across the state and caused significant damage to buildings and infrastructure.

The entire area of Sikkim falls under the Zone IV of the Seismic Zonation Map of India (IS1893: 2002). This zone is broadly associated with seismic intensity VIII on the Modified Mercalli Intensity (MMI) scale.

The physiographic setup of the East Sikkim district characterized by hilly terrain, abundant river catchments, a highly varied climatic pattern and scattered population result in a high vulnerability to a range of natural hazards which is exacerbated by the continuous and frequent precipitation. Additionally, the impeding impact of climate change has the long term potential to further aggravate the risk of weather-related disasters.

Since, East Sikkim district can be regarded as the lifeline of the entire state, it becomes absolutely imperative that the district has an effective disaster management arrangement, which begins with putting in place a disaster management framework that broadly comprises elements of research, policy and governance, risk assessment, mitigation, preparedness, response, relief and recovery and post-disaster assessment.

This analytical note attempts to analyze the disaster management framework of the East Sikkim district and lays emphasis on the capacity building initiatives, mitigation and prevention measures and technological interventions in the realm of disaster management.

DISASTER RISK MANAGEMENT PLAN

The district has so far deftly handled most of the disasters, ensuring minimal loss to human lives and property. Yet, a disaster management plan is indispensible to create a system that functions by itself in times of crises.

The plan has clearly spelt out the major types of disasters that are experienced in the district including natural hazards and man-induced hazards. In addition to it, it enumerates the most vulnerable areas of the district, besides mentioning the alternative routes and the nearby helicopter landing sites for all blocks in the districts. It also gives an idea of the most probable periods of occurrence of such disasters.

HAZARD	MONTH OF OCCURRENCE											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
FLASH FLOOD				←	—	—	—	—	→			
HIGH SPEED WIND		←	→						←	—	→	
DROUGHT	←	—	→							←	—	→
COLD WAVE	←	→								←	—	→
FOREST FIRE	←	→							←	—	—	→
EARTHQUAKE	←	—	—	—	—	—	—	—	—	→		
LANDSLIDE				←	—	—	—	—	→			

Period of occurrence of various natural disasters in the district

The plan also includes an analysis of the status of buildings in the district and highlights the fact that the overall condition of building stock in the district is poor.

Owing to the limitation of land, particularly in the urban areas in and around Gangtok the people have been forced to opt for vertical expansion so as to meet the growing demand. These multi-storied building are built with scant regard for earthquake safety. Furthermore, inappropriate drainage measures in the district have resulted in slope instability and subsidence related problems. Therefore, Disaster Resistant Construction Technology with adequate inputs from local know-how should be accorded importance.

CAPACITY-BUILDING INITIATIVES FOR COMMUNITY AND GOVERNMENT OFFICIALS

Experience sharing is the key to learning and improving. This assumes greater significance in the realm of disaster management as the disaster incidences are most often separated by long period of quiescence and moreover, the stakes being very high one cannot afford to wait for the disaster to strike. Therefore, sharing of experiences is vital for capacity- building by improving and strengthening mechanisms so as to be prompt and effective when disaster strikes. To facilitate this, Disaster Awareness Programs were conducted on the Disaster Risk Reduction Day that is observed on the 18th of September every year to remember the devastating tremors of 2011.

Prizes being distributed to school students on Disaster Risk Reduction Day

The district administration accords a lot of importance to capacity building of the local populace for mitigation and preparedness purposes.

The Disaster Risk Reduction Day was organized with the main objective to disseminate key messages of disaster awareness to public through skits, lectures, live demonstrations, etc. School safety campaigns have also been conducted in a concerted manner to raise awareness among the children.

Mock drills being conducted as a part of the awareness program

Apart from these activities, various capacity-building measures have been undertaken in the district. Under the National School Safety Program, many schools have been selected for building the capacity of the schools besides sensitizing the school authorities on the various safety aspects of disaster management, mitigation and preparedness in schools and thereby imparting knowledge and understanding among school students for better resilience. In addition to it, the topic of disaster management has been included in the school curriculum.

The Sikkim Manipal Institute of Technology, Majitar, East Sikkim has introduced two years distance learning Master of Science (M.Sc.) Degree courses related to disaster management to meet the growing demand experts in the field of disaster mitigation, preparedness, etc.

The State Institute of Rural Development (SIRD) has Disaster Management Faculty and Field Facilitators for providing disaster management training to the PRIs, NGOs in blocks, and various stakeholders with the help of resource persons from various institutes and SSDMA. Apart from the SIRD, the Capacity Building Institute also imparts training in the realm of disaster management. The rescue forces are also trained and made more conversant with the terrain so as to enable greater response during relief work.

To augment the capacity-building initiatives, the literacy programs for adult conducted by the GPUs can include elements of disaster risk management and preparedness in their curriculum to mainstream the field of disaster management. In addition to it, the Anganwadi Workers can also be trained in Basic First Aid and Home Nursing.

Ultimately, the community remains the weakest link in all disasters and there is a growing necessity to train and equip young volunteers and prepare the community to face any exigency.

COORDINATION AMONG DEPARTMENTS AND RESPONSE MECHANISM

A proper coordination among the various stakeholders is crucial to manage disasters promptly. Thus, the District Disaster Management Authority has prepared several versions of the Disaster Management Plan in the quest to make it more user-friendly and suit the needs of all stakeholders.

It has also ensured proper coordination among various departments and arms of the government like, administration, Urban Development & Housing Department (UD&HD), Roads & Bridges Department, Civil Aviation and Tourism Department, etc. during the time of disasters as well during the preparedness stage.

The district has a system of 'First Responder' and their roles are clearly laid down by the District Disaster Management Authority. In times of crises, the 'first responders', typically the people residing in that particular area, would be the ones who would respond immediately to such situations.

Panchayat members and field officials like Head Surveyors, Revenue Surveyors, Booth Constables and Home Guards have been made as the 'first responders' who would disseminate information to the concerned authorities. Similarly, in the urban areas of the district, the ward Councillors and members of Civil Defence will be the 'first responders'.

At the Gram Vikas Kendra (block) level, the Gram Vikas Adhikaris and the Zilla Panchayat members have been designated as the 'second responders'. The Gram Vikas Adhikaris have been given additional responsibilities as Incident Commanders who would mobilize manpower and the resources available at the Gram Vikas Kendra level and disseminate the information to the concerned authorities. The Sub-Divisional Magistrate (SDM) will take charge of the Incident Command System at the Sub-Division level duly mobilizing the man power and resources from line departments, Army, GREF, private agencies, NGOs, etc.

The importance of a timely, adequately resourced and coordinated approach to disaster response is essential in the district owing to its increased pace of urbansation, and urban congestion, particularly in Gangtok.

RESOURCE MANAGEMENT DURING DISASTERS AND EMERGENCY

The resource management has to be clean, green, smart and sustainable and not a knee-jerk reaction to the tragedy. Thus, it is necessary to efficiently manage the resources that are available in the district during disasters to minimize casualty and hasten recovery.

The district has been plagued by gross mismanagement of scarce resources in the past. It was felt that the redesignation of the Land Revenue Department as Land Revenue and Disaster Management Department has resulted in shortage of dedicated manpower for undertaking various post disaster activities. Furthermore, it has been observed that communication is majorly affected during such disasters and surface connectivity to far flung areas is rendered impossible.

Sometimes, telecommunication is also affected hindering rescue and relief work. Search and Rescue equipments also were not available in sufficient quantities during the tremors of 2011.

However, the state has overcome these obstacles and has been a pioneer in effectively utilizing its resources when Sikkim became the first state in the country to constitute a platoon of Disaster Rescue Unit comprising 30 Home Guards and Civil Defence Volunteers for search and rescue operations in the event of any disaster in the state. The Civil Defence setup has been revamped

and its focus has been shifted from the town to district in the sense that the District Magistrate has been made the Controller to command the Civil Defence Corps. Thus, it becomes the responsibility of the Controllers in the districts to enroll volunteers and form the Civil Defence Corps.

The State Disaster Response Force stationed at Sikkim Armed Police Camp, Pangthang, East Sikkim and the Home Guards & Civil Defence Platoon stationed at Gangtok caters to the emergencies that may arise in the East Sikkim district. Moreover, a Road Map has also been prepared to make the district safe and disaster resilient.

In view of revamping the Civil Defence setup in the state, the Ministry of Home Affairs has also sanctioned Rs. 1.46 crore for the construction of Civil Defence Institute at Pakyong, East Sikkim and this certainly would enable the district to better manage the human resource by imparting training and equipping the force with all the requisite skills.

It must be remembered that role of Civil Defence in disaster management has been expanding and comes in to play at various stages of disaster management like pre disaster, during disaster and also post disaster. In addition to that, Civil Defence must also assume a greater role in capacity building in the districts by working in tandem with Gram Panchayats, Urban Local Bodies, NGOs, school and college students, etc.

To further manage the resources efficiently, the need for more helipads is felt since the shortage of helipads and other potential landing sites delayed effective response on the aftermath of the 2011 earthquake. In addition to this, structural audits of the major urban areas of the district like Gangtok are essential to reveal the weaknesses of the present structures in the district so that with appropriate retrofitting these structures can be made resilient. Finally, effective and optimal management of resources in the district will get a fillip when the proposed Disaster Management Institute will come up in the state in the near future.

TECHNOLOGY INTERVENTION FOR EMERGENCIES AND DISASTER MANAGEMENT

Geographic Information System (GIS) and Remote Sensing (RS) are indeed some of the most effective and useful tools in disaster management. Since the Sikkim Himalayas is more vulnerable to landslides, remotely sensed data can be of immense help to assess the severity and impact of damage due to these calamities. In the disaster prevention stage, GIS is used in managing huge levels of data required for vulnerability and hazard assessment.

Similarly, in the disaster preparedness stage, it is a tool for planning evacuation routes, designing centres for emergency operations and for integration of satellite data with other relevant data in the design of disaster warning systems. This also comes to the rescue in the disaster relief phase when GIS coupled with Global Positioning System (GPS) is indispensible in search and rescue operations in places that have been ravaged. In the disaster rehabilitation stage, GIS can be used to organize the damage information and post disaster census information and also in the evaluation of the sites for reconstruction.

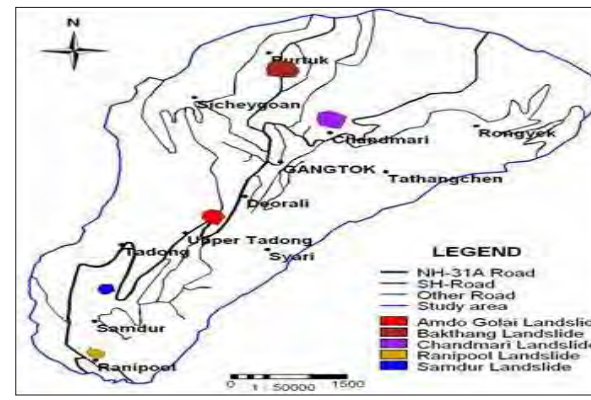
Moreover, it helps in 'Disaster Mapping', i.e. drawing of the areas that have been through excessive natural or man-made troubles to the normal environment where there is a loss of

life, property and infrastructure. Remote sensing is also emerging as a popular means of map preparation while GIS can be used for storage, analysis and retrieval. Under remote sensing techniques, maps can be prepared using satellite data or aerial photographs and then digitised and stored on computers using GIS software.

Disaster maps generally show risk zones as well as disaster impact zones. These are marked areas that would be affected increasingly with the increase in the magnitude of the disaster. These could include landslide hazard maps, flood zone maps, seismic zone maps, forest fire risk maps, industrial risk zone maps etc. It helps in conducting the multi hazard risk vulnerability assessment of the district and particularly Gangtok.

Landslide hazard zone mapping involves a detailed assessment and analysis of the past occurrences of landslides in conditions of their location, size and incidence with respect to various geo-environmental factors that cause landslides and mass movements.

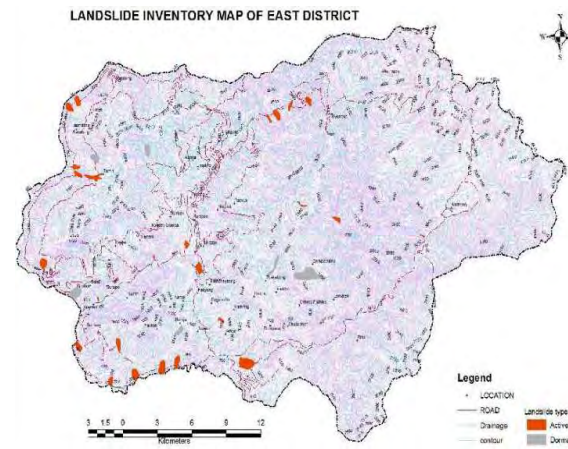
The services of National Informatics Centre (NIC) are also harnessed to strengthen the communication and information database systems related to disaster management at the district levels. The G.B. Pant Institute of Himalayan Environment and Development, Sikkim Unit located in Gangtok has been contributing a great deal in assisting the district administration in the technological aspects of disaster preparedness.



Road Network and Landslide Map of Gangtok

With the technical assistance it has become easier to carry out rescue operations efficiently. It has also helped in making it possible to forecast and simulate disaster occurrences with regard to specific locations- aiding in the initial stages of search and rescue operations.

Techniques like satellite imagery and GIS have helped in identifying areas that are disaster prone, zoning them according to risk magnitude, inventory population and assets at risk and simulating damage scenarios. These tools are even useful in managing disasters as they provide instant access to information required in management decisions.



Landslide Inventory Map of East Sikkim District

Modern communication systems have also proved very useful, particularly in search and rescue operations. They not only help in providing warnings before the disaster, but also help in creating awareness which helps in reducing panic, confusion and mental stress. A good communication network system helps in establishing contacts between relief teams which, with better central coordination, can work more efficiently.

The images from CARTOSAT 1 and CARTOSAT 2B have in the past helped in providing useful guidelines for vulnerability assessment and also for planning and formulation of mitigation strategies. However, a major drawback is that long-term reliable data are available only for Gangtok and therefore the other areas of the district are neglected.

MITIGATION AND PREVENTION MEASURES FOR DISASTER RISK REDUCTION

Disaster risk assessment has been carried out in the district to determine the vulnerability through the identification of hazards, analysis of risks and likelihood and consequence of disaster occurring. Multi Hazards Risk Vulnerability Assessment (MHRVA) has been undertaken in the district with respect to the following hazards:

Earthquake hazards	Landslide hazards
Fire hazards	Flood / Flash floods hazards
Avalanche hazards	Drought hazards
Hailstorm hazards	Riots and stampedes

While carrying out these assessments, the hazard prone areas have been identified in terms of its intensity and scale and the risk level is identified up to the household levels. The assessment was carried out on a 1:50000 scale using GIS platform.

The East Sikkim district being the most populous district has many large towns and villages. Similarly, a Multi-Hazard and Risk Vulnerability Assessment of Gangtok Municipal Corporation Area has been compiled on a 1:2000 scale. However, similar types of assessments must be carried out for the other major and fast growing towns like Rangpo, Singtam and Pakyong.

The assessment of the area gives a general idea about the condition of the land in a regional sense. Thus, the less vulnerable areas can be selected for infrastructural development programs and the vulnerable areas can be prepared with concerted mitigation efforts. Furthermore, the implementation of appropriate and targeted mitigation initiatives can offer more sustainable cost savings to communities and government in the event of a disaster.

A risk-matrix chart has also been prepared to assess the impact of each disaster the district.

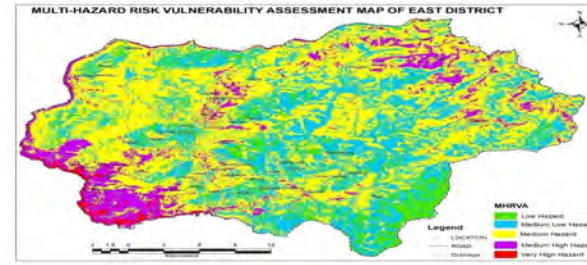
INSTITUTIONAL FRAMEWORK AS PER THE DISASTER MANAGEMENT ACT, 2005

The state government has constituted the District Disaster Management Authority, East District in August, 2010 in accordance with the provisions of sub-section(1) of section 25 of the Disaster Management Act, 2005 (53 0f 2005). The District Disaster Management Authority, East District, (DDMA) headed by the District Collector adopts a holistic and integrated approach to disaster management exhibiting a paradigm shift from relief-centric response to a proactive prevention,

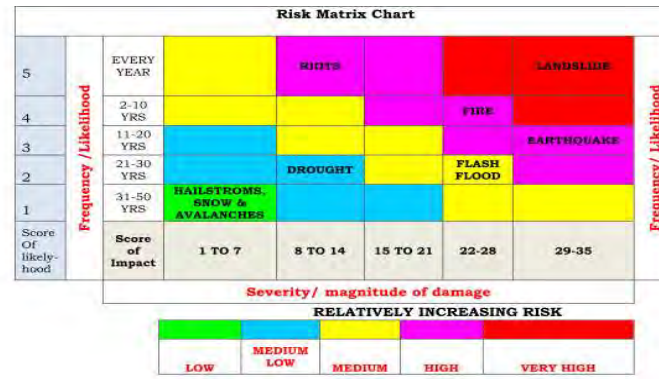
mitigation and preparedness-driven approach for conserving developmental gains and to minimize loss of life, livelihood and property.

The District Core Committee for Crises Management chaired by the District Collector evaluates the disaster preparedness for different types of calamities that may occur at different times of the year. The committee takes stock of the situation, monitors the routine preparedness efforts, suggests improvements in response mechanism and prepares a plan for disaster management in the district.

A District Crisis Management Sub-Committee (Search & Rescue Operation) is also in place and has the responsibilities of search and rescue, evacuation of injured to the hospital, fire fighting, protection of public properties and prevention of looting and traffic management to name a few.



Multi-Hazard Hazards			
Hazards Category	% of Area	% of Household	Risk type
Very High Hazards	1.05	1.90	Very High
Medium High Hazards	12.55	16.81	High
Medium Hazards	38.70	48.67	Medium
Medium Low Hazards	36.30	23.27	Low
Low Hazards	10.08	9.19	Low



Multi Hazard Risk Vulnerability Assessment Map of East Sikkim District

The District Disaster Management Sub-Committee (Relief & Rehabilitation) takes care of the arrangements for medical camps, relief camps and distribution of relief materials, logistical support, disbursement of ex-gratia payments, restoration of communication networks, assessment of damages and so on.

FUND PROVISIONS FOR MITIGATION, PREPAREDNESS, RESPONSE AND RELIEF WORK

The funds for the disaster management activities in the district are broadly classified under the heads of ex-gratia payments, capacity building and disaster preparedness. The funds for capacity building are normally distributed among the four subdivisions of the district and for disaster preparedness, it is on a case to case basis.

The fund provisions for the East Sikkim district for the year 2014-15 is as follows:

Sub-Division	Ex-gratia	Capacity Building	Disaster Preparedness	Total for each Sub-Division
Gangtok	Rs. 25,00,000	Rs. 5,00,000	-	Rs. 30,00,000
Pakyong	-	Rs. 2,00,000	-	Rs. 2,00,000
Rongli	-	Rs. 2,00,000	-	Rs. 2,00,000
Rangpo	-	Rs. 2,00,000	Rs. 5,00,000	Rs. 7,00,000
Total	**Rs. 25,00,000**	**Rs. 11,00,000**	**Rs. 5,00,000**	**Rs. 41,00,000**

CRISIS SITUATIONS DURING DISTRICT TRAINING

Since the district training commenced when the monsoon was in full spate, there were a few incidents of landslides in and around the district where I could visit and observe the damages and the action taken. The officials from various departments coordinated and assisted the geologists to assess the damage and suggest solutions to arrest the landslide and slumping.

Damage to the edges of the roads

Rockfall along the steep valley face

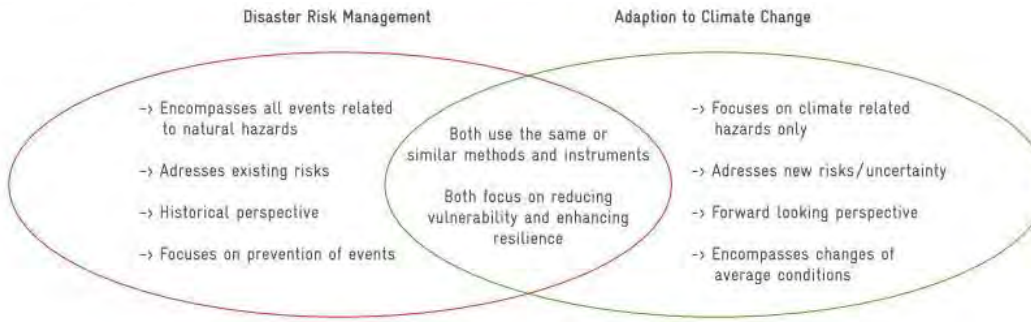
The officials from the district administration and ward councilors patiently listened to the apprehensions of the local residents and assured that appropriate measures would be taken to assuage their grievances.

CONCLUSION

In recent times, natural disasters have become more common and catastrophic, therefore, necessitating the need for an all encompassing disaster management framework. To add to our torment, climate change has also changed our perceptions of disasters. The increasing incidents of weather-related hazards are not seen as 'natural' anymore, but as of our own making.

Disasters can undo decades of development efforts and reverse poverty reduction achievements. Therefore, it also becomes essential to systematically assess, reduce and manage risks and find synergies between disaster risk management and climate change adaptation efforts. The district disaster plan should also integrate climate change adaptation and disaster risk reduction since climate change has known to be responsible for increasing the frequency and intensity of disasters. Hence, a Climate Smart Disaster Risk Management approach should be adopted. Similarly, their needs to be a greater integration of disaster management plans with other welfare schemes of the state to promote greater coordination among the various departments.

Overlap between DRM and adaptation to climate change



Additionally, it is imperative that the district adopt the recent innovations in disaster management like community based disaster risk management and strengthen the village disaster management which is prevalent in the district. Making a village disaster management plan is indispensible and a vital component of the Community Based Disaster Risk Management Plan (CBDRM). This provides ample opportunities for the local community to evaluate their own situation based on their own experiences. The local community not only becomes part of creating plans and decisions, but also a major player in its implementation.

Since it is safe to presume that the community is the real sufferer and first responder to disasters, it has also a developed a coping mechanism and strategy to minimize the impact of disasters. Thus, it is essential to involve the communities in disaster preparedness and consider them as proactive stakeholders and not as passive targets of intervention. It is also wise to appreciate the local knowledge and resources and enhance them to improve the capacity of the people to withstand the impact of disaster.

Building community leadership and a chain of trained community cadres is very much possible in a close knit community as the one that exists in Sikkim and it must be leveraged through participatory approach to harness the resilience and resourcefulness of the communities to cope with the exigencies. Local knowledge best solves local challenges.

Further, in the East Sikkim district, it is not the occurrence of disasters of a large scale that affect lives and livelihoods, but the accumulated losses due to the seemingly minor landslides, rock falls, etc and greatly increases the vulnerability at the local level. Therefore, putting in place such a comprehensive disaster management framework would positively equip the people to face any impediment that comes their way with unwavering optimism and hopefulness.

District Disaster Management Framework, Puri District

Monisha Banerjee, IAS

FOREWORD

Natural disaster or calamity brings widespread damage to the property and lives of vulnerable people. The District Disaster Management Framework intends to mitigate the impact of such disasters be it floods, cyclone, earthquake or drought etc. Undeniably poverty in rural areas is directly proportional to the damage due to its impact. The responsibility of District Administration becomes manifold to prepare themselves for mitigation. It includes relief, rehabilitation and preventive measures to lessen the impact. Puri district being a coastal district is vulnerable to all such calamities.

A treatise on such management has been attempted taking all things into consideration and obtaining valuable feedbacks and past experiences of all the stakeholders and line departments.

Chapter 8

MULTI HAZARD DISTRICT DISASTER MANAGEMENT FRAMEWORK

1.1 VISION

The District Disaster Management Framework has a multi hazard approach and incorporates various actions, which will promote a culture of preparedness. Trigger mechanism is an emergency quick response mechanism, which would spontaneously set in motion all disaster management activities for response and recovery without loss of critical time. The aim of the Plan is – fool proof communication, authentic and accurate database, documented and rehearsed, to be activated in the shortest possible time with minimum simple orders and procedures ensuring active participation by Government, Community and volunteers at all levels, making optimal utilization of men, material and resources with no gaps or no overlaps to prevent loss to lives and minimize loss to property ensuring fastest restoration of the situation.

1.2 OBJECTIVES

The objective of the District Disaster Management Plan is to ensure prevention, response and recovery to facilitate planning, preparedness, operational coordination and community participation in the shortest possible time.

- To mitigate impact of natural and man-made disasters through preparedness at District, Block, Panchayat and Village level.
- To provide effective support and resources to individuals and groups in disaster.
- To assist the District Administration, Line Departments, Block Administration and community in developing coping skills for disaster management.

- To provide an organized, systematic, flexible approach to deal with a natural calamity.
- To disseminate factual information in a timely, accurate and tactful manner while maintaining necessary confidentiality.
- To help develop immediate and long-term support plans for vulnerable people following a disaster.
- To elicit the least possible disruption to the normal life process when dealing with individuals in disaster.
- Ensuring active participation by Government, Community, Volunteers and NGOs at all levels making optimal utilization of man, material and resources at the time of disaster and increase their participation in preparedness, prevention, development, relief, rehabilitation and reconstruction process.
- To have response system in place to face any eventuality.

1.3 PERSPECTIVE AND STRATEGY

A formal plan for managing disaster would include:

- Pre planning a proper sequence of response actions.
- Allocation of responsibilities to the participating agencies.
- Developing codes and standard operating procedures for various departments and relief agencies involved.
- Inventory of existing facilities and resources.
- Mechanism for effective management of resources.
- Coordination of all relief activities including those of NGOs to ensure a coordinated and effective response.
- Coordinating with the State response machinery for appropriate support.
- Testing the plan including mock drills.
- Defining levels of acceptable risk.
- Monitoring and evaluation of actions taken during relief and rehabilitation.

1.4 TYPES OF DISASTER

- Types of Disasters experienced in the Puri District:

Common Disasters
Flood
Cyclone
Drought
Hail Storm
Earthquake
Tsunami
Fire Accident
Heat Wave

1.5 WHO FORMULATES AND CARRIES OUT THE FRAMEWORK & WHEN

The Disaster Management Frameworks have been formulated starting from the village level up to the district level. The plan clearly indicates the role and responsibility of each team member. The Collector in the District level, Sub-Collector in the Sub-Divisional level and the BDO in the Block level will be chief of the team. The Sarpanch plays the key role in GP level and the Community with guidance of Village Disaster Management Committee to carry out this plan in the village level. Civil Society Organisations also have a vital role during the implementation of this plan in the ground level.

The Codal provision of Orissa Relief Code envisages constitution of District Level Natural Calamity Committee which is the apex committee in the District to discuss and finalize the District Disaster Management Plan. The Committee also takes stock of the arrangements, monitors preparedness and suggests improvements in response mechanism and develops a document for effective management of Disasters in the District. The Committee members are as follows:

Sl.No.	Functionaries	Designation
1	District Collector & District Disaster Manger	Chairman
2	All M.P. & M.L.A. of the District	Member
3	Suptd. Engineer	Member
4	Sub Collector	Member
5	CDMO	Member
6	CDVO	Member
7	District Emergency Officer	Member Secretary
8	Chairperson / Vice Chairperson of Zilla Parishad	Invitees
9	Chairperson of Panchayat Samities	Invitees
10	Superintendent of Police	Invitee
11	Addl. District Magistrate	Invitee
12	Project Director, DRDA / CADA	Invitee
13	District Development Officer	Invitee
14	Dy. Director, Agriculture/ Dist. Agriculture Officer	Invitee
15	All Tahasildars and Block Development Officers	Invitee
16	Executive Engineers, Irrigation / PHED/ PWD/ Rural Works Division/ Minor Irrigation/ Lift Irrigation/ RWSS Division/	Invitee
17	All Executive Officers of ULBs	Invitee
18	C.S.O/ R.T.O/D.I. & P.R.O/C.I/D.I. of Schools	Invitee
19	Leading NGO Representatives nominated by Chairman	Invitee
20	DET	Invitee

1.6 DISTRICT DISASTER MANAGEMENT AUTHORITY (DDMA)

As per the provisions under sub-sections (1) & (2) of Section 25 of the Disaster Management Act-2005, the State Government has constituted the DDMA of Puri District, consisting of the following members, vide Revenue & D.M. Deptt. Notification Dt. 12th November, 2010. The meeting of District Disaster Management Authority was held on **04.04.2013** to discuss various

issues including preparedness plan to meet the possible heat wave condition & water scarcity problem during summer season and preparation of DDMP.

1.7 OPTIMUM STRATEGY

Framing of a Comprehensive District Disaster Management Plan to combat the effects of disasters and minimize loss of life and property. The role and responsibilities of different stakeholders involved in disaster management such as Government officials, Public, NGO sector, Civil Defence, Interest groups, CBOs, and the community in disaster mitigation during different stages of disaster are included in the Plan.

PRE DISASTER PERIOD (Preparedness)

1. Formation of District Disaster Management Committee.
2. Formation of District Disaster Management Plan for the running year.
3. Hazard Analysis & Resource Inventory.
4. Allocation of responsibilities to the individual actors/ Groups/ Institutions/ Organizations.
5. Broadly defining the responsibilities and operational jurisdiction.
6. IEC Programme
7. Training and capacity building.
8. Logistic arrangement – Cyclone / Flood shelters, Food items like Rice, Chuda & Guda, Drinking water, Medical facilities, clothing, other essential commodities, communication network like wireless system / VHF, HAM – Radio, V-sat, Vehicle and Boat, Power Boat, Fire Brigades etc. Check Memo, Do's & Don'ts.

DURING DISASTERS

1. Functioning of District Control Room & other Block / Tehsil / Line Departmental Control Rooms.
2. Dissemination of warning/ information.
3. Coordination meeting with officials at District Control Room in each 12 hours interval to take stock of the situation.
4. Alert CDMO / CDVO / CSO/ RTO / Field Officers (Revenue / Line Department) to remain in readiness to gear up their action immediately after abetment of crisis.
5. Immediate freezing of reasonable POL stock with different Petrol Pumps.
6. Rescue Operation / Evacuation teams (already identified) providing infrastructure facility and movement to rescue centers.
7. Management of Rescue shelters.
8. Administration of Relief.
9. Preparation of the Daily situation report.
10. Daily stock of the situation by District Magistrate and Addl. District Magistrate.

POST DISASTER

1. Assessment & enumeration of damage.
2. Distribution of Relief / Emergent Relief as per the provisions of ORC.
3. Monitoring Relief Operation organized by outside agencies / UN Agencies / Red Cross / NGOs / PSUs other states etc through District Administration.
4. Restoration of Communication – Roads & Railways.
5. Restoration of Electronic communication system.
6. Immediate arrangement of free kitchen in the cutoff/ shelter camps and inaccessible areas.
7. Ensuring transportation of Relief Materials to affected pockets.
8. Ensuring safeguarding of belongings of the evacuees.
9. Maintenance of Law & Order.
10. Ensuring safe availability of Drinking water.
11. Provision of Medical facilities and Minimum sanitation.
12. Removal of debris and disposal of carcasses.
13. Helping the evacuees to return to their homes.
14. Special care to children, Lactating Mothers, Old & infirm.
15. Documentation of the entire events.
16. Keeping liaison with field and state Govt. & interaction.

RISK ASSESSMENT AND VULNERABILITY ANALYSIS

3.1 DISASTER SPECIFIC PRONENESS TO VARIOUS TYPES OF DISASTERS:

Type of Hazards	Time of occurrence	Potential Impact	Vulnerable areas
Cyclone	May, September, October, & November	Loss of life, livestock, crop and infrastructure	All the Blocks
Drought	April to June	Crop Loss, Water scarcity	All the Blocks
Epidemics	June to December	Loss to human life	68 GPs in 11 blocks
Flood	June to September	Loss of life, crop, infrastructure and animals	All the Blocks
Fire Accidents	Summer & winter	Human Loss and house damage	All the blocks
Sunstroke	April to June	Loss of life of human being and livestock	All the blocks
Tsunami	Any time	Loss of life of human being and livestock	86 Villages of 33 GPs in 6 Blocks
Earthquake	Any time	Loss of life of human being and livestock	5 Blocks

3.3 DISASTER PROBABILITY

Type of hazard	Month of occurrence											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Flood						←	—	→				
Cyclone				←	→				←	—	→	
Drought						←	—	→				
Sunstroke			←	—	→							
Village Fire			←	—	—	→						
Earthquake	●	—	—	—	—	—	—	—	—	—	—	●
Industrial Disaster	●	—	—	—	—	—	—	—	—	—	—	●

3.4 RANKING AND PROBABILITY OF DISASTER EPISODES IN THE DISTRICT

Basing on the disasters experienced by the district in the last 15 years, probability of flood ranks first. Accordingly the occurrence of other disasters such as cyclone, fire accident, drought, epidemic and earthquake rank as orderly mentioned.

Chapter 8

Disaster	Year
Flood	1956, 1959, 1969, 1970, 1986, 1987, 1988,1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2001, 2003, 2005, 2006,2008,2011.
Cyclone	1967, 1968, 1970, 1971, 1972, 1973, 1999.
Fire Accidents	Every Year in summer and winter.
Drought	1956, 1970, 2000, 2002, 2010.
Epidemic	During cyclone & floods.
Earthquake	2013.

CAPABILITY ANALYSIS

4.1 INVENTORIES AND EVALUATION OF RESOURCES

- **Boats**

  Power Boats supplied by the SRC are stationed at following places under the control of the respective BDOs.

  - PURI SADAR
  - GOP
  - KAKATPUR
  - KANAS
  - ASTARANGA
  - PIPLI
  - NIMAPARA
  - BRAMHAGIRI
  - DELANG
  - KRUSHNAPRASAD

  Apart from this, country boats are available at village level for utilization during calamities

➲ CYCLONE SHELTERS

There are 165 cyclone shelters available in the district for use during calamity.

The RD department is in charge of the safe shelters and the DI & CI of schools shall remain in charge of inspecting the safety of the School cum Cyclone Shelters. Shelter Managing Committee has been formed in some places to look after the logistic arrangements of the people taking shelter during calamities.

➲ STORAGE OF FOOD FOR INTERIOR, VULNERABLE, STRATEGIC AND KEY AREAS

All the Block headquarters and Gram Panchayat Offices are used as storage points when need arises. The BDOs and the Procurement Inspectors of RRCs situated at Block head quarters are the contact persons Block. The Panchayat Secretaries are the contact persons for the G.P. offices. Adequate quantity of rice are kept in each RRCs at each block headquarters for distribution to the victims as immediate relief. These locations are used as storage locations for medicines, blankets. Power boats and country boats are deployed at their nearest river site. 200 quintals of rice have been stored with each RRCs for immediate relief.

There are 42 K.Oil Sub-wholesalers and 8 kerosene wholesalers functioning in Puri district, who maintain fluid reserve of 2000 litres kerosene to be utilized during the period of natural calamity. In total, 1,00,000 litres kerosene is kept reserved with wholesalers and sub-wholesalers in Puri district covering all blocks. Rice will be kept reserve as per Govt. in Food Supplies & C.W. Deptt. allocation.

4.2 CAPABILITY ANALYSIS OF INSTITUTIONS IN THE DISTRICT

All the major district offices have been provided with a telephone connection. VHF communication exists at 2 Police Stations including outposts all over the district. Cyclone Warning Dissemination System has been installed at four block offices of Astaranga, Gop (Konark), Kanas and at Gram Panchayat Office of Kurujunga at Kakatpur by the Indian Meteorological Department. Apart from that one Wireless transmitter is exsiting in Reserve Police Line.

➲ VETERINARY OFFICES

There is one Veterinary Hospital, 15 Veterinary Dispensaries and 147 Livestock Aid Centers in the district

➲ POLICE / CIVIL DEFENSE

There exists 23 Police Stations, 11 Outposts in the district. The total number of Home guards in the district is 844 at present. The SP is the Commandant of Home guards.

➲ FIRE STATIONS

The district has 9(nine) Fire Stations functioning under a Fire Station Officer/ Asst. Fire Station Officer at each station at Puri, Shri Mandir near Lions' Gate, Brahmagiri, Krushnaprasad Satyabadi, Kanas Pipli, Nimapara and Astaranga.

➲ HOSPITALS / DISPENSARIES / PHCS / CHCS / UPHCS

Puri district is divided into 4 zones and one Senior Medical Officer is kept in charge of each zone for health activities. All the PHCs, CHCs, UPHCs are declared as Calamity Control Unit and one emergency squad will proceed to the spot on receipt of the information. The District Emergency Squad is formed comprising with one Medical Officer, One MPHS(M), One Sr. Helper.

In case of any natural calamity the squad shall proceed to the spot forthwith and start immediately Medical relief work.

➲ NGO MOBILISATION

NGO Coordination Meeting takes place on the 28th of every month. They are being organized to form response groups. 46 NGOs all over the District in coordination with the District Administration have formed Task Forces to carry on the relief and rehabilitation activities.

4.3 COMMUNICATION AND MEDIA INCLUDING MASS MEDIA

The District Administration has a number of CBOs / NGOs who help in preparing suitable public awareness materials to be distributed to the public. To ensure widespread dissemination of materials, it is desirable that the materials for awareness programmes at community level should be prepared in the local language.

The schools, colleges and other public institutions should be specifically involved in this programme of awareness generation.

4.4 ADMINISTRATIVE PREPAREDNESS FOR DIFFERENT HAZARDS

The following steps have been taken as a part of administrative preparedness to combat any eventuality during and immediately after the disaster:

1. Control Rooms are functioning round the clock in 11 blocks, 11 tahasils, Sub-Collector's Office, Offices of the CDMO, CDVO, District Agriculture, all Executive Engineers of Irrigation, R&B (PWD), RWSS, Rural Works Division, PHD.
2. Senior Level Officers from different departments will be assigned charges for 11 flood circle zones along with the BDOs of respective blocks.
3. Telephone Numbers have been made available to the Director Meteorological Centre, Bhubaneswar to intimate about the adverse weather.
4. SDO Telegraphs / Telephones have been requested to keep the lines in order at the time of calamity.
5. Rain recording stations installed in each of the 11 blocks. Daily report on rainfall is being obtained from the BDOs.
6. The Executive Engineers of Irrigation Division have been intimated to report Gauge reading of the rivers, daily during flood and to keep drainage clean

7. The Executive Engineers of Minor Irrigation Division have been instructed to repair all weak points/ breaches caused in the last flood and complete the left out work before the onset of monsoon, keep a close watch on the embankments passing through the habitations, remain alert with men and materials to face any eventuality.
8. Executive Engineer, RWSS has been directed to repair / replace the defunct tube wells on war footing basis before the rainy season
9. The Superintendent of Police has been intimated to monitor the installation of Police Wireless Stations and make arrangements for army assistance.
10. CSO has been directed by the Collector and District Magistrate to store adequate food stuff at interior, vulnerable strategic and key areas for immediate relief.
11. NGOs identified block wise and task force formed in collaboration with the district administration to carry out relief operation, rescue and evacuation, etc.
12. CDMO instructed to arrange Medical Relief Camps and medical teams to keep ready to face any eventuality
13. Indent of different vaccines has been taken to protect animals against contagious diseases, medicines supplied to the field functionaries for routine treatment as part of veterinary measures.
14. PWD Officer will look into the repairs of roads, bridges, concrete steel work and make other necessary arrangements as per requirement

PREVENTION & MITIGATION STRATEGY

5.1 DISASTER SPECIFIC MEASURES AND APPROACHES

Preparedness Measures for different Departments Collector and District Magistrate

- Training & Mock drill of officials designated for disseminating a Cyclone/ Flood warning.
- Public-address system to be kept ready along with vehicles.
- Battery/ Charging sets to be kept charged with arrangements for stand by Battery sets.
- Rescue groups to be Mock drilled.
- Areas to be identified to be cordoned off.
- Public information centers activated.
- An officer to be appointed as the relief officer.
- Arrangements for Trauma counseling facilities.
- Family pack should be made in advance.
- Ensuring MSL (minimum standard limit) at all the fair price shop/ Wholesalers etc.

POLICE DEPARTMENT

- Ensure functioning of the warning system.
- Formation of team
- Delegation of areas
- Formation of Zones/ Sub-Zones

REVENUE DEPARTMENT

- Holding of natural calamity meeting in the month of May and October.
- Joint inspection
- Formation of Zones/ Sub-Zones
- Review progress
- Arrangement of boats and transport, based on the risk assessment, for evacuation
- Provision/ arrangement of rescue kit at risk prone area.
- Equipments to be ready
- Formation of team
- Delegation of areas

HEALTH DEPARTMENT

- List out the staff with contact address
- Stock position of the sub-center and PHC/ AWCs
- Prepare the plan and indent for stock
- Train paramedical staff/ ANMs/ Male Health Workers/ Volunteers/ Task Forces/ Anganwadi Workers for use and providing minimum health services to the community.
- Arrange for mobile health unit for inaccessible areas
- Health Awareness Campaign
- Arrangement of vehicle for uninterrupted mobility
- Repair of Sub Centers buildings
- Dis-infections of Drinking water Sources thrice before flood season at least, one month before

IRRIGATION DEPARTMENT

- Holding of natural calamity meeting in the month of May and October
- Awareness Generation
- Provision/ arrangement of sand bags in risk prone area
- Equipments to be ready
- Formation of team

RD & R&B DEPARTMENT

- Identification of weak-points
- Repair of weak roads/ structures/ canals before hazard season
- Stockpiling of building material
- Arrangement of equipments for road clearance

ELECTRIC DEPARTMENT

- Regular identification of faults

- Regular checking and repair of weak points. Transformers
- Stockpiling of equipments/ accessories
- Skill development training / orientation
- Precautions/ protections near high voltage electric equipments installed
- Stopping illegal consumption of electricity

NON – GOVERNMENT ORGANIZATION (NGO)

- IEC activities on disaster management
- Community mobilization
- Ensure regular meeting of NGO co-ordination cell

WARNING DISSEMINATION PHASE

Responsible Department	Activities		
	Pre	During	Post
Collector, ADM, Emergency Officer	• Verify inventory of Resources • Setting up of Control Rooms • Communication link with all concerned with disaster preparedness • Coordinate with blocks and neighbouring districts • Coordinate with NGOs and NGO Coordination Committee • Ensure functioning of all communication and warning system • Update databank	• Provide information to all areas about weather • Collection of information and providing it to the state • Expending funds for emergency needs	• Provide information about the relief and rehabilitation programme • Order CESCO to disconnect electricity supply for the affected area
BDO and Tahasildar	• Alert all departments to be present at their headquarters • Convene meeting of DDMC	• Collection of information and providing it to the DCR • Procuring locally needed emergency	• Report to the district administration on information from field level
Revenue	• Close contact with district administration • Alert officials to remain in HQ	• Disseminate day to day information of the position of the blocks	• Ensure cooperation of the public / task force during damage assessment

Responsible Department	Activities		
	Pre	During	Post
Police/ Civil Defence/ Fire Brigade	• Make all available Police persons in the district available to the district administration	• Inform BDOs on receipt of any information • Recruit casual labourers	• Report of the District Collector
	• Ensure functioning of Police Stations • Alert police officers to remain in HQ • Activate a public information centre		
Irrigation	• Organize round the clock inspection and repair of breaches, culverts, irrigation channels, bridges and embankments • Arrange additional sand bags, cement bags, bamboo mats and bamboos	• Organize round the clock inspection and repair of pumps, generators, motor equipments and station building • Provide all technical assistance in disaster affected area	• Inspect the inlet and outlet to tanks to check obstruction by trees and vegetation

EVACUATION PHASE

Responsible Department	Activities		
	Pre	During	Post
Collector, ADM, Emergency Officer	• Order evacuation on priority basis of seriously injured, sick, children, women, handicapped, old people and able bodies • Requisite for additional rescue equipments such as boats, transport vehicles, etc.	• Provision of food to rescue population through CSO • Ensure precautionary measures through student mass	• Ensure evacuation done safely • Road clearance. • Eviction of encroachments
PWD	• Check evacuation routes and assist people in evacuating an areas	• Community assistance mobilized for road clearing	• Despatch extra transport vehicles from headquarters
Health	• Deploy senior medical officer • Make arrangement of medical facilities	• Ensure potable water supply or packed water • Provide medical help • Help the injured to move to hospital	• Ensure priority for shifting of those seriously injured to hospital • Provide first aid

Responsible Department	Activities		
	Pre	During	Post
Police	• Deployment of police staff and armed force for evacuation • Arrangement for the safety of the property of the people	• Organize emergency transport for seriously injured people to hospital • Maintain law and order	• Take assistance from community leaders for appropriate security during evacuation
BDO and Tahasildar	• Ensure adequate warning mechanism • Prepositioning of task force	• Send search Groups to rescue people from risk areas • Help the injured people to move to the hospital	• Assistance to community in evacuation process • Keep record of missing persons • Inform the family members
NGO/ Volunteers	• Mobilize response group • Help the evacuees	• Keep close contact with community and district administration	• Assist community to find the missing persons

SEARCH AND RESCUE PHASE

Responsible Department	Activities		
	Pre	During	Post
Collector, ADM, Emergency Officer	• Intimate police to make arrangement for army assistance • Inform BDOs to coordinate with local NGOs • Requisition for extra boats • Provision of food to rescued populace	• Ensure volunteers carry out the search and rescue operation with the assistance of police • Identification of Causalities	• Keep record of the search and rescue operation and make assessment of active NGOs • Preparing reports on UD cases
Police	• Deployment of police personnel at risk points • Arrangement for the safety of the property of the people	• Organize Emergency transport for seriously injured people to hospital • Guard and rescue at the breach points	• Find out the missing persons and keep a record of them • Inform their family members

Responsible Department	Activities		
	Pre	During	Post
Block/ Panchayat Samiti/ Revenue/ RI	• Work division to the officers and NGOs for rescue operation • Prepositioning of food stuff, life saving drugs, cattle feed, polythene • Deployment of RIs and other supporting staff to assist in rescue operation • Propagation for evacuation • Arrange rescue kits	• Send search group to rescue the left behind persons in the risk areas • Arrange boats and transport for the people who are stranded • Reaching out to people with food stuff and other essential items	• Find out the missing persons and keep a record of them • Inform their family members • Provide tarpaulins as and when necessary and help the people to return to their homes • Arrange exgratia for the family of missing persons

RELIEF OPERATION/ PHASE

Responsible Department	Activities		
	Pre	During	Post
Collector/ Emergency Officer	• Procurement of relief materials • Requisition of relief • Need assessment	• Coordinating relief activities • Transportation and logistics	• Reporting and liasioning • Electricity restoration • Transportation/ communication restoration • Water supply restoration.
BDO/ Tahasildar	• Stock relief Materials/ Medical equipments for distribution • Arrange Cooking equipment for free kitchen • Prioritize disaster site depending upon the magnitude	• Provide dry food, cooked and packed food • Relief Distribution • Prepare a list of beneficiaries for free kitchen	• Start free kitchen immediately • Distribution of dry food and maintain record of distribution
PWD	• Install adequate road signs to guide and assist drives	• Identify locations for setting up relief camps	• Assessment of the arrangement
CDPO	• Submit indent for supply of baby food	• Distribution of baby food at shelter points	• Record maintaining and reporting
Police	• Identify anti-social elements and take necessary precautionary measures for confidence building.	• Provide conveys for relief materials • Assist community in road clearing operation	• Despatch officers to systematically identify and assist people and community in life threatening situations

HEALTH AND SANITATION PHASE

Responsible Department	Activities		
	Pre	During	Post
Health Officer/ CDPO/ CDVO	• Arrange ambulances/ transport for the transfer of seriously injured patients from villages and peripheral hospitals to general hospital • Deployment of staff in the cut off areas with medicine	• Establish health facility and treatment centers at disaster sites • Arrange emergency accommodation for auxiliary staff from outside the area	• Provide necessary medical aid • Collection of daily report on different diseases • Provide halogen for safe drinking water

5.3 MOCK DRILL

For the DDMF to be successful it is important that a mock drill of the plan be carried out under the in the presence of and under the observation of officer deputed from the other district and the District Collector. The mock drill should be enacted in the pre disaster season, twice a year after the District Natural Calamity Committee Meeting is convened. The mock rehearsal should start from the Control Room. This will help in finding out the preparedness level of the district level functionaries.

5.4 PLAN EVALUATION

The purpose of evaluation of DDMF is to determine

- The adequacy of resources
- Coordination between various agencies
- Community participation
- Partnership with NGOs

The ease of understanding and using the plan will also be important consideration. The plan will be updated when short comings are observed in

- Organizational structures
- Available technologies
- Response mechanism following reports on drills or exercises

5.5 POST – DISASTER EVALUATION AND UPDATION OF FRAMEWORK

A Post – disaster evaluation and updation of the framework should be done after the withdrawal of relief and rehabilitation activities in order to assess

- The nature of state intervention and support,
- Suitability of the organizational structure,
- Institutional Arrangements,

- Adequacy of Operating Procedures,
- Monitoring Mechanism,
- Information tools,
- Equipments,
- Communication System, etc.

The impact studies on the above operations for long term preventive and mitigation efforts are to be undertaken.

Framework for North District, Delhi

Rahul Singh, IAS

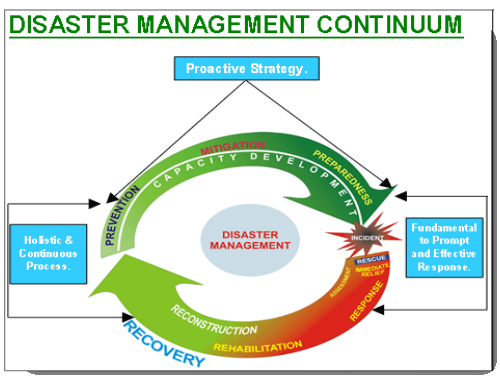
Chapter 9

INTRODUCTION

The Disaster Management Act, 2005 (DM Act, 2005) lays down institutional and coordination mechanisms for effective disaster management (DM) at the national, state, and district levels. As mandated by this Act, the Government of India (GOI) created a multi-tiered institutional system consisting of the National Disaster Management Authority (NDMA), headed by the Prime Minister, the State Disaster Management Authority (SDMA) which in case of Delhi is called Delhi Disaster Management Authority (DDMA) headed by the Lieutenant Governor and the District Disaster Management Authority (DDMA) headed by the Deputy Commissioner and co-chaired by elected representatives of the local authorities of the respective districts. These bodies have been set up to facilitate the paradigm shift from the hitherto relief centric approach to a more proactive, holistic and integrated approach of strengthening disaster preparedness, mitigation and emergency response.

A typical Disaster Management continuum as shown below, comprising of six elements i.e., Prevention, Mitigation and Preparedness in pre-disaster phase, and Response, Rehabilitation and Reconstruction in post-disaster phase, defines the complete approach to Disaster Management.

Disaster management cycle



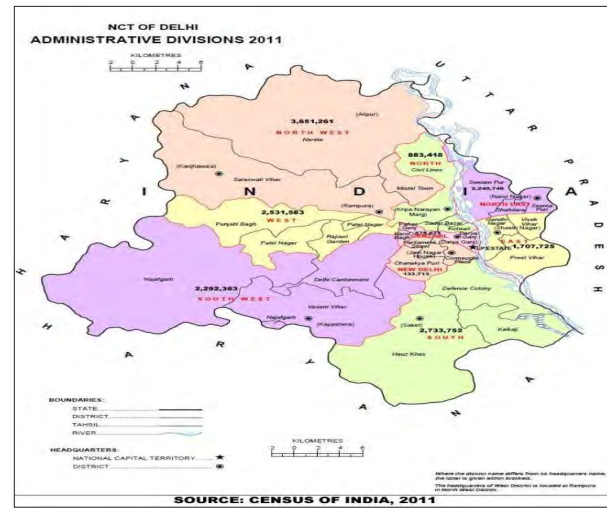
Delhi is prone to multi-hazards that include natural disasters such as Earthquakes, Fire, Flood and drought and other disasters that include the usage of Nuclear, Biological and Chemical weapons, terrorist threats, human epidemic (dengue, plaque) and genetically developed (SARS).

As per Section 25 of the DM Act, District North has set up its District Disaster Management Authority as the planning, coordinating and implementing body for all disaster related activities in the District.

District North has its District Disaster Management Plan as mandated by Section 31 of the said Act. This Plan includes certain most important concepts and approaches like significance of a District Disaster Management Plan for North Delhi as well as detailed profile of the district are coming in the first two chapters. The vulnerability and hazard situation and capacity available to face a disaster are elaborately described in the third chapter. Some other important discussions in this plan are the present institutional mechanism of disaster management; Mitigation plan, Standard Operation Procedures and action plan for the Emergency Support Functions. This document

concludes with chapters on additional information required for better disaster management. Mostly it contains the resource inventory of the district, emergency contact number, Performa for data collection, check list and many more. Besides, this plan also provides an exclusive list of schools in the district, various associations in the district and other such information required in a disaster situation.

Administrative map of Delhi



DELHI

The National Capital Territory (NCT) of Delhi occupies an area of 1483 sq. km. and lies between latitudes 28o 24'15"N to 28o 53'00" N and longitudes 76o 50' 24" to 77o 20' 30". It has been divided into nine Revenue Districts named as North, North-North, North, South-North, South, East, North-East, Central and New Delhi. Physiographically, Delhi is situated in Indo-Gangatic Plains, south of Himalayas and East of Aravallis and adjacent to Punhar (Punjab - Haryana) plain.

Now, NCT of Delhi, a Metropolis with over sixteen million of population is extremely vulnerable to multiple disasters. The entire region of Delhi is in Seismic Zone IV, at high risk to earthquakes. It is also vulnerable to the fires, epidemics, bomb blasts, riots, cyclones and terrorism. Any disaster can cause unprecedented and colossal damage to Delhi.

NEED OF PLANNING IN THE NORTH DISTRICT OF DELHI

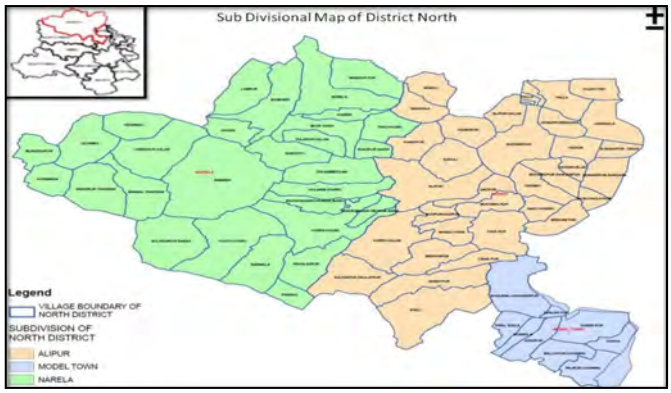
The District Disaster Management Authority (DDMA), headed by the Deputy Commissioner is the Apex Body for Disaster Management in District North. The setting up of the DDMA and the creation of an enabling environment for institutional mechanisms at the State and District levels is mandated by the Disaster Management Act, 2005.

North District is an integral part of the state of Delhi and so the vulnerabilities and risks at stake are not very different. Some of the very old parts of the state with their delicate constructions, narrow lanes and old hanging wires form a part of the district. It also has important installations like Wazirabad water works that may be potential target areas in wake of a terrorist attack. We cannot rebuild our environment and our structures no matter how unsafe they are, we still have a long way to go to achieve these goals but what we can do right now is improve our skills to fight better any calamity that strikes us and stand tall in wake of a disaster.

The present study i.e. District Disaster Management Plan is an assessment of the existing situation with strategies to improve it over the years. It may serve as a guidebook for district administration to take measures to reduce the vulnerabilities of areas under its jurisdiction and improve the

capacities of its people. It may also provide an inventory of resources that can be tapped in wake of a crises situation and thus help the administration cope in a better manner.

Sub divisional Map of District north



DISTRICT PROFILE

Delhi was divided in to 11 revenue district and district North is one of them. The district is having both rural and urban areas.

PREVENTION AND MITIGATION MEASURES

Disaster Mitigation contributes to lasting improvement in safety and is essential to integrate disaster management in mainstream planning. Broadly mitigation ways can be divided into two parts i.e. structural measure and non-structural measures. Structural measures undertake to strengthen buildings, lifelines and infrastructure to withstand any hazard. Non-structural measures emphasis on land-use planning, programmes for sustaining awareness, dissemination of information materials on do's and don'ts at the time of disaster. Once the area has been identified as hazard prone, it becomes important that the government and the community should practice these above-said measures. Based on this ideology, mitigation plan may vary according to hazards. The North district is being considered prone to earthquake and fire related hazards, incidences of building collapse are also very frequent in District North, Delhi.

Disaster Mitigation Measures

As it has been discussed in the previous chapters that district North lies in Zone IV. Risk gets compounded when hazard meets with Vulnerabilities as high dense population, weak physical structures and conventional construction technologies. Similarly, district is also vulnerable to high degree of fire and chemical explosions. Although, district has not faced any high intensity earthquake but studies envisages that Delhi can receive an earthquake of 6 to 7.5 ricter scale band.

Earthquakes can destroy buildings and infrastructure with secondary effects i.e. fires, embankments failures, release of poisonous gases, release of nuclear radiations, liquefaction etc. Therefore it is important to consider both primary and secondary effects into earthquake disaster mitigation planning.

So, an effective mitigation planning is necessary to reduce the risk involved in the district. For efficient disaster mitigation, the pre-disaster phase needs to be utilized for planning and implementing preventive measures on the one hand and working on preparedness activities on the other. Disaster is caused due to failure of manmade structures, lack of preparedness and awareness. So far, disaster mitigation efforts are mostly reactive. (HPC, 2001)

Structural Mitigation Measures

a. Retrofitting of Buildings:

Generally buildings of the district can be characterized in three parts i.e. Slums and JJ clusters, non-engineered and engineered buildings.

Categorization of housing typology in the district

S. No	Categories	Construction description	Resistance
1	Slums and JJ Clusters/unauthorized colonies etc	Weak constructions	May get damaged due to moderate intensity of earthquake
2	Non-engineered buildings	Brick construction Masonry buildings	May damage due to moderate to high intensity of earthquake
3	Engineered Buildings	R.C.C constructions with good designs but not necessarily earthquake resistant	May damage due to high intensity of earthquake.

** Note: Above table is based on reconnaissance survey and general observations*

The Bureau of Indian Standards (BIS) has developed its first code on a seismic design in 1962 (IS:1893-1962). However, till date there is lack of efficient legal framework to implement seismic code provisions in Delhi. As a result most of the building in Delhi does not meet codal requirements on seismic resistance. Even if new constructions may fulfill the requirement of seismic code provisions in their buildings, still a very large inventory of old buildings will remain deficient for seismic safety. Therefore we need to develop a rational seismic retrofitting plan for the government owned buildings and private constructions on priority bases. Generally public buildings are given first priority because they are lesser in number and at the time of disaster people can take shelter in these public buildings. Some of the important public buildings are schools, hospitals, government officers, community halls, fire and police stations, cultural buildings, communication buildings, cinema halls, meetings halls, historical monuments and important installations etc. The proposal for certification of such critical buildings from the point of view of disaster resilience is under consideration.

b) Need of systematic study to evaluate construction typology in the district:

As per Vulnerability Atlas of India (2007), out of 33.8 Lakh buildings in Delhi, over 31 Lakh are at medium risk of being affected by an earthquake, while 1.46 Lakh are at high risk. Out of 5, 23,703 houses in North district, only 32,381 are concrete (Census of India, 2011). Systematic studies are needed on vulnerability of different types of constructions in the area. This will require experimental studies to evaluate strength, stiffness and ductility of different types of constructions as well as analytical studies such as the Push over Analysis. Experiences of past earthquakes both in India and abroad have clearly outlined the vulnerability of multistory reinforced concrete buildings if not designed and constructed correctly. Huge number of multistory reinforced concrete buildings in Delhi, particularly those with open ground storey to accommodate vehicle parking, could also pose a major challenge in the event of a strong earthquake.

c) Construction Control

The best mitigation measure is to build strong built-in environment in the district. The district must ensure the implementation of building codes. The quality of buildings measured by their seismic resistance has its fundamental importance. Minimum designs and construction standards for earthquake resistant structures legislated nationally are an important step in establishing future minimum level of protection for important structure. India has building codes and regulations for seismic resistant design which needs to be enforced by municipal bodies. Some of the policy measures taken at state level are: Municipality Corporation has been asked to bring a circular shortly to make submission of actual structural drawings, besides the structural safety certificates mandatory for all buildings while seeking building plan approval. The Urban Shelter Board, GNCTD has been asked to urgently carry out structural audit of buildings in Delhi with the assistance of experts from NDMA, using RVSA (Rapid Visual Screening Assessment) and DVA (Detailed Vulnerability Assessment) methods.

NON-STRUCTURAL MEASURES

a. Land Use Planning

Damage of buildings depends primarily upon the soil conditions and topology of the area which are moderately favorable in the district. Anyhow, to analyze risk within district microzonation planning should take place. It will help to guide modify landuse planning in the district accordingly.

b. Capacity Building and awareness generation

Country have a very few experts in mitigation planning. We must focus our attention to the institutionally and manpower development at all levels. There is a need to train architects, engineers, planners and masons in developing safe housing and infrastructure facilities. District has already arranged two trainings for engineers, masons and architects of public and private sectors where 100 such participants got trained. Manuals have also been developed outlining methodologies for new constructions and retrofitting of old ones. A strong legal and enforcement framework with appropriate incentives and punitive measures is required together with awareness programmes for general public. All these components must be taken up simultaneously; ignoring one aspect for the other could be counterproductive.

c. Insurance

Insurance brings quality consciousness in the infrastructure and a culture of safety by insisting to follow building codes, norms, guidelines, quality materials in construction. It would enforce safety standards by bringing accountability. Hazardous area should be announced, notified and publicly displayed so that people would be motivated not to settle in those areas and insurance be mandatory in insurance prone areas. Premiums can be changed on the basis of risk proneness. Urban Development Department, GNCTD has been asked to draft a scheme to incentivize house owners to take up retrofitting of their houses.

Important Mitigation Measures

Sl. No.	Strategies	Actions involved	Suggested Institutions involved
1	**Retrofitting** of buildings	Prioritization of buildings according to their importance during emergency. ***First priority buildings are***: 1. District administration office building, all police and fire stations 2. Nodal 3. All Schools (Government, SDMC and Public) 4. Residences of Deputy commissioner (Revenue), Deputy Commissioner of Police	**South Delhi** Municipal Corporation (SDMC)/PWD engineers
		Second priority buildings are: 1. Hospitals and clinics 2. Community centres 3. Residences of other key officials 4. Office buildings of SDMC, PWD, CD & HG and DDA ***Third Priority buildings are*** 1. Remaining Government Buildings and colonies	
2.	**Enforcement** of Building codes	Review and updation of building codes	BIS
		Implementation of codes in new engineered and non-engineered constructions	**SDMC**
3.	**Community** Awareness	Large-scale information dissemination about basics of new constructions and retrofitting of existing buildings and encouraging fire-fighting arrangements in the building	**SDMC, PWD, District** Administration
		Information dissemination about dos' and don'ts at the time of earthquake event and fire-outbreak	**District** administration, Fire and police department, NGO's
4.	**Capacity Building**	Priority-wise training to the engineers, architects, and masons for disaster-resistance. These people may further utilized for providing assistance in retrofitting and reconstruction exercises.	**District administration, SDMC, PWD and DDA**
5.	**Insurance**	Identification of hazardous areas in the district	**DC Office, SDMC**
		Provisions of insurance according to building bye laws, codes and hazard proneness	Insurance companies, SDMC

PREPAREDNESS MEASURES

Disaster causes sudden disruption to the normal life of society and causes damage to the properties and lives to such an extent that normal social and economic mechanism available to the society get disturbed. Those who are unaware and unprepared generally get affected more due to their lack of knowledge and physiological pressure. Hitherto, the approach towards coping the effects of disasters has been post- disaster management, involving many problems related to law and order, evacuation, communications, search and rescue, fire-fighting, medical and psychiatric assistance, provisions of relief and shelters etc. After initial trauma next phase starts with long-term reconstruction planning which takes about 5 to 6 years to normalize the life-style in a particular area.

In view of these problems the district administration, has prepared a comprehensive plan. The plan basically detailed out preparedness strategy under which communities and district authorities would be prepared so that level of destruction and unnecessarily delay in relief and response can be reduced. The preparedness measures include setting up disaster relief machinery, formulation of community preparedness plans, training to the specific groups and earmarking funds for relief operations (UNDRO, 2004).

Measuring Community Preparedness

Generally community preparedness depends upon following four major components (Cottrell et al-2001):

- Population characteristics (number of children, squatter settlement etc)
- Building and critical infrastructure such as road, drinking water, communication network, health and sanitation
- Physical environment
- Social environment (social groups)

In view of these components, risk assessment study has been conducted and identified that North District is densely built and consists of a high number of small and big scale industries. Any major earthquake or fire/chemical explosion can affect district very badly. Although many steps have been taken by the district but still a high degree of awareness and training is required to lay down an organization system within communities.

Components of Preparedness Plan

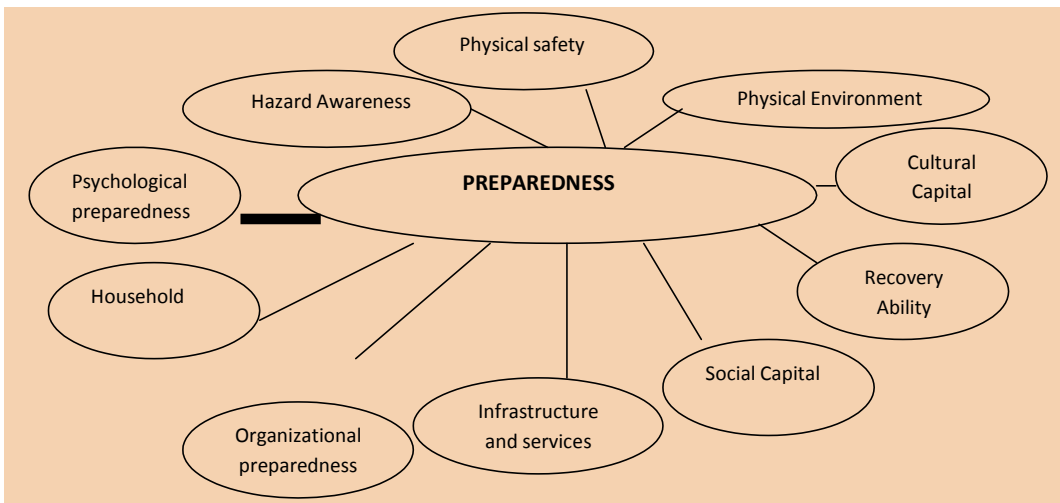
Looking at the complexity of repose mechanism during disasters two sets of components have been studied to prepare this plan.

Components of Community Preparedness Plan

Several previous attempts have been made by researchers to measure community preparedness within various indicators. Some of the important components of measuring preparedness are given below:

1. **Physical Safety:** i.e. how safe community members are in view of the physical danger from these hazards? The parameters essentially tries to measure how effective structural mitigation measures are e.g. resistance of building structures for earthquakes, availability of safe shelters and its capacity etc.
2. **Hazard awareness i.**e. awareness level about hazards which have a reasonably higher probability of occurrence
3. **Organization preparedness** i.e. how far the community is organized to face disaster i.e. existence of committee at community level, task forces, volunteers of civil defence and other local volunteers , trained disaster management teams and community disaster management plan etc.
4. **Infrastructure and services** which tries to measure current state of these services and how well restoring critical services as and when disruptions occur
5. **Recovery ability** i.e. ability of the community members to recover from the impact of the hazard
6. **Physical environment** i.e. state of environment to face hazards e.g. Condition of sub-surface aquifers and vegetation etc.
7. **Social capital** i.e. degree to which social networking and cooperation exists among community members
8. **Psychological preparedness** i.e. how safe and prepared do community members feel in view of these hazards
9. **Cultural capital** i.e. cultural richness such as existence, recognition and use of traditional mechanism to cope with such disasters
10. **Household preparedness** i.e. preparedness at a house hold members

Components of Community Preparedness



Components of Administrative Preparedness

Administrative preparedness is another very important issue which helps in reducing relief and response time in a disaster situation. Preparedness plan is based on below-given components

1. Operation readiness of facilities, equipments and stores in advance
2. Maintaining response inventory of equipments and materials required for response
3. Assignment of responsibilities to agencies and organizations
4. Management training of crisis group members, desk officers and officers of respective departments likely to be assigned management duties
5. Specialized trainings of district disaster committee members, officials, community organizations through seminars and workshop
6. Training of taskforces
7. Raising community awareness
8. Improving response mechanism through conducting practice drills etc
9. Annual updating of District and community level plans

Preparedness Plan

Base on above-mentioned components following arrangements needs to be maintained at district level preparedness plan.

Establishment of Emergency Operation Centre (EOC):

To ensure coordination at district headquarter among community organizations, district level organizations and State government during preparedness and response phase, EOC has to play an important role. Directing the operations at the affected site, the need for coordination at the district headquarter and the need for interaction with the state government to meet the conflicting demand at the time of disaster is the responsibility of the District Magistrate and his team. District EOC helps District Commissioner and his team to meet these conflicting demands. Keeping this in view, District Magistrate has established an EOC at district level. The building of District Magistrate Office is a temporary one and will shift to another place in future; therefore a temporary EOC has been established in the office. The EOC would be responsible to facilitate following activities.

(a) Activities of EOC

- To ensure that warning and communication systems are in working conditions
- Collection and compilation of district level information related to hazards, resources, trained manpower etc.
- Conducting district, sub-division and community level mock drills
- Networking and coordination with community, district and state level departments
- Monitoring and evaluation of community and inter-intra organization level disaster management plans

- Develop a status report of preparedness and mitigation activities under the plan
- Allocation of tasks to the different resource organizations and decisions making related to resource management
- Reviewing and updating response strategy
- Supply of information to the state government

(b) Facilities with EOC

Presently, the emergency operation centre is operating in 24/7 mode well-equipped with computer, wireless and telephone facilities. In future EOC would include a well-designed control room with workstation, hotlines and intercoms. **Following other facilities shall be made available within the EOC:**

- A databank of resources, action plans, district disaster management plan, and community preparedness plan would be maintained at EOC.
- Maps indicating vulnerable areas, identified shelters, communication link system with state government and inter and intra district departments would strengthened
- Inventory of manpower resources with address, telephone numbers of key contact persons has been maintained
- EOC have to identity desk arrangements during disaster situations
- Frequently required important phone numbers would be displayed on the walls so that they can be referred whole other phones and addresses would be kept under a easy-retrieval and cross- referring system
- Retrofitting of building shall be done so that it can be operational during disaster also.
- EOC shall be operational 24 hours with the help of police, fire and home guard department

(c) Transport Facility

A vehicle has been assigned to the EOC (N) during normal times. Additional vehicle can also be hired during the emergency.

(d) EOC Staffing

To make EOC operational during and post disaster situation there would be a need of keeping adequate staff. There is a need of regular staff, staff-on requirement and staff-on disaster duty. Therefore, trained Civil Defence volunteers are working 24 hours on shift basis for managing the communication and transportation of rescue equipments in EOC during any disaster. More volunteers are also hired for supporting in rescue and relief operation during emergencies. Staff on disaster duty can be appointed by District Magistrate. This staff can be drawn from the various government departments.

(e) Desk arrangement

In case of emergency, DC and other team members would be present round the clock in the EOC. Therefore senior officers have been appointed in the capacity of desk officers for the coordination of following emergency response functions:

List of ESF and desk officers

Nos.	ESFs Function	Nodal Officers
1	Communication	MTNL
2	Evacuation	Delhi Police
3	Search and Rescue	Delhi Fire Service
4	Law & Order	Delhi Police
5	Medical Response and Trauma Counseling	Directorate of Health-CDMO
6	Water Supply	Delhi Jal Board
7	Relief (Food and Shelter)	Department of Food and Civil Supplies
8	Equipment Support, debris and road clearance	SDMC
9	Help lines, warning dissemination	Department of Revenue
10	Electricity	B.S.E.S.
11	Transport	Transport Department

Reliable Communication Systems

During emergency communication plays a very important role. Although Delhi being a capital city has already registered a phenomenal growth but yet incase of disaster like earthquakes witnessed collapse of general communication system which delays flow of information from the disaster site and consequently resulting delays in relief operations. Therefore a reliable communication is also one of a very important action. Till now TETRA wireless communication system has been found most suitable to rely upon. But this plan also seeks for installation of satellite phones and HAM equipments in the EOC for strengthened communication system in the district. Plan also advocates training some volunteers of home guards etc in HAM operations.

CAPACITY BUILDING AND TRAINING MEASURES

To enhance organizational and capability skills to deal with emergency situations requires trainings and capacity building exercises of the various linked government and non-government officers. Since disaster management is a multi-organizations effort, it emphasizes on trainings in execution and coordination as well. Therefore wide ranges of trainings related to management skills are highly required for potential officers in order to equip them for specialized disaster-related tasks. They require orientation of various aspects of crises management such as

- Skill training,
- Planning,
- Trainings on Emergency Response Functions such as first-aid, search and resuce, emergency operation centre, emergency feeding and welfare, communication and damage assessment etc.
- Trainings for coordinated disaster management activities and response operations are highly required especially for the persons engaged in emergency services, government–line departments, non-government organizations and important private sector groups

Training requirements are likely to comprise of core activities of emergency management such as Incident Response System, Emergency Response Functions and basic management skills. Persons to be trained shall be:

- Government Officers at par with the rank requirement under Incident Response System
- Team leaders and members under Emergency Support functions
- Quick Response Teams at headquarter and field level
- Community level taskforces including Volunteers, NGOs and home guard volunteers, school and college students, NCC and NSS scouts etc

District Administration can organize seminars and workshops with the help of State disaster management authority, Civil Defence and Home Guard, Fire fighting department, Health departments etc. A record of trained manpower shall be maintained by each department and their representation shall be noticed during mock-drill.

Community Preparedness Strategies

S. No	Tasks	Mode of conduct	Nodal Agencies	Supporting Agencies
1	Priority-wise information dissemination of various hazards and their do's and don'ts. Also preparation of community based disaster management plans shall be promoted in these areas. First priority shall be given to the schools, industrial clusters, Market Trade Associations and Residential areas, slums and resettlement colonies etc located in Kirti Nagar, Raja Garden, Vishnu Garden, Moti Nagar, Punjabi Bagh etc. Second Priority shall be given to the communities living in the outer part of the district especially villages.	Through Nukaad Nataks, Film Shows, Rallies, Media, Newspaper Media, Posters and Pamphlets, Group discussions and workshops etc	District Administration	Civil Defence and Home guards volunteers (CD & HG), Nehru Yuva Kendra Sangthan (NYKS), Residential Welfare Associations (RWAs), Market trade Unions (MTAs), Rotary Clubs, Non Government organizations (NGOs), Schools and colleges volunteers, NSS, NCC etc.
2.	Constitution of Community Based Disaster Management Committees and Taskforces	Through community level meetings	District Administration	RWAs and MTAs Members, Local Volunteers etc.
3.	Capacity Building of Community Members	Through mock-drills, preparation of community plans, trainings and workshops on disaster specific topics	District administration	CD & HG, Local NGOs, NYKS, St. John Ambulance, C.A.T.S etc.

S. No	Tasks	Mode of conduct	Nodal Agencies	Supporting Agencies
4.	Trainings to the taskforces and committee members - First-Aid and Trauma Counseling - Search and rescue and fire-fighting - Warning Dissemination etc.	Trainings and workshops	Revenue Department along with Health, Police and Fire Departments	CD & HG, St. John Ambulance and CATS and NGOs
5.	Post disaster epidemic problems	Seminars and community meetings	Health department	Local health departments, and NGOs
6	Trainings for construction of seismic resistant buildings and retrofitting of the buildings. Target groups are contractors, masons, engineers, architects and local communities (especially those who are taking loans for building constructions and provided assistance under Indira Awas Yojana and other developmental programmes)	Showing Films, videos, distributing posters and brochures, reading materials, etc in trainings and workshops or any other community gathering	Revenue department	SDMC, PWD, Private contractors and NGOs etc

PREPARATION OF DISTRICT DISASTER MANAGEMENT PLAN

District Disaster Management Plan for the North Delhi is a public document. It is neither a confidential document nor restricted to any particular section or department of administration. The underlying principal of disaster management is that it has to be part of all departments and none can fold fingers against it.

The District Disaster Management Plan is the sum and substance of the *Horizontal and the Vertical* disaster management plans in the district. Horizontal plans included plans prepared by line departments such as Delhi Police, Delhi Fire Service, MCD, Irrigation and Flood Control, Delhi Civil Defence, Department of Food and Civil Supplies, Public Works Departments etc where as the Vertical plan includes Sub Divisional Plans, Community Plans, School/Hospital plans and all other logical units' plan at the lower level and State disaster management plans and National disaster management plans at the higher level.

- Preparation of plan is the ultimate responsibility of the District Disaster Management Committee (DDMA (N)/ESFs) or the person / sub committee appointed by the DDMA (N)/ ESFs in the district. The first draft plan is to be discussed in the DDMA (N)/ESFs and later the Chairman of the DDMA (N)/ESFs shall ratify it.
- The same procedure is to be followed in updating of the plan document. The District plan is to be updated biannually by the District Disaster Management Committee or the sub committee appointed by the DDMA (N)/ESFs. In order to update the document, all Vertical and Horizontal plans shall be collected and incorporated to the District Plan.

- After each biannual updation of the DDMP, version number shall be given serially. A copy of the updated document shall be circulated to each stakeholder of disaster management in District North.

POST DISASTER EVALUATION MECHANISM

Disasters are always unexpected. Each disaster causes huge loss of human lives, live stocks and property as well. It is said that, every disaster repeats after a particular interval. Also lessons learnt from a particular disaster will help to plan for another potential hazard.

The DDMA (N)/ESFs Chairman shall make special arrangements to collect data on a particular disaster irrespective of size and vulnerability. This post disaster evaluation mechanism shall be set up with qualified professionals and researchers and the collected data shall be thoroughly crosschecked and documented in the EOC for further reference.

MEDIA MANAGEMENT

Media Management is one of the core issues related to disaster management. Usually, in case of disaster, hundreds of media crew reaches the site even before the outside disaster management agencies and they assess the situation. The report they release on air is contradicting and creates panic. In order to control the situation certain arrangements shall be made by the district. As a disaster is noticed the Incident Commander shall do the following measures to control the media:

1. Along with information dissemination to the vertical and horizontal agencies, press people also shall be called and given preliminary data based on assessment. This shall reduce the guesswork of the media people.
2. Only the state owned electronic, print media should be taken to the site. More people mean more confusion and hazard in disaster management.
3. In every one hour or so the Incident commander shall give press release in order to control false information to the outside world.
4. No media shall be allowed to air or print pictures of dead bodies with worst condition.

There is a tendency to do so by the media to make sensitivity.

In a disaster situation, only the incident commander or his assignee in district level will communicate with the media and provide brief, No other parallel agency or ESF or voluntary agency involved in the disaster management shall give any sort of press briefings.

DISASTER MOCK DRILLS

The ultimate objective of the Training programme on preparedness and mitigation is to conduct mock drill, which is an artificial scenario of a disaster. The objectives encompassed in the mock drill are to validate the Standard Operating Procedures (SOP) and ascertain the capabilities created by District Disaster Management Committee (DDMA (N)/ESFs) in managing and responding to natural disasters.

A sample note, which describes a likely scenario of earthquake in district North has been given below. It also lays down the sequence of actions to be taken by different agencies in response to the scenario.

Model Scenario for Mock Drill in North

The objectives encompassed in the mock drill are to validate the Standard Operating Procedures (SOP) and ascertain the capabilities created by district Disaster Management Committee (DDMA (N)/ESFs -N) in managing and responding to natural disasters.

Concept

1. This document describes a likely scenario of earthquake in North Delhi. It also lays down the sequence of actions to be taken by different agencies in response.
2. The emergency response to the scenario is to be evaluated at four phases of activity levels, as given below:

- Notification Phase: During this phase the incident will be identified and relevant agencies will be notified and their responses ascertained.
- Response Phase: In this phase the capabilities available with the government at various levels will be put into effect for controlling the situation.
- Recovery Phase: the setbacks suffered as a result of the earthquake will be restored.
- Restoration Phase: the site clearance and resumption of normal activity will be ensured.

Specific assumptions

- Certain aspects of damage assessment system are purported to be in place.
- Restricted avenues of reaching the incident site.
- Certain fire tenders/rescue vehicles are declared off-road due to mechanical faults and routine commitments.

Instructions

1. The following control rooms to be activated:
   a. Delhi Disaster Management Authority
   b. Delhi Police
   c. Delhi Fire Service
   d. Municipal Corporation of Delhi
   e. Department of Irrigation and Flood Control
   f. Delhi Jal Board
   g. Delhi Metro Rail Corporation
   h. Delhi Transco
   i. Public Works Department
   j. Ministry of Home Affairs k. Indian Army
   l. Other critical departments/agencies

2. Wherever the control room does not exist, a nominated officer will be the duty officer. He will receive messages and disseminate information as per the Standard Operating Procedures.

3. Traffic rules will not be violated while responding

4. Wherever a road is declared out of use, detours will be taken to reach the site of incident.

5. A report pertaining to this exercise should be submitted within next two working days to the Divisional Commissioner of Delhi.

STANDARD OPERATING PROCEDURES

Disasters affect human lives in a massive scale. If a formalized and timely response would not take place death toll can increase immensely. Therefore each district in coordination to State formulates a District Response Plan consisting 11 Emergency Support Functions (ESFs) related to Communication, Search and Rescue, evacuation, law and order, medical response and Trauma Counseling, water supply, electricity, warning and transport etc. All of these emergency functions consist of emergency plans that would be activated at the time of emergency.

The ESFs document outlines the purpose, scope, organisation setup and Standard Operating Procedures (SOPs) for each function of operation that is to be followed by the respective ESF agencies when the Incident commander will activate the response plan. Standard Operation Procedures (SOPs) provides a basic concept of the operations and responsibilities of Disaster Management Team, Nodal and Secondary agencies.

ESF Response Actions, Organisational Setup and Inter-relationships

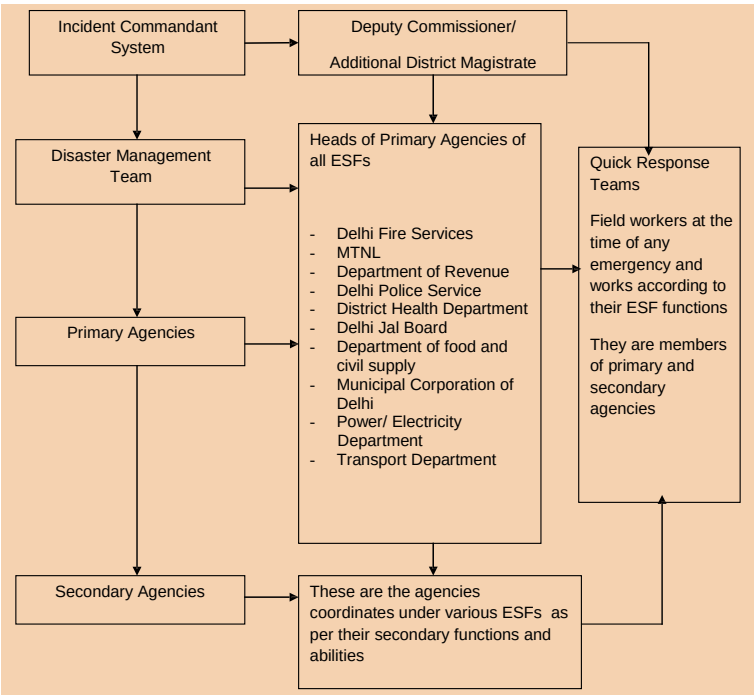
The Response plan establishes an organised setup to conduct ESF operations for any of the Natural and Manmade Disasters. It outlines an implementing framework of sharing resources as per the requirement within National and State level department will be engaged to support during an emergency situation. The Response Plan has structured the response of concerned department's i.e. primary and supporting departments to be organized and function together with grouping capabilities, skills, resources, and authorities across the State and district Government with the ESF plan. The plan unifies the efforts of State Departments and supporting agencies to be involved in emergency management for a comprehensive effort to reduce the effects of any emergency or disaster within the state.

The ESF activates under the guidance of Incident Commander (Deputy Commissioner/ Additional District Magistrate) who is also a head of Incident Commander System (ICS). Under the ICS a team of 11 ESFs nodal officers works together also called as Disaster Management Team (DMT). DMT would also be constituted at District level with district level nodal officers. The members of Disaster Management team would also heads primary agency and simultaneously coordinate with the secondary agencies. Each of the primary and secondary agencies would also comprise of quick response team trained to carry out their functions at the response site. The success of ESF will be of critical importance and would reflect in the lives saved in the golden hour. Below a list of ESFs has been given which will activate at district level during emergency situation.

ESFs Activates at the Time of the Disaster

All ESFs have to assist the Incident Commander i.e. Deputy Commissioner at State level as per their assigned duties described in the SOP's and to be followed during emergency within the District/State. A detailed organisational setup of all ESFs and team leaders has been given below.

Organisation Setup of the ESF at District Level



ESF - 1 Communications

Background:

The communication ESF is primarily responsible for restoration of communication facilities. The ESF on Communication should ensure the smooth flow of information that can cater to the outreach in a time- sensitive manner at state level in response efforts.

Situation Assumptions

1. There would be a congestion in the network because of increased calls to control rooms due to panic created in the community.
2. The initial reports on damage may not give a clear picture of the extent of damage to communication network.
3. The affected site may cut off from the state control rooms and the officials on site and find difficulty in communicating to the District/State EOC.

Nodal agency at state level: Mahanagar Telephone Nigam Ltd. (MTNL)

Suggested supporting agencies: NIC, Revenue wireless, Ham Operators, Private telecommunication service operators and mobile phone services operators

SOPs for Nodal Agency:

- Team leader (TL) of Communication ESF will activate the ESF on receiving the intimation of occurrence of the disaster from the State EOC.
- TL would inform Nodal Officers (NOs) of support agencies about the event and ESF activation.
- TL would establishes contact with the district EOC for First Information Report
- TL requests for reports from local ESF contact persons (this would be the local office of ESF Nodal Agency) to understand the current situation and action taken
- Based on information given by the supporting agencies, TL decides on the need to launch an assessment mission to estimate the extent of damage to telecom services and network as well as to come up with possible arrangements to establishing reliable and appropriate network.
- TL communicates situation to supporting agencies and also requests to provide details on the status of equipment and infrastructure in the affected area(s).
- TL informs the Incident Commander on the status of telecom services.
- TL works out a plan of action for private telecom companies and convenes a meeting of all ESF members to discuss and finalise the modalities.
- TL issues orders to establish systems and reports to State and District EOCs on the action taken. New phone numbers and details of contact persons would also be communicated. If required mobile exchanges would be deployed. (need explanation---mobile exchanges)
- TL gets the temporary telephone facilities established for the public. Prior information on this would be announced through media
- HAM radio operators would be informed about the current requirements and coordination mechanisms shared.
- TL monitors the situation and arranges emergency staff required to operate established systems.
- TL sends the District Quick Response (SQR) team at the affected site with the required equipments and other resources.

SOPs for Quick Response Team on Communication

- The QRT (Quick Response Team) members will reach to the nodal office as soon as they will get instructions from the TL.
- Once the QRTs receive any intimation from the nodal officer to reach at the site they would rush to the site.
- At the emergency site QRT members will take stock of the situation from the IC and would also know about their counter parts.

- QRTs would assess the ground situation and would send sectoral report (what is a sectoral report-?--add) to the State ESF agency.

A sectoral report would contain following contents:

An assessment of overall damage, listing specifically:

- Overhead route damage (in miles/kilometres).
- Cable damage (in yards/meters).
- Specific equipment damaged.
- Establish a temporary communication facility for use by the public
- Identify requirements of manpower, vehicles and other materials and equipments Give priority and concentrate on repairs and normalization of communication system at disaster affected areas.
- Begin restoration by removing and salvaging wires and poles from the roadways with the help of casual labourers.
- Carry out temporary building repairs to establish a secured storage area for the equipments and salvaged materials.
- Report all activities to head office
- Begin restoration by removing and salvaging wires and poles from the roadways through recruited casual labourers.
- Establish a secure storage area for incoming equipments and salvaged materials.

ESF - 2 Evacuations

Background:

The ESF on evacuation is primarily responsible for establishing evacuation plans, identification of fastest evacuation routes and alternate routes and coordinating evacuation logistics during field operations.

Situation Assumptions

- Most of the buildings would be damaged and would not remain serviceable.
- Many structures would be damaged and there would be an urgent need to evacuate.

Nodal agency at state level: Department of Revenue

Suggested supporting agencies: Delhi Police, Delhi fire Service, Directorate of Health Service and Civil Defence, NCC, Army etc

SOPs for Nodal Agency:

- Team leader (TL) of Evacuation ESF would activate the ESF on receiving the warning of the disaster from State EOC.
- TL would inform Nodal Officers (NOs) of supporting agencies about the event and ESF activation.

- TL will direct the QRTs to be deployed at the affected site.
- TL will gather information on availability of predefined evacuation routes.
- Where the predefined evacuation routes are not available, the nodal officer would coordinate through State EOC with other ESFs nodal officers and the support agencies about clearing of routes and identifying alternate routes.

SOPs for Quick Response Team on Evacuation

- The QRT members will reach the nodal office as soon as they get instructions to do so from the TL.
- Once the quick response teams receive an order from the nodal officer for reaching the site they would rush to the site.
- On reaching at the site the QRT members will take stock of the situation from the Incident Management Team at the site and their counter parts.
- The quick response teams with the help of local task forces will start evacuating peoples to safe shelters or open areas.
- The QRT members should concentrate more on evacuation in areas that have been worst affected by the disasters.
- Reporting about all the activities to head office

ESF - 3 Search and Rescue

Background:

Search and Rescue operations are one of the primary activities taken up in a post disaster situation. The promptness in these operations can make a remarkable difference in the amount of loss of life and property.

Situation Assumptions

- Local community task forces will initiate search and rescue at residential level
- Spontaneous volunteers will require coordination
- Access to affected areas will be limited.
- Some sites may be accessible only through air routes only

Suggested Nodal Agency: Delhi Fire Service

Support agency: Department of Revenue, Delhi Police, Army, Civil Defence and Directorate of Health Services.

SOPs for Nodal Agency

- IC will call the TL of Primary Agency and get the ESF activated.
- TL of primary agency will call nodal officers of supporting agencies.
- TL would activate the State Quick Response Team.

- Quick Assessment of the S&R operations through Aerial surveys
- Assessments of the specific skill sets and the other equipments required.
- Using IDRN network to check and map the availability of resources in and round the disaster site.

SOP for Quick Response Team on Search & Rescue

- Assessment of damage (locations, number. of structures damaged, severity of damage)
  The QRTs will be deployed at the affected site.
- Enlisting the types of equipment required for conducting the S&R
- QRTs will report the situation and the progress in response activities to the respective EOCs.

ESF - 4 Law and Order

Background:

The ESF on Law and Order maintains the law and protects the property and valuable commodities. It is mainly responsible to control crowd and avoid riots situations.

Situation Assumptions

- There would be panic and people will gather at a place.
- The crowds may go out of control.
- Riots may also take place.

State Nodal Agency: Delhi Police Service

Suggested Support Agencies: Civil Defence and Home guards, Central Paramilitary Forces, Army etc

SOPs for Nodal Agency

- IC will call the TL of Primary Agency and get the ESF activated.
- TL of primary agency will call nodal officers of supporting agencies.
- TL would activate the State Quick Response Team.
- The QRTs will be deployed at the affected site.
- Cordoning of area to restrict movement of onlookers, vehicular and pedestrian traffic should be done.
- Any additional requirements at site to be taken care of.

SOP for Quick Response Team on Law and order

- Quick assessment of law and order situation in affected areas
- Support and coordinate with Local Administration

- Prepare updates on the law and order situation every 4-6 hours and brief the authorities
- Controlling situations like rioting and looting, and cordon off sensitive areas
- QRTs will guide property and valuables in affected areas.
- Control and monitor traffic movement.
- QRTs will provide diversion of traffic on alternate routes as and when it is necessary.
- The QRTs will also provide information about traffic flow along various corridors, especially heavy traffic or congested roads.
- QRTs will communicate to police control rooms, details on the field activities including deployment and reinforcement of staff and resources and communicate nature of additional requirements.

ESF -5 Medical Responses and Trauma Counseling

Background:

The ESF on Medical Response and Trauma Counseling will look after emergency treatment for the injured people immediate after the disaster take place.

Situation Assumptions

- Emergency Medical services will be required by affected population
- Likely outbreaks of epidemic diseases after the disaster.
- Hospital services would be affected

Suggested Nodal Agency: State Health Department

Suggested Support Agencies: CATS, MCD, DGHS (Central Govt), Indian red Cross, Civil Defence, Delhi Fire Service

SOPs for Nodal Agency

- IC will call the TL of Primary Agency and get the ESF activated.
- Team leader (TL) of primary agency will call nodal officers of supporting agencies.
- In coordination with the transportation ESF, it will ensure a critical number of medical professionals to be reached at the site including specialists from other states.
- If temporary housing arrangements are being made for the affected population, the ESF must ensure high standards of sanitation in settlements in order to reduce epidemic outbreak.

- Ensuring the provision and continuous supply of medical facilities (medicines, equipments, ambulances, doctors and manpower etc) required at the disaster affected site and the hospital health centers catering to disaster victims.

- In case of orthopedic care required in disasters like earthquakes the immediate response would have to be complimented by a follow up treatment schedule for a majority of the patients in/ near their place of residence.
- Trained professionals should be mobilized by psychosocial support.
- Ensuring setting up of temporary information centers at hospitals with the help of ESF through help lines and warning dissemination system.
- TL will coordinate, direct, and integrate state level response to provide medical and sanitation health assistances.
- On the recommendations of the EOC, the TL also responsible to :
- Send required medicines, vaccines, drugs, plasters, syringes, etc.
- Arrange for additional blood supply. Send additional medical personnel equipped with food, bedding and tents etc.
- Send vehicles and any additional medical equipment.

SOP for Quick Response Team (QRT) on Medical Response and Trauma Counselling

- QRTs will provide situation and progress reports on the action taken by the team to the respective EOCs
- QRT's will assess type of injuries, number of people affected and possible medical assistance needs
- QRTs will ensure timely response to the needs of the affected victims such as:
- Establishing health facility and treatment centers at disaster sites.
- Providing medical services as reported by the District Civil Surgeon with District Control Room.
- Procedures should be clarified in between
- Peripheral hospitals
- Private hospitals
- Blood banks
- General hospitals and
- Health services established at transit camps, relief camps and affected villages.
- QRTs should maintain check posts and surveillance at each railway junction, ST (full form) depots and all entry and exit points from the affected area, especially during the threat or existence of an epidemic.

ESF- 6 Water Supply

Background

The ESF on drinking water and water supply will ensure provision of basic quantity of clean drinking water and water for other purposes in a manner that does not allow the spread of diseases through the contamination of water.

Situation Assumptions:

- Existing water storage bodies will be damaged and unusable.
- There would be an urgent need of water to assist victims in rescue operation.
- Break down of sanitation system.
- Contamination of water due to outflow from sewers or due to breakage of water pipelines.

State nodal agency: Delhi Jal Board

Support Agency: MCD, Irrigation and Flood Control

SOPs for Nodal Agency

- Team leader (TL) of ESF on Water Supply will activate the ESF on receiving the intimation of the disaster from State EOC.
- TL would inform Nodal Officers (NOs) of support agencies about the event and ESF activation.
- TL will ensure special care for women with infants and pregnant women.
- Provide for sending additional support along with food, bedding, tents
- Send vehicles and any additional tools and equipments needed.

SOP for Quick Response Team (QRT) on Water Supply

- QRTs will ensure that supply of drinking water is made available at the affected site and relief camps
- QRT's will ensure the temporary sewerage lines and drainage lines are kept separate.
- QRTs will report the situation and the progress on action taken by the team to the EOC.
- QRTs will intimate their TL of the additional resources needed.
- Carry out emergency repairs of all damages to water supply systems.
- Assist health authorities to identify appropriate sources of potable water.
- Identify unacceptable water sources and take necessary precautions to ensure that no water is accessed from such sources, either by sealing such arrangements or by posting the department guards.
- Arrange for alternate water supply and storage in all transit camps, feeding centres, relief camps, cattle camps, and also the affected areas, till normal water supply is restored.
- Ensure that potable water supply is restored as per the standards and procedures laid down in "Standards for Potable Water".
- Plan for emergency accommodations for staff from outside the area.
- QRTs will ensure timely response to the needs of the affected victims.
- QRTs will set up temporary sanitation facilities at the relief camps.

ESF – 7 Reliefs (Food and Shelter)

Ground:

In the event of a disaster there would be a need of disbursing relief materials due to massive destruction of life and property taken place. The ESF on Relief should ensure coordination of activities involving with the emergency provisions of temporary shelters, emergency mass feeding and bulk distribution of relief supplies to the disaster victims as also the disaster managers and relief workers.

Situation Assumptions

- Probability of shortage of a critical resources
- Immediate assistance to the community at the time of resource shortage particularly when affected area is larger.

State Nodal Agency: Department of Food and Civil Supplies

Support Agency: Department of Revenue, Urban Development, Municipal Corporation of Delhi, PWD, Delhi Development Authority,

SOPs for nodal agency

- TL will activate the ESF on receiving the information of the disaster from State EOC.
- TL would inform Nodal Officers (NOs) of support agencies about the event and ESF activation.
- TL will coordinate with all state and district level suppliers as identified with under IDRN.
- TL with coordinate with other ESFs related to transportation, debris and road clearance to ensure quality supply chain management of relief materials.
- Ensuring composite relief with availability of complimentary relief material.

SOP for Quick Response Team (QRT) on Relief

- QRTs will report to site of the relief camps
- QRTs will be responsible to manage and distribute relief items to the affected victims
- QRT's will be responsible for reporting the progress on action taken by the team to the EOC.
- QRTs will provide information to their TL about the need of additional resources.
- Clearing of the areas to establish relief camps
- Setting up relief camps and tents using innovative methods that can save time
- Assist local authorities to set up important telecom and other service related facilities
- Initiate, direct and market procurement of food available from different inventories and reassuring food supplies to the affected population
- Preparing take-home food packets for the families

- Ensuring distribution of relief material to the all the people including vulnerable groups of the target area such as women with infants, pregnant women, children, aged people and handicapped.
- Ensuring support to Local Administration
- Locating adequate relief camps based on damage survey
- Develop alternative arrangements for population living in structures that might be affected even after the disaster

ESF – 8 Equipment support, Debris and Road clearance

Background:

The importance of this ESF emanates from the fact that most large scale hazards such as earthquakes, cyclones, floods primarily affect the building structures.

Situation Assumptions

- Access to disaster-affected area would depend upon the re-establishment of ground and water routes.
- Early damage assessment may be incomplete, inaccurate and general. A rapid assessment may be required to determine response time.

Engineers and masons may be required in large scale for the inspection of present buildings

State nodal agency: Municipal Corporation of Delhi

Support Agencies: PWD, DDA, DMRC, DTC,

SOPs for Nodal Agency:

- Team leader (TL) will activate the ESF on receiving the information of the disaster from State EOC.
- TL would inform Nodal Officers (NOs) of support agencies about the event and ESF activation.
- TL will coordinate with the supporting agency to mobilize equipments from the ware houses through IDRN database
- The respective supporting agencies will contact their respective personal to move the equipments to central warehouse
- The equipments like JCB, concrete cutters identified as per the need will be transported to the site.
- As per the information the nodal officer of Debris road clearance will make an assessment on of the damages of roads and built structures at the site and surrounding areas
- The nodal officers of Supporting Agencies will immediately start debris clearance operation to enable movement to the affected site.
- Review of the current situation is taken up by the nodal agency to update the support agencies and to delegate their respective personnel to take precautionary measure to plan de-routes for the transportation ESF's to be operational

- All supporting agencies will inspect the road and rail network and structures within the disaster site and surrounding.
- TL will also ensure proper corpse disposal and post mortem by coordinating with ESF on medical response.

SOP for Quick Response Team on Equipment support, debris and Road Clearance

- Damage assessment including locations, number of structures damaged and severity of damage
- The QRTs will be deployed at the affected site.
- Enlisting the types of equipment as compiled from IDRN resource inventory required for conducting the debris clearance
- The QRTs will report the situation and the progress in response activities to the respective EOCs.
- Undertake construction of temporary roads to serve as access to temporary transit and relief camps, and medical facilities for disaster victims.
- Repairing of all paved and unpaved road surfaces including edge metalling, pothole patching and any failure of surface, foundations in the affected areas by maintenance engineer's staff and keep monitoring their conditions.

ESF – 9 Help Lines, Warning Dissemination

Background:

The ESF on help lines and warning dissemination should process and circulate information about the welfare of citizens of affected area and managing the tremendous flow of information. The help lines will be responsible for providing, directing and coordinating logistical operations.

Situation Assumptions

- There may be a flood of information and confusion about the injured population.
- The communication with affected area may be partially impaired.

State nodal agency: Department of Revenue

Support Agencies: NIC, AIR, Doordarshan, Press Information Bureau, NGO Rep.

SOPs for Nodal Agency:

- IC will call the TL of Primary Agency and get the ESF activated.
- TL of primary agency will call nodal officers of supporting agencies.
- TL would activate the State Quick response Team.
- The QRTs will be deployed at the affected site.
- QRTs will report the situation and the progress in response activities to the respective EOCs.

- Sending flash news of latest updates/donation requirements for disaster area all over the state
- Assisting the EOC in providing updated information to national as well as at the state level.
- Setting up of toll free numbers for emergency information assistance.

SOP for Quick Response Team on Help Lines, Warning Dissemination

- The QRT members will reach to the nodal office as soon as they will get instructions.
- QRT teams would reach to the site immediately after receiving instructions from the nodal officer
- On the site QRT members will take stock of the situation from the IC at the site and their counter parts.
- The QRTs will coordinate, collect, process, report and display essential elements of information and facilitate support for planning efforts in response operations.

ESF – 10 Electricity

Background:

The ESF on electricity will facilitate restoration of electricity distribution systems after a disaster. In the event of a disaster there would be major electricity failure and many power stations damaged.

Situation assumptions

- Prolonged electricity failure.
- The affected victims may be panicked
- Halt of all activities specially jamming communication networking systems in the affected site.

State nodal agency: State Department of Power

Support Agencies: NDPL

SOPs for Nodal Agency:

- IC will call the TL of Primary Agency and get the ESF activated.
- TL of primary agency will call nodal officers of supporting agencies.
- TL would activate the State Quick response Team.
- The QRTs will be deployed at the affected site.
- TL will dispatch emergency repair teams equipped with tools, tents and food.

SOP for Quick Response Team on Electricity

- The QRT members will reach the nodal office as soon as they get instructions to do so from the TL.

- QRT members would reach to the site immediately after receiving instructions from the nodal officer
- On the site QRT members will take stock of the situation from the IC at the site and their counter parts.
- The QRTs will coordinate, collect, process, report and display essential elements of information and facilitate support for planning efforts in response operations.
- Begin repairing and reconstruction work
- Assisting hospitals in establishing an emergency supply by assembling generators and other emergency equipments, if necessary.
- The members of QRTs will establish temporary electricity supplies for other key public and private water systems.
- The members of QRTs will establish temporary electricity supplies for transit camps, feeding centres, relief camps and SOC, District Control Room and on access roads to the same.
- The members of QRTs will establish temporary electricity supplies for relief material godowns.
- Compile an itemized assessment of damage, from reports made by various electrical receiving centers and sub-centers.
- Report about all the activities to the head office.

ESF -11 Transport

Background:

The ESF on Transport should ensure smooth transportation links at state and district level. Within the disaster context, quick and safe movement of material and humans are a priority. It should coordinate the use of transportation resources to support the needs of emergency support forces requiring transport capacity to perform their emergency response, recovery and assistance missions.

Situation assumptions

- The state civil transportation infrastructure will sustain damage, limiting access to the disaster area.
- Access will improve as routes are cleared and repaired.
- The movement of relief supplies will create congestion in the transportation services.

State nodal agency: State Department of Transport

Support Agencies: DTC, DMRC, Northern Railways, Civil Aviation, PWD, MCD and Civil Defence etc.

SOPs for Nodal Agency:

- TL of Transportation ESF will activate the ESF on receiving the intimation of the disaster from State EOC.

- TL would inform Nodal Officers (NOs) of support agencies about the event and ESF activation.
- TL establishes contact with the district EOC for FIR
- TL requests for reports from local Transportation ESF contact person
- TL communicates situation to support agencies and requests for detailed information on the status of transportation infrastructure in the affected area(s).

SOP for Quick Response Team on Transport

- The QRT members will reach to the nodal office as soon as they will get instructions to do so from the TL.
- As quick response teams will receive instructions from the nodal officer they would reach to the site immediately.
- QRTs would report the situation and the progress on action taken by the team to the respective EOCs
- QRT will send a requirement schedule for the different modes of transportation eg. Trucks, boats, helicopters to be put on stand-by.
- QRTs will ensure timely re-establishment of the critical transportation links.
- The members of QRTs will establish temporary electricity supplies for relief material go-downs.
- Compile an itemized assessment of damage, from reports made by various electrical receiving centres and sub-centres.
- Reporting about all activities to the head office.

SOP for Community Task Forces

Task Force Group	Primary	Secondary
Search and Rescue	To trace and locate people who are physically trapped and distressed, people in the buildings and houses etc. To move out these people to the safe locations identified in advance and to organize further care	Administering primary health care to rescued victims Assisting the sanitation group in carcass disposal and the cremation of dead bodies Coordination with the evacuation team to shift rescued persons to safe shelters in case of recurring heavy rains
First Aid and Health	To provide primary health care to the ill or injured until more advanced care is provided and the patient is transported to a hospital	Assisting the sanitation team to inoculate against water borne and other diseases Assisting the communication team to disseminate precautionary information on post-disaster health hazards and remedies

Task Force Group	Primary	Secondary
Water	Restoring and maintaining the water supply and minimum quality and quantity parameters	Assisting the sanitation team in ensure that there is enough water stored in buckets at latrines and for bathing Assisting the sanitation team in deciding the location for the construction of latrines away from ground water sources Assisting the shelter group to ensure that there is sufficient water stored in the water tank in the safe shelter
Sanitation	To ensure that the minimum basic facilities such as temporary toilets and common bathing units are constructed near the relief camp, that these facilities and the surroundings are kept clean, garbage disposed, dead bodies cremated and that normal drainage systems function smoothly	Assisting the shelter team to ensure that water spouts and water harvesting tanks at the safe shelter are clean and functional Assisting the relief group to ensure that containers for storing water are clean, narrow necked and covered
Relief Coordination	To establishing contact with the District Control Room and organising the distribution of assistance in terms of food, water, medicines and so on, in a fair and equitable manner	Co-ordinating with the shelter group in the distribution of material for the construction of temporary shelters Assisting the shelter group to ensure that the safe shelter is well stocked in terms of dry food, water and so on in order to cater for the needs of evacuees after a cyclone or flood warning has been issued
Warning and communication	To ensure that: (a) the warning of the impending disaster reaches every single household, thereby allowing people to take timely action to protect their lives and property (b) accurate information is provided regularly as events unfold (c) information flows quickly and reliably upwards to District level and downwards from District level to Community/ Neighbourhood/Village level.	Assisting the relief group in disseminating information about the quantity and type of ration to be distributed for each distribution cycle Assisting the sanitation group in raising awareness about water borne diseases and vaccination programs

Task Force Group	Primary	Secondary
Evacuation and Temporary Shelter Management	To construct/identify maintain and make repairs to the flood shelter, to evacuate people on receipt of a warning and to make all the necessary arrangements to accommodate evacuees during a flood.	Assisting the communities in accessing compensation Assisting the relief group in stocking up dry food, medicines, water and temporary shelter materials Assisting the sanitation group in the construction of latrines, soak pits and drainage channels

CONCLUSION

North district has numerous distinct peculiarities with respect to occurrence of a disaster – whether natural or man made. Road accidents and chemical/industrial, domestic fires and collapse of structure are important man-made hazards in the district. Mishandling and late response in case of any such hazard can cause disaster situation in the district. There are certain pertinent issues related in district which can cause any of above-said hazards as disaster which needs to be deal with:

High population density, crowded streets, unmatched mix of occupancies, inadequate water supply, poor electrical services, encroachments of *jhuggies* and slums are few examples of ineffective planning which adversely affect the fire response time. Under the present circumstances, a response time of 3 minutes in urban areas and 5 minutes in rural areas is very difficult to achieve. The developmental activities are in full swing in the areas like Vishnu Garden, Khyala, Kirti Nagar, Moti Nagar, Raja Garden, Patel Nagar and sub-urban areas of the district where environmental and fire safety aspects needed to be stressed upon. It is very important in today's scenario to have fully tested and foolproof disaster management plan at the district level as it can certainly reduce the level of both man and material losses during any kind of disaster by ensuring full implementation of mitigation measures and having a robust emergency response system.

Disaster Management Framework Kanniyakumari District 2014-15

Shreya P. Singh, IAS

Chapter 10

DISTRICT PROFILE

GENERAL

To be well aware about the geography, demography and other general information about the district is the first vital step to manage the disaster. This Chapter gives in a nut-shell the information about the important social, geographical, administrative and economical indicators of the district. Kanniyakumari District came into existence in the year 1956 as a result of reorganization of states on the basis of vernacular and added in the map of Tamil Nadu. It was known as the granary of Travancore due to its vast stretches of Paddy fields, rich forests and abundant mineral sands.

This district has a pleasant climate and has the advantage of both the SouthWest as well as North-East monsoons. The district has many a charming spot, best being the cape-comorin, the place of meeting of the Bay of Bengal, the Indian Ocean and the Arabian Sea. The meeting point of the Ocean is the place where “Continent ends in a Swan-song of broken rocks and mingling oceans”.

GEOGRAPHICAL LOCATION OF THE DISTRICT

The district is bounded by Tirunelveli District in the north and north-east, by Kerala state in the north-west and confluence of Arabian sea and the Indian Ocean in the west and south. The Coastline extends over 68 Kms, and is almost regular except for some points and land projecting into the sea at Kanniyakumari.

AREA AND POPULATION

The District has an area of 1684 Sq.km. As per 2011 census, the Population of Kanniyakumari District is as follows.

	As per 2001 Census	As per 2011 Census
Total Population	1676034	1870374
Male Population	832269	926345
Female Population	843765	944029
Rural Population	582107	330572
Urban Population	1093927	1539802

The District with Population density of 1111 per sq.km. is thickly populated.

DISTRICT ADMINISTRATION

For the purpose of Revenue Administration the district has been divided into 2 Revenue Divisions, 4 Administrative Taluks and 188 Revenue Villages, Nagercoil and Thuckalay are the Revenue Division's Head Quarters while Bhoothapandy, Nagercoil, Thuckalay and Kuzhithurai are 4 Taluks Head Quarters. There are 18 Revenue Firkas in between the Taluk and Village level Revenue Administration. There are 9 Panchayat Unions, 56 Town Panchayat, 4 Municipalities and 99 Village Panchayats carryout the local administration.

ACTION PLAN

District Disaster Management Authority, Kanniyakumari District

1. Setting up well equipped District Disaster Information & Response Centre in the District.
2. Formation of Block Disaster Management Committee.
3. Review / Updation of Disaster Management Plans at District, Block and Village Levels.
4. Preparation of multi hazards Disaster Vulnerability maps at District and Block Levels.
5. Organising Trainings for Search and Rescue and First Aid at District, Block and Village Levels.
6. Specialized Training Programmes for different levels of Officers, Task forces, Quick Response Teams, employees and voluntary rescue workers in the District.
7. Specialized Training to masons, volunteers, etc. for capacity building.
8. Holding of Workshops and Seminars on Disaster Management.
9. Training on Incident Response System (IRS) to all Officials and relevant line depths. for proper co-ordination / liaisons during disasters and facilitating integration of Disaster Management Plans.
10. Facilitate community training and awareness programmes for prevention of disaster or mitigation with the support of local authorities, governmental and non-governmental organizations.
11. To develop / prepare action plans for the district so that activities can be streamlined and taken up on priority basis.
12. Retrofitting (Structural and Non-Structural) of existing weak and vulnerable lifeline buildings and other engineering structures such as roads, bridges, etc.
13. Adoption of latest technologies aimed at managing disasters through scientifically approached methodologies.
14. Awareness Campaigns at all levels.

PREAMBLE, SCOPE AND OBJECTIVES OF DISASTER MANAGEMENT CODE

PREAMBLE:

i) State Government is primarily responsible for disasters/crisis management including prevention and mitigation. The existing State Relief Codes/ Manuals/ Book of Circulars guide the entire process of administration of relief and recovery in the State. These Codes/

Manuals/compilation of Circulars mainly address post-disaster events and the scope is limited to some of the natural hazards – floods, hailstorm, droughts & earthquake.

ii) The State is prone to many natural and man-made disasters. Natural disaster vulnerability of the State is presented in the Vulnerability Atlas of India prepared by Building Materials & Technology Promotion Council (BMTPC), Ministry of urban Affairs & poverty Alleviation. The Atlas covers hazard vulnerability of the State to flood, wind and earthquakes. The State is also prone to fire outbreaks, major rail, road and air accidents, and industrial accidents.

iii) Disaster is a function of hazard (event), vulnerability and capabilities of the people. While some of the natural events cannot be prevented, the State Government can put systems in place to reduce the vulnerability and build a disaster resilient community. In order to reduce the impact of future disasters, there is a need to put in place very comprehensive guidelines for reduction of vulnerability to natural and manmade disasters. In the light of the above, the Government of Tamil Nadu has decided to amend the existing Codes/ Manuals/Compilation of Circulars to incorporate all necessary measures, which need to be taken for prevention, mitigation, preparedness and response, in addition to streamlining the relief and recovery administration.

SCOPE

I) The State Disaster Management Code will include all functions pertaining to disaster prevention, mitigation, preparedness, response, relief, recovery and rehabilitation.

II) This Code will apply to disaster management administration for all possible hazards that the State is prone to.

III) It shall not be applicable to nuclear, biological and chemical disasters.

OBJECTIVES

Following are the broad objectives of Disaster Management Plan

I) To identify the major disasters to whom the district is vulnerable.

II) To identify the locations prone to major disasters.

III) To assess the capability and strength and to take inventory of resources available for Disaster Management.

IV) To define the institutional arrangement and organizational structure for Disaster Management.

V) To define the role and responsibilities of the stake holders in Disaster Management, with Emphasis inters departmental co-ordination. To outline the mitigation in pre-disaster period and relief and reconstruction measure in post disaster period.

INSTITUTIONAL MECHANISM FOR DISASTER MANAGEMENT

The State Government is primarily responsible for management of disasters. The State has appropriate institutional setup for comprehensive hazard mitigation, preparedness, response and disaster relief and recovery, as explained in the following paras.

ADMINISTRATIVE SETUP:

I) STATE LEVEL:

The State has a dedicated administrative setup for disaster management at all levels with suitable horizontal and vertical linkages at various levels.

A. Constitution of Disaster Management Authority:

The State Government has constituted a State Disaster Management Authority headed by the Chief Minister to coordinate all disaster management activities among all line departments. The Authority consists of the following members:

- Minister, Finance
- Minister, Water Resources
- Minister, Rural Development
- Minister, Health
- Minister, Urban Development
- Minister, Home
- Minister, Agriculture
- Minister, Science & Technology
- Minister, Revenue
- Minister, Transport
- Minister, Planning
- Chief Secretary
- Addl. Chief Secretary, Development
- Secretary, DM&R (Member Secretary)

All decisions of the Authority will be deemed to be a decision of the Government and no further references will be required in order to implement the decisions taken by the Authority.

B) Disaster Management Group - Executive Committee

A Committee at the administrative level would be constituted under the chairmanship of Chief Secretary, which consists the following Secretaries of the Department as members:-

- Addl. Chief Secretary, Development
- Home
- Finance
- Energy
- Public Works
- Urban Development
- Medical & Health

- Public Health and Engineering & Ground Water
- Secretary to Chief Minister
- Secretary, Irrigation
- Secretary, Agriculture
- Secretary, Animal Husbandry
- Secretary, DM&R (Member Secretary)
- Any of the following members may be asked to attend the meeting as and when required by the Chairman:
- Station Commander, Army and its nominee
- General Manager, Railway
- Director General of Police
- Director General, Civil Defence
- Director HCM DDMA
- Incharge, Centre for Disaster Management
- BSNL

The Disaster Management Group has already been constituted vide Disaster Management and Relief Department order No. 6243 dated 28-2-2001.

The Department of Disaster Management will function as a Secretariat of the Authority, in addition to its other functions. The State Secretary of Disaster Management is also the ex-officio Relief Commissioner of the State in whom the power of administration of prevention, mitigation, preparedness, response and disaster relief and recoveries vests. The State Government's efforts and Secretaries of Nodal Department in various aspects of disaster management is governed by the following provisions:

a) Prevention – The Department of Disaster Management is a member of all the regulatory bodies in the State in order to ensure that measures required for safe planning are enforced. The existing Town & Country Planning Act, Industrial Master Plan and Land use Zoning Norms shall be evaluated to make necessary amendments to ensure that implementation of these Acts and Rules do not increase our vulnerability.

b) Mitigation - A district may outline its strategy for mitigation of the hazards it faces. Existing plans of various departments for mitigating hazards are relevant to a DMP, particularly in short-term recovery decision-making, which can effect prospects for effective implementation of a mitigation strategy aimed at reducing the long term risk to human life and property in the district.

c) Preparedness and Response - Preparedness planning covers three objectives maintaining existing emergency management capability in readiness, preventing emergency management capabilities from themselves falling victim to emergencies and if possible, augmenting the district's emergency management capability.

Such plans would include; the process and schedule for identifying and meeting training needs (based on expectation created by the DMP) the process and schedule for developing, Conducting, and evaluating exercises, and correcting identified deficiencies and plans to procure or build facilities and equipment that can withstand the effects of hazards facing the jurisdiction. Results of these efforts should be incorporated in the DMP as assumptions, that certain equipment and facilities are available that people are trained and exercised etc.

d) Relief and Recovery – Typically, a DMP does not spell out recovery actions beyond rapid damage assessment and the actions necessary to satisfy the immediate life support needs of disaster victims, the DMP should provide for a transition to a recovery plan, if any exists, and for a stand-down of response forces. However, some short-term recovery actions are natural extensions for response and are covered by the DMP. For example, meeting human needs would require maintaining logical support to mass care actions initiated in the response phase with the addition of crisis counseling, it would also involve restoration of infrastructure "lifelines" and perhaps debris removal to facilitate response. Disaster assistance plans would identify how eligible relief recipients will be identified, certified and issued relief amount and materials. Beyond that life long-term recovery, which is not strictly time-sensitive and can sometimes be more adhoc Pre-disaster planning for long- term mitigation and recovery would involve identifying strategic priorities for restoration, improvement and growth; here emergency management planning starts to intersect the community development planning of other agencies.

ii) District Level:

The District Collector will be responsible for coordinating all disaster management activities at the district level. There shall be a District Disaster Management Authority headed by Collector. The District Disaster Management Authority shall approve a district disaster management planning and review all measures relating to preparedness and response to various hazards. The District Disaster Management Committee comprises members from Zilla Panchayat, Zilla Parishad, different line departments, NGOs, district Red Cross and others to be notified by the Department of Disaster Management from time to time. In times of disasters, Distt. Collector shall constitute a District Relief Committee to oversee management of relief. This will be in accordance with the instructions issued by the Department. of Disaster Management from time to time.

iii) Urban Areas:

The responsibility to manage disasters in the urban areas will rest with the Municipal Commissioner and Chief Executive Officer under the overall supervision of District Collector. The urban local body will be responsible for putting in place techno-legal regime and its compliance, training and capacity building of municipal staff, State Disaster Management Plan, awareness raising in the urban areas, functioning of fire services, setting up of search and rescue teams and such other activities to be notified by State Department of Disaster Management from time to time.

iv) Blocks and Tehsil Level:

Block and Tehsil level Disaster Management Committees will be constituted and will be headed by SDO and tehsildars as the case may be. Officers from different departments and representatives

of local panchayat body will be members of this Committee. The Committee will look into all the aspects of disaster management including mitigation preparedness, response and relief.

v) Panchayat Level:

In each Panchayat, there shall be a Disaster Management Committee which will oversee all activities in disaster management. The Panchayat will also constitute a Panchayat Disaster Management Team consisting of officials and non-officials and organize training for them to be able to discharge their duties properly.

vi) Village Level:

Each village shall have a Disaster Management Committee consisting of officials and non-officials. The Committee will be constituted to oversee by the gram sabha. The Committee will be responsible for awareness generation, warning dissemination, community preparedness plan, adoption of safe housing practices and organizing and cooperating relief in post disaster situations.

The State Department of Disaster Management will assign various duties and responsibilities to Disaster Management Committees at various levels from time to time. The State Disaster Management Centre created within the Harish Chandra Mathur Tamil Nadu Institute of Public Administration (H.C.M. DDMA) would work in close coordination with the State Disaster Management Department Disaster Management Centres, H.C.M., DDMA of the State would work as a think-tank to the State Disaster Management Department. They would carry out research, documentation of the best practices, networking with the National Institute of Disaster Management, knowledge management and would focus on training and human resource development need of the State.

Financial Management:

(i) The State and all departments shall make adequate budgetary provisions on plan and non-plan site for carrying out disaster mitigation preparedness response and relief activities.

(ii) The Calamity Relief Fund for the State will be utilized as per the Calamity Relief Fund (CRF) guidelines indicated by Ministry of Home Affairs, Govt. of India from time to time and Tamil Nadu State Contingency Relief Fund will be utilized as per the State Government guidelines.

(iii) Department of Disaster Management will work with all the Departments of the State Government to earmark resources for giving preference to projects which will help in mitigating the impact of natural hazards.

HAZARD AND VULNERABILITY ANALYSIS

Hazards are defined as “Phenomena that pose a threat to people, structures or economic assets and which may cause a disaster. They could be either man-made or naturally occurring in our environment.” A disaster is the product of a hazard coinciding with a vulnerable situation, which might include communities, cities or villages. Vulnerability is defined as “the extent to which a community, structure, service or geographical area is likely to be damaged or disrupted by the

impact of particular hazard, on account of their nature, construction and proximity to a hazardous terrain or disaster prone area.

There are five major classification of disasters:-

i) Water and climate related disaster
ii) Geologically related disaster
iii) Sea-erosion
iv) Accident related disaster
v) Biologically related disaster
vi) An analysis has to be done to identify the disasters, which the district is prone to, while climatic and water related disaster prevail through out the district, the accident related disaster are limited to where ever road and rail network is there.

Water and climate related disaster

Cyclone

Kanniyakumari district is a coastal district having coastal line of about 60 KMS. Thus the district is highly prone to cyclone. cyclone are part of North East Monsoon Season. Therefore, whenever there is depression, there are cyclonic formation in Bay of Bengal and it has its effect on Kanniyakumari District which may range from light rains in the coastal area to wide spread heavy rain through out the district and devastating effect of major cyclonic storm. Kanniyakumari district falls under the very High Damage Risk Zone. A Terrific Cyclones attacked Kanniyakumari as well as the coastal areas of Tamil Nadu after 30 years and resulted very heavy and flash flood. Heavy rain was also experienced during November 2010.

Storm Surge

Storm surge is the term used to denote the rapid rise in the sea level associated with a cyclone. It occurs along the seacoast to the right of the tract of the cyclone, a few hours before the cyclone strikes the coast. A sea level rise of 2 to 3 meters is common but with very severe cyclones the rise can be 5 metres or more. The risen sea inundates the low-lying land areas of the coast drowning human and livestock, eroding beaches and embankments, destroying vegetation, increasing salinity, reducing soil fertility and causing contamination of drinking water.

Storm surge depends on:

- Intensity of the system
- Bathy metry (bottom topography) of the sea coast
- Coastal configuration
- The angle at which the cyclone strikes the coast

Vulnerability to storm surges is not uniform along the Indian coast. The following segments of the east coast are most vulnerable to high surges.

1. North Orissa and West Bengal Coasts

2. Andra Pradesh coast between ongole and Machillipatnam
3. Tamil Nadu Coast South of Nagapattinam

Gales

Very strong winds may cause damage to installations and structures, dwellings, communication system and trees resulting in loss of life and property. In the case of a fully developed Tropical Cyclone wind system in the horizontal plane near the sea surface consists of 4 zones.

1. A calm central area, often circular varying between 10 to 30 kms in diameter, where the winds are very light, sky mostly clear or lightly clouded, no rain and the temperature significantly warmer than in the clouded zone outside this area. This region is called the eye of the storm.
2. An inner ring of hurricane force winds (Speed 90 Kmph or more and 50-150 km in width) and torrential rain.
3. An outer storm area in which winds are less strong (20 to 30 kmph). There is an asymmetry of rainfall pattern, clouds, winds etc. about the centre of the cyclone over this zone. Rainfall is also not continuous.
4. The outer most area weak circulation characterized by partly cloudy weather and light rain.

Rainfall

Heavy and prolonged rain spell may cause river-floods, which may submerge low-lying areas, cause erosion of structures, washing away of bridges, rail tracks and roads.

Tropical cyclones give abundant rainfall. Slow moving and large-scale cyclones produce more rain in comparison to the fast moving small size systems. Rainfall distribution around the centre is not symmetric.

ACCIDENT RELATED DISASTER

Road accident related disaster

The National Highways NH-7 crosses this district through Kanniyakumari from Tirunelveli to Kanniyakumari NH 47 crosses this district through Nagercoil from Kanniyakumari to Marthandam.

i) National Highways 63.600 Km.
ii) State highways : 1211.604 Km.
iii) Panchayat Road : 425.000 Km.
iv) Panchayat Union Roads : 568.150 Km.

Being a thickly populated district several road accidents occur. Every year the accident from spots have been identified and based on the risk assessments, during the earlier accidents in the district, the accident disaster plan has been prepared.

FIRE ACCIDENT RELATED DISASTER

On an average per year, 401 fire accidents are reported. The fire accident plan deals with the measures to be taken when there are reports received about fire accidents.

BIOLOGICALLY RELATED DISASTER

Kanniyakumari District has a cattle population of about 101712 cattle. There are about 463824 nos. of poultry. The cattle are exposed to the disaster of epidemic disease.

There are 655 Nos. of Noon Meal Centres, 1401 Nos. of ICDS Centres working in the district where the Mid Day Meals has been given to school going children, to the expected mother and young children and old age people.

Similarly while meeting on the fertile and marriages, big community kitchens are being organized. In such community kitchens, preparation is liable to food poisoning. this disaster management plans deals over the above two biological related management plans.

Secondary Hazards:

The State will take due cognizance of the secondary hazards, often induced from primary hazards like fires following earthquakes, epidemics following floods and famine and other hazards cover under the Tamil Nadu State contingency Relief Fund scheme etc. All actions for assessment of various hazards by the State will essentially take into account the associated secondary hazards in hazard analysis studies.

Vulnerability Analysis:

The impact of a hazard becomes a disaster only when an interface with vulnerability occurs, in terms of vulnerable structures, people or environment. The Vulnerability Atlas of India, published by the Ministry of Urban Development & Poverty Alleviation, Govt. of India, contains comprehensive details of the state-wise vulnerability to various natural disasters. Vulnerability Maps are available at **Annexure-I**.

i) Socio-economic:

Locational vulnerability is often intensified by the socio-economic conditions of the population. Poverty is the greatest vulnerability as it forces people to settle in marginal and more vulnerable areas. The State will endeavour to reduce the socio-economic vulnerability poverty alleviation programmes. The preparedness and mitigation initiatives run by the district and block administration will be sensitive to the increased vulnerability of the poor (BPL population) and the socially challenged groups and aim to reduce their vulnerability.

ii) Environmental:

Environmental problems often aggravate the destruction from disasters. The increased environmental vulnerability caused by vehicular and industrial pollution should be mitigated. The State will pay attention and enforce relevant laws regarding proper siting of industries and efforts

will be undertaken to minimize the ill effects of industrial pollution. On-site and off-site plans for industrial disasters will be made and updated regularly. The Secretary in charge of Disaster Management/Authority will interact with Secretary Industries and Chairman, State Pollution Control Board regularly and monitor the preparedness and mitigation initiatives. At the district level, the Collector will coordinate with the GM, DIC on this matter.

iii) Physical:

Micro-level vulnerability analysis pertaining to physical location of people and elements at risk will be completed by the state government, in consultation with the DMC Cell at the State H.C.M. DDMA and the experts. A detailed study pertaining to the technical capacity of the buildings and structures to resist the predominant hazards will be done by the state PWD/Urban Department and unsafe structures identified for upgradation or otherwise, at the discretion of the state government.

Urban hazards:

The State is witnessing a rapid increase of urbanization giving rise to concerns like slums and squatter settlements, pollution, unregulated expansion of the urban areas, transportation problems etc. Excessive urbanization has contributed to the occurrence of major disasters, both natural and man- made. Even natural disasters have different ramifications when they occur in urban areas due to high population density. A composite vulnerability/risk profile of the urban agglomerations and highly disaster prone areas will be developed. Urban Disaster Management Plans will be drawn up by the Urban Local Bodies, in consultation with the Department of Disaster Management and related sectors.

An Urban Disaster Management Expert Group will be constituted by the state government for advising the government and preparing guidelines for Mainstreaming Urban Disaster Mitigation into the development processes. The Urban Local Bodies including the Municipal Corporations will be the key agencies in the formulation and enforcement of disaster mitigation initiatives in the State.

STATE RESOURCE AND CAPABILITY ANALYSIS

In view of the vulnerability to various disasters, the capability of the State in terms of its resources should be analyzed to identify the gaps and devise means to enhance the state's capability. An objective analysis of the state's resources will ensure optimal utilization and better management in times of disasters. A detailed analysis and inventory of the state's resources will facilitate mobilization and cut down on precious response time.

State Resource Analysis:

Creation of intelligent, integrated and comprehensive database of resources, both material and human resource, at the state level will be generated as a subset of the nationwide India Disaster Resource Network

Indian Disaster Resource Network [State database]:

A web-enabled centralized database for the IDRN is operational. The network will enable quick access to resources to minimize response time in emergencies. The system gives the location of specific equipments/specialist resources as well as the controlling authority for that resource so that it can be mobilized for response in the shortest possible time. The database will be made available at the district, state and national levels and will be used for all emergencies and day-to-day operations. However, the District Collector will take proactive steps to verify and update the dataset regularly. The Department of Disaster Management will update the database on a quarterly basis. All District Collectors will provide the updated information to the Department of Disaster Management regularly.

Material resource analysis:

A database of all area/region, giving the land use, demographic, socio-economic data, infrastructure (like road, rail network, hospital etc), geography etc will be maintained at the state level. At the district and sub-district levels, the available physical resources, like buildings on high ground, public utilities, boats (with the administration and general public) will be assessed by the District Relief Officer, under the supervision of the District Collector. The DRO will regularly update the list of resources within the district for use during an emergency.

Human resource/expertise analysis:

The State will identify the human resource available for disaster management. The institutions for human resource development and training run by the government and also those run by non-governmental agencies will be identified and a detailed plan for capacity building will be chalked out by the State DM Department, involving all the institutions & departments. The State will also maintain a list of professionals whose services might be required in management of disasters. The District Relief Officer, under the supervision of the District Collector will maintain an updated list of professionals like doctors, paramedics, civil and construction engineers, architects and town planners and send it to the State DM Department every six months for updation of the State list. Similarly, an expertise database comprising of trained experts in various disasters, volunteers, NGOs, retired experts, swimmers, rescuers etc will be prepared by each district and sent to the State DM Department.

Capability Analysis:

An objective analysis of the state's own capacity to fight disasters will be carried out in terms of Resources, Skills and Information availability.

SEARCH AND RESCUE TEAMS:

Specialized Search & Rescue Teams consisting of fire service professionals, police, civil defence volunteers, doctors, paramedics, structural engineers etc. will be constituted by the State Government according to the requirements of disaster management emerging from the vulnerability profile of the State.

a) State Search and Rescue Team:

The State Government will constitute a Search & Rescue Team from the State Police. The state will ensure that the teams have the latest equipment as well as dog squads for locating survivors in the debris. The team will be a composite one with one company from the State Armed Police trained and equipped to carry out specialized Search & Rescue, one mobile engineering unit with necessary equipment.

b) Urban Search and Rescue Team:

Disasters in highly populated urban areas require specialized response. For this purpose, specially trained Urban Search & Rescue Teams will be constituted by strengthening and reorienting the Fire Services, Police Dog Squad and Civil Defence personnel in all Big Cities, State capital and very vulnerable populous urban centers. The Fire Services will function as multi-hazard response units.

c) Local Search and Rescue Team:

At the local level, retired Army and Police personnel, Civil Defence and Home Guard volunteers will be organized and trained to perform initial Search & Rescue operations till the arrival of the specialized teams. Local S&R Teams shall be a constituent of the local Disaster Management Teams and adequate training provided to the members.

MEDICAL FIRST RESPONDERS:

Disaster Medical Assistance Teams should be fully equipped with mobile hospital units having OT, Pathological laboratories, ICU, X-Ray equipment and the standard cache of medicines and equipments. Epidemic prevention measures and trauma counseling should be specially incorporated in the medical plans. Disaster specific medical plans will be prepared by the state Department of Health, incorporating the special needs.

Incident Command System:

In order to professionalise the response, the state will set up the Incident Command System (ICS). This system will provide for specialist Incident Command Teams with an Incident Commander and officers trained in different aspects of incident management such as logistics, operations, planning, safety, and media management. The state will depute its officers to undertake necessary training in ICS in the nodal institutions approved by Govt. of India. The State DM Department will also prepare and finalise the protocols/SOPS required or putting the ICS in place.

Emergency Support Functions (ESF)-concept and operations:

During most smaller emergencies, each department/agency within the State Government performs its specialized tasks according to the agency's internal operating procedures. During major emergencies, however, there is an increased need for coordination of all activities relevant to the emergency response as they relate to the event as a whole. The ESFs are designed to ensure coordination between various agencies for optimal resource utilization and to minimize duplicity. The ESF group is composed of a lead agency and one or more support agencies. The

lead agency is responsible for the coordination of the ESF group as a whole, with individual departments/agencies performing their emergency missions as per delegated responsibility, being coordinated by the lead department/agency. Each department/agency is responsible for developing its own respective plans and SOPs for carrying out its assigned responsibilities.

During the period immediately following a major disaster or emergency requiring central response, primary agencies will take actions to identify requirements and mobilise and deploy resources to the affected area to assist the district administration in its response actions under designated ESFs (Emergency Support Functions). Request for assistance will be channeled from the district level to the state government.

i) Ministries/Departments/Organizations:

The Department of Disaster management will identify the ESF's and the primary and support agencies associated with it. The major ESF's are:

Response Functions ➢ Search & Rescue ➢ Relief Supplies (Lifeline)	Human Needs Functions ➢ Food ➢ Drinking Water ➢ Shelter ➢ Cash Relief
Services & Support Functions ➢ Public health & Sanitation ➢ Power ➢ Transport ➢ Public Works & Engineering	Recovery Functions ➢ Helplines
Communications Functions ➢ Communication ➢ Media	Information & Planning Functions ➢ Information & Planning

ii) Emergency Support Functions (ESF) Teams:

Each primary agency will coordinate with the secondary agencies and develop a team of nodal officers for the particular ESF. The teams thus formed for each ESF will meet twice a year during normal times and evolve detailed operating procedures for management of future disasters. During disasters**,** however, the ESF teams will meet as often as is deemed necessary.

iii) Field Quick Response Teams (QRT):

Quick Response Teams (QRT) will be developed at the district level, which will have the requisite equipment and resources to respond to any hazard. The QRTs, adequately briefed, should leave the district headquarters within 2 hours of the news of a disaster. The teams should be self sufficient in terms of the their own survival kit and for the disaster response work. These teams should be all hazard teams that are prepared for all disasters. The teams can be divided into two broad categories

- Assessment teams
- Response teams

Emergency Communication Network:

The State Government accepts that breakdown of the traditional communication system already in force becomes a key bottleneck in case of any major disaster. The State will put in place an efficient communication network for better coordination in times of a disaster. The State will extend the facilities of NICNET, ISDN and Space Net to the district level for a two-way communication and coordination to and from the State Secretariat to the district. At the sub-divisional levels, the police network (POLNET) facility extended to District Magistrates will be utilized. A dedicated communication system for disaster management through satellite phones and other facilities will be developed. The District Collectors will also coordinate with the HAM radio network active in the district for communication during disasters. HAM members would be the integral part of the response plan. They have to facilitate emergency communication at the time of disaster. At the State level, Relief Commissioner and at the district level District Collector office would be responsible for the collection and updation of the list of the HAM members. If any simulation is done at the state as well as the district level they need to be incorporated in the emergency communication network of the state and the district.

Resource Institutions for multi-hazard mitigation:

The State will take initiatives to institutionalize knowledge and lessons learnt in the process of coping with past disasters. The knowledge gained over the years needs to be adequately filtered and authenticated and get connected with the learning exercise. The State DM Department, in consultation with the Disaster Management Centre H.C.M. DDMA will identify the resource institutions for multi-hazard mitigation from the institutions of higher learning like IITs, Universities and R&D and S&T institutions located in the State.

Regional and National resources available:

Severe disasters cannot be handled by the state alone. The Department of Disaster Management will list out the resources available at the Regional and national level and maintain constant communication with the authorities at these levels for immediate deployment of required resources during a disaster.

Information Technology and GIS applications in Disaster Management:

The Geographical information System (GIS) database is an effective tool for emergency responders to access information in terms of crucial parameters for the disaster-affected areas. The parameters include location of public facilities and vital installations, communication links and transport network at local levels etc. The GIS database already available with various agencies will be collated into a system by the NIC and will be made available in a user-friendly format to all District Collectors for ready reference.

DISASTER MANAGEMENT PLANNING - METHODOLOGY AND PROCESSES

Planning at different levels:

The most important component of preparedness is planning for all contingencies. The plans

have to be linked with different support departments, and also at various levels. The National Tenth Five Year Plan accords a high priority to disaster management and states that "… we now have to look ahead and plan for disaster preparedness and mitigation, in order that the periodic shocks to our development efforts are minimized." Pre-disaster planning augments the system and society to be prepared to cope with a disaster effectively when they occur. Taking a cue from the national plan, state will also be drafting its plan by incorporating disaster management as its important components. Similarly, all the District Collectors and the Panchayat will formulate their plans. All the plans will have disaster management as a mandatory component.

i) State Disaster Management Plan:

A Disaster Management Plan will be prepared for the State by each Nodal Department under the direct supervision of the Chief Secretary. The plan will be comprehensive and include aspects of mitigation, preparedness and response. The plan will be multi-disciplinary and drawn up in conjunction/consultation with all relevant departments concerned with mitigation, preparedness and response. The State Disaster Management Authority and Disaster Management Group will monitor its implementation at all levels. A process of annual updation of the plan once a year will be institutionalized at the state level by all departments.

ii) District Management Plan:

Detailed District level Disaster Management Plans will be drawn up under the supervision of the District Magistrate/Collectors and will include the elements of mitigation, preparedness and response. The Plan will be drawn up in consultation with all relevant departments. The Emergency Support Functions of various departments will be listed out in the plan. An inventory of resources in the district will be listed out and updated regularly. The District Disaster Management Committee will coordinate the rehearsal of the plan, if deemed necessary by the District Magistrate/Collector and its yearly updation.

iii) Disaster Management Plan for Urban Areas:

The ramifications of urban disasters being different, the disaster management operations in the urban areas will be administered with respect to specific plans for the urban areas. Each Municipality/ Corporation/ Notified Area Authority/Development Authority will prepare a DM Plan based on guidelines prepared by the Urban Development Department/ Town Planning Department.

iv) Block Level Disaster Management Plan:

Block level DMPs will be drawn up by the Block Development Officer, under the supervision of the Collector and will include preparedness, mitigation and response components. The plan will be prepared in consultation with all relevant departments, and will include an inventory of resources available at the block level.

v) Panchayat Level Disaster Management Plan:

The annual development plan of the Panchayats will comprise of a separate plan for disaster management, which will focus on the pre, during and post-disaster activities of the DMCs and DMTs, identification of safe shelters, stockpiling of relief materials, early warning dissemination etc.

vi) Village Level Disaster Management Plan:

At the village level, community based plans will focus on enhancing the community capacity in order to respond effectively to disasters, especially the vulnerable communities and groups. The plan will focus on hazard mapping and identifying the vulnerable areas and population groups, identifying the resources and dissemination of early warning.

Frequency of updating of the plans:

The plans at all levels will be updated half yearly in the month of April and October.

PUBLIC EDUCATION AND TRAINING

Mainstreaming disaster management in education:

There is a need to build up the young to understand the their community's/ districts'/state's vulnerability to various disasters and involve them in problem solving through community level participation. In order to inculcate within them an ethos of prevention and preparedness, large-scale awareness and knowledge generation needs to be emphasized. The education sector plays a critical role to develop among the young a sense of social and civic responsibility towards preparedness and also to build capacities to meet emergencies to develop into responsible citizens of the future. The State recognizes the need for integrating and institutionalizing disaster education within the formal and informal systems of education in practice in the State.

i) Disaster management education in school/colleges/Universities:

The focus towards preventive disaster management and development of a national ethos of prevention calls for awareness generation at all levels. An appropriate component of disaster awareness at the school/college/University level will help increase awareness among student and teacher community and their family members. Appropriate steps will be taken by the State Education Department to disseminate disaster related information covering junior, middle and high schools along with college and Universities. The Sate Educational Departments in consultation with the Boards of secondary and higher secondary school education and universities will take appropriate measures to ensure their implementation at the earliest.

ii) Disaster management education in professional education:

The multi-sectoral and multi-hazard prevention based approach to DM requires professional inputs. Therefore, professional training should be built into the existing pedagogic research and education. The Universities functioning in the State will incorporate disaster management and disaster resistant development practices as specific components in professional and technical education curricula like medicine, nursing, engineering, environmental sciences, architecture & town and country planning. The State Disaster Management Authority, in consultation with the Department of Higher Education and eminent experts in the field will develop specific guidelines for incorporating disaster education in professional and technical curricula. The educational institutions run by non-governmental bodies and private trusts will follow the guidelines provided by the Authority. The Universities and other professional teaching institutions will also initiate actions to develop specific curricula for disaster management at the post-graduate and doctoral research levels.

iii) Disaster management in vocational education:

Disaster education will be addressed adequately in the vocational education system also. The State Education Department, in consultation with the State Disaster Management Authority and a committee of experts in the field, will take appropriate measures for incorporating a component of disaster management in all vocational training courses.

Mainstreaming disaster management training in all training programmes:

Training is an integral part of capacity building as trained personnel respond much better to different disasters and appreciate the need for preventive measures. Systems, measures and initiatives will be taken to ensure intensive training and retraining for building up of human resources, especially to improve disaster awareness, safety and capabilities of disaster managers. Priority will be given to training and capacity building of personnel in critical sectors like police, revenue, agriculture and irrigation, health, public works etc.

i) Civil servants:

The officers of the Civil Services function as nodal functionaries for disaster management at the district, state and national level during their career. Training of civil servants is imperative at all levels to enhance their knowledge, managerial skills, sensitivity and commitment in disaster management. The State H.C.M. DDMA will develop appropriate modules on disaster management for training of State Service officials at the Induction level. All officials employed by the State in the departments of revenue, fire services, public works, health, irrigation, education and related departments will be imparted training on disaster management at the induction level and regular skill enhancement by periodic in- service training. Emphasis will be given to training of the officials deployed in the field for efficient response during disasters. All the modules developed by the Disaster Management Centre H.C.M. DDMA and other training institutes will keep the specific needs of the trainees in view.

ii) Police service:

The role of the police in disaster management is crucial, albeit more in response and relief. However, managing disasters and its aftermath requires increased sensitivity to the event, the extent of damage and skills for managing disasters. The State Home Department will make all efforts towards sensitization and skill development of the police personnel down to the constable level. The state level Police Training Institutes will develop the need-based training modules focusing on issues like maintenance of law and order during disaster, search and rescue, crowd management, coordination with civil administration and armed forces and other related areas. Orientation and training programmes on disaster management will be conducted as a part of induction training of all police personnel and regular in-service training will be as per the decisions taken by the department from time to time.

iii) Elected leaders:

Disaster management needs to be addressed particularly at the level of policy makers and legislative authority. Orientation and sensitization programmes highlighting the issues and concerns in disaster management at the policy-makers level are therefore essential. The Chief

Secretary will coordinate, in consultation with the Chief Minister and Chairman, State Disaster Management Authority will instruct the Department of Disaster Management to hold half-day orientation workshops on DM in the State Assemblies for members of the Lower and Upper Houses, as applicable. The Department of Disaster Management will also formulate a plan for regular orientation workshops for elected leaders of the Urban Local Bodies (ULBs) and Panchayati Raj Institutions (PRIs). The H.C.M. DDMA will conduct the orientation programme in association with the State Disaster Management Authority.

iv) Civil Defence:

Currently, Civil Defence Department is working in the State to protect civilians against any foreign aggression and natural calamities. Civil Defence will act as a major force in emergency response and it will be the integral part of the Incident Command and Emergency Response System of the State. The State will strengthen and upgrade the facility of the Civil Defence according to the vulnerability of the State due to various hazards. Department of Civil Defence will incorporate disaster mitigation, prevention and preparedness in their regular budget submitted to the state government department. Home department will in turn be responsible for developing and building capacity of the State Civil Defence system. Department of Home of the state will constitute a committee on revamping Civil Defence. The Committee will also look into the role of NSS, NCC and Nehru Yuva Kendra for integrating them into emergency response mechanism.

v) NGOs and Volunteers:

In order to make volunteering useful in such situations, voluntary groups will be identified, which can be pressed into action whenever such disaster or calamity occurs. Once such voluntary groups are identified they have to be trained to tackle emergency situations. One of the most important aspects of this training would be how they would interface with the government machinery and work in a coordinated manner so that efficient and speedy relief is afforded to the affected people.

Volunteering assumes further importance in a disaster situation because very often, the government machinery does not have the required credibility, both with the public as well as with the media. Hence, if a volunteer group involves itself in a systematic, effective and well-coordinated manner, there would be a sense of transparency in the operations and even political interference would be minimised. For example, if the controversy and contradictions surrounding a damage assessment exercise by the Government machinery were to be conducted with close coordination with voluntary groups of eminent people, these issues could be resolved.

PREVENTION AND MITIGATION

Mitigation in development planning:

Sustainability is the key word in the development process. Developmental activities that do not consider the disaster loss perspective fail to be sustainable. Therefore, mitigation measures will be integrated within the development process and all development schemes in vulnerable areas will include a disaster mitigation analysis, whereby the feasibility of a project will be assessed with respect to vulnerability of the area and the mitigation measures required for sustainability.

i) Town and Country Planning Acts and their related provisions:

The Department of Disaster Management, being a member of all regulatory bodies will coordinate with the Town & Country Planning Board and constitute a committee of experts to evaluate the provisions of the State Town & Country Planning Act in place. The Committee will consist of experts from the fields of disaster management, town and country planning and legal experts and will be chaired by the State Relief Commissioner.

ii) Zoning Regulations and their related provisions:

The State Urban Development Department, in consultation with the Department of Disaster Management will constitute a committee of experts with members from the Institute of Town Planners, State Pollution Control Board, Chairpersons of major Development Authorities/Notified Area Authorities, eminent faculty from planning, architecture and civil engineering departments of engineering colleges, eminent resource persons and such other experts nominated from time to time to study the existing zoning regulations and suggest necessary amendments to incorporate components for vulnerability reduction. The State Chief Town Planner will be the Convener of the Committee.

ii) Development Control regulations:

The same committee of experts constituted to evaluate the zoning regulations will also evaluate the development control regulations and suggest measures to incorporate the disaster management concerns into them.

iii) Government-sponsored programmes and schemes:

The State Planning Department will prepare a report on the government sponsored programmes and schemes running in the State and how far each programme/scheme addresses the issue of disaster management and submit to the government. The Disaster Management Group which is constituted under the chairmanship of the Chief Secretary with Secretaries of the Departments of Disaster Management, Urban Development, Rural Development, Health, Home, Finance, Science & Technology, Transport, and Agriculture to evaluate and suggest disaster mitigation measures to be incorporated.

Building Bye-laws and their implementation:

Proper conceptualization, risk evaluation, proper designing, construction and maintenance of houses and building are all disaster reduction measures. Compliance to building guidelines and codes covering all aspects of disasters needs to be addressed by building codes and bye-laws and these need to be uniform as far as possible. The situation warrants a high degree of coordination between the organizations involved in the formulation of the building codes. The State Urban Development Departmentt/Urban Local Bodies will put in place appropriate technolegal regime and take steps to enhance the capacity of Urban Local Bodies to enforce the compliance of techno-legal regimes. The Urban Local Bodies will ensure stringent implementation of BIS codes and disaster resistant construction practices. Disaster resistant codes and standards will be made a part of the building byelaws and regulations and enforced by the ULBs. The

Department of Urban Development will identify a competent authority to certify the disaster resistant components in public buildings.

Hazard Safety Cells:

The State Government will establish a Hazard Safety Cell within the Public Works Department in order to establish competency in hazard resistant design of building and structures as well as restoration and retrofitting of buildings and structures. The Hazard Safety Cell will perform the following functions:

- Training, acquisition of published books and documents, building codes, guidelines and manuals, documentaries and films on the subject of disasters.
- Preparation of checklists for quick review of new designs, to be adopted for buildings and structures to be constructed in the state.
- The Cell will act as an advisory cell to the State Govts. on different aspects of building safety against the hazards.

Structural Mitigation and role of different departments

i) Earthquake:

It is often said that earthquakes do not kill people, but badly constructed buildings do. Construction practices should incorporate earthquake resistant features like raft or pile foundation, braces, lintel bindings, edge-beams and Base Isolation Techniques etc. Retrofitting of existing buildings will be undertaken after proper vulnerability analysis. Public utility buildings and vital installations will be retrofitted on priority by the concerned departments in consultation with experts in the field. A detailed risk and hazard analysis will be undertaken districtwise, based on which stringent zonation norms be formulated and enforced.

ii) Floods:

Floods continue to be a menace mainly because of the huge quantum of silt being carried by the rivers emanating from the Mountains. This silt has raised the bed level in many rivers leading to channel diversion and flooding. The structural mitigation measures for floods relate to flood management and stringent implementation of flood zoning measures. The Department of Disaster Management and Department of Irrigation in the flood-prone areas will undertake appropriate flood proofing measures like construction and monitoring the condition of embankments and flood walls, small dams and reservoirs and identifying and maintaining quick drainage channels.

iii) Drought:

Substantial areas of our country periodically experience droughts leading to considerable loss of agricultural production and livestock wealth, besides causing misery to people inhabiting these areas. Drought management generally focuses on soil cultivation methods, drought tolerant cropping pattern, water regulatory mechanisms, water conservation/water harvesting techniques appropriate cropping pattern for sustainable agricultural production and alternative employment generation. Each state Directorate of Agriculture has a well-established system to

closely monitor sowing operations from village level to district and state level. Monitoring the water levels in all the medium and major dams and reservoirs are carried out daily by the State Irrigation Department and Indian Metrology Department.

Capacity Building for Mitigation:

Recognizing the importance of human resource development and capacity building for effective disaster mitigation, the State will take appropriate steps to develop training curriculum for officials in all sectors at all levels. The H.C.M. DDMA in collaboration with the State Institute of Rural Development and training institutes in related sectors like health etc will develop the required modules and capsules for conducting training at all levels. Efforts will be made by the state government to effectively train engineers, architects, masons etc on disaster mitigation and also create a pool of master trainers for training of the DMC's and DMTs in the state. The District Institutes of Education & Training (DIETs) will be utilized for training of district, block and village level officials in disaster management.

Awareness generation on disaster mitigation:

Creating awareness among the community through disaster education, training and information dissemination and thus empowering them to cope with hazards are all mitigation strategies. In the present circumstances, adhering to building byelaws and standards would be crucial and therefore the people's consciousness towards the same needs to be evolved. However, each mass movement requires different and context-specific study. The Information Directorate, in consultation with the State DM Department and the Disaster Management Cell within the Disaster Management Centre H.C.M. DDMA, will develop a Mass Media Campaign for taking up large-scale awareness generation bringing out specific do's and don'ts through audio, video and print media as well as publicity through pamphlets, posters, bus back panels at all levels. The District Information Officer will ensure that all these publicity materials are prominently displayed at buildings like PHC's, Community Centres, Schools and such other common places where villagers normally congregate for community activities. The State Directorate will collect IEC material from other states and wherever appropriate, translate them into local languages and disseminate them widely down to the village level. The Information Directorate will also associate the corporate sector for dissemination of the mass media campaign.

Role of local self-governments in mitigation:

Local self-government institutions like PRIs and ULBs will be the focal points for mitigation at the village and city levels. Members of the PRIs and ULBs will be involved in all preparedness and mitigation measures. Members of the PRIs and ULBs will coordinate the functioning of the DMCs and the DMTs in DM plan preparation, preparation and maintenance of resource inventory, conducting mock drills etc. During disasters also, they will coordinate with the district and block administration for evacuation, response, relief distribution etc.

Role of Insurance in Disaster Mitigation:

To obtain competitive advantage in providing catastrophe insurance coverage to consumers, the pools frequently rely on government capabilities not available to private insurers. Among the

most common are the use of government tax collection offices to collect insurance premiums, or the use of real estate registration offices as check points to enforce the compulsion. In addition, insurance programs frequently have access to the pool of qualified damage assessment engineers employed by different public sector agencies. These cadre of specially trained engineers, if properly trained in damage assessment methods, can be an invaluable resource in case of large disasters. By putting in place some basic organizational arrangements, they can be swiftly mobilized and employed as damage assessment specialists (loss adjusters) frequently at a very minor cost to the insurance pools.

PREPAREDNESS

While mitigation can make communities safer, it does not eliminate risk and vulnerability for all hazards. Therefore, administration must be ready to face emergency threats that have not been mitigated away. Since emergencies offer evolve rapidly and become too complex for effective improvisation, a government can successfully discharge its emergency management responsibilities only by taking certain action before hand.

Preparedness involves establishing authorities and responsibilities for emergency actions and garnering the resources to support them, a jurisdiction must assign or draft staff for emergency management duties and designate or procure facilities, equipment, and other resources for carrying out assigned duties. This investment in emergency management requires upkeep; the staff must receive training and the facilities and equipment must be maintained in working order. To ensure that the district's investment in emergency management personnel and resources can be relief upon when needed, there must be a programme of tests, drills and exercises. Consideration also must be given to reducing or eliminating the vulnerability of the district's emergency response organization and resources to the hazards that thereaten the district.

Accordingly, preparedness measures should not be improvided or handled on an adhoc basis. a key element of preparedness is the development of plans that link the many aspects of a district's commitment to emergency management.

i) Incident Management Teams:

The state will constitute specialized teams at various levels for responding to disasters. These specially trained teams will be capable of providing specialized response to various disasters in minimum time.

a) State Level :

At the state level, Search & Rescue teams will be constituted from the State Police and will be provided with state-of-the-art equipment for immediate response. The State Home Department will designate the units for conversion into Specialist Response Teams (SRTs). The State will also designate training centers for training the SRTs and nominate key personnel within the Police Training Colleges and Fire Training Institutes as trainers and train them at the national level. These trainers will then impart training to the SRTs.

b) District Level:

Subsequently, Specialized Response Teams at the district level will be designated from the district level Police and Fire Service personnel and equipped for immediate response in any disaster within the district. In the event of a request from a neighbouring district these teams will be authorized to operate under the direction of the Collector of that district.

c) On-site teams:

Disaster Management Teams (DMTs) at the village level will operate as Incident Management Teams and will be trained to perform immediate rescue and first-aid operations in a disaster situation. A systematic approach should be evolved to ensure proper coordination between the SRTs and DMTs.

ii) Emergency Operations Centre (EOC):

In a disaster situation, variable factors of intensity, affected population and severity of damage need to be quickly assessed based on which government agencies can allocate and deploy relief. Therefore, in the event of failure of the normal management mechanism, an Emergency Operations Centre becomes a nodal point for overall coordination and control of relief work. The EOCs at the State and District will be activated immediately on the event of a disaster or a disaster warning. The primary function of these EOCs is to facilitate the smooth inflow and out flow of relief and other disaster response related activities. These EOCs act as bridges between the center, state and district. The EOCs have to be equipped with state of the art communication technology and GIS enabled systems for quick and effective decision making. The structure in which EOCs are housed must also be disaster resistant. The EOC should also be equipped with a Doctor and First Aid Equipment apart from its own administrative and maintenance staff. The EOC Incharge who has had substantial expertise in the area of disaster management and is familiar with the area of disaster should head the EOC. Since the EOC functions and activities require quick and spot decisions, the EOC equipment as well as manpower is required to be periodically evaluated and tested. Therefore the core nucleus of the EOC will remain functional throughout the year.

a) State Level:

The State Secretariat will house the EOC, which will be a multi-hazard resistant construction with latest communication system linkages, technologically advanced equipments and trained personnel to manage it. The EOCs will function as composite Control Rooms to look after law and order issues as well as disaster management.

b) District Level:

As in the state, a multihazard resistant building with state-of-the-art communication facilities will be made available round the clock.

c) On-site Teams

A mobile EOC for on-site disaster management information will be functional under the supervision of the District Collector/Deputy Commissioners.

iv) Emergency Management Contact Directory:

An Emergency Management Contact Directory will be prepared and maintained, containing contact numbers of all the nodal officials in disaster management along with those of prominent NGOs. The Collector will supervise and coordinate the preparation and regular updation of this directory at the district level and send a copy to the State Department of Disaster Management.

iv) Preparedness actions by different Emergency Support Functions:

Emergency Support Functions (ESF) form an integral part of the EOCs; hence they should coordinate their activities from the allocated EOC. Extension teams and workers of each ESF will be required to coordinate the response procedures at the affected site. However, the identified ESFs should have a plan for mobilization, management and monitoring of their designated activities.

v) Mock drills:

The district police department, Homeguards, Civil Defence personnel, Fire Service officials, SRTs, QRTs, DMCs and DMTs will undergo periodic mock drills for different disasters, coordinated by the District Collector at the district level and by the Relief Commissioner at the State level. It is mandatory to have mock-drills at least twice in a year for fire and earthquake.

Mock Drill has been conducted at District Level on 18.09.13 & 23.09.2013. The officials from Revenue, Fir Service, Health, Fisheries, P.W.D., and Educational Departments participated in the mock drills. Local people in that area participated. The response from the villagers was appreciable.

vi) Role of local-self governments in disaster preparedness:

The Chairpersons of the PRIs and ULBs will ensure necessary measures for warning dissemination, community awareness generation, evacuation drills and capacity building of their functionaries to be involved in disaster management.

EARLY WARNING AND DISSEMINATION

The early warning systems for different disasters should be in place so that the concerned administrative machinery and the communities can initiate appropriate actions to minimize loss of life and property. These should give an indication of the level of magnitude of the mobilization required by the responders. The goal of any warning system is to maximize the number of people who take appropriate and timely action for the safety of life and property. All warning systems start with the detection of the event and with their timely evacuation. Warning systems should encompass three equally important elements viz detection and warning, dissemination of warning down to the community level and the subsequent quick response.

The State acknowledges the crucial importance of quick dissemination of early warning of impending disasters and every possible measure will be taken to utilize the lead-time provided for preparedness measures. As soon as the warning of an impending calamity is received, the EOCs at the State, District and Block levels will be on a state of alert. The Incident Commander will take charge of the EOC and oversee the dissemination of warning to the community. The District Collector will inform the District Disaster Management Committees who will alert the lock and Village level DMCs and DMTs to disseminate the warning to the community. On the basis of assessment of the severity of the disaster, the State Relief Commissioner (Incident Commander) shall issue appropriate instructions on actions to be taken including evacuation to the District Collector, who will then supervise evacuation. In situations of emergency, the District Collector will use his own discretion on the preparedness measures for facing the impending disaster.

At the village level, members of the DMCs and DMTs or village level worker/Patwari will coordinate the evacuation procedures to the pre-designated relief centers, taking special care of the vulnerable groups of women, children, old people etc. according to the plans laid down earlier.

Warning or Occurrence of Disaster

On the receipt of warning of alert from any such agency which is competent to issue such a warning, or on the basis of reports from Divisional Commissioner/ District Collector of the occurrence of a disaster, all community preparedness measures including counter-disaster measures will be put into operation. The Chief Secretary/ Relief Commissioner will assume the role of the Chief of Operations for

Disaster Management.

It is assumed that the district administration would be one of the key organizations for issuing warnings and alert. Additionally, the following agencies competent for issuing warning or alert are given below.

Disaster	Agencies
Earthquakes	IMD
Floods	Meteorological Department,
	Irrigation Department.
Cyclones	IMD
Epidemics	Public Health Department
Road Accidents	Police
Industrial and Chemical Accidents	Industry, Police, NPS, Rawat Bhata,
	District Collector
Fire	Fire Brigade, Police, Collector
Rail Accident	Railways, Police, Collector
Air Accident	Police, Collector, Airlines
Ammunition Depot-Fire	Army, Police, Collector.

The occurrence of the disaster will be communicated to :

- Governor, Chief Minister, Home Minister, Relief Minister and non-officials namely MPs and MLAs from the affected district.
- Chief Secretary, Principal Secretary, Disaster Management & Relief Department, Secretary, Disaster Management & Relief Department,
- Cabinet Secretary, Secretary, Home and Defense, Government of India.
- Secretary, Agriculture, and Joint Secretary, NDM, Ministry of Agriculture, GOI
- Local Area Commander of the Army.

The Occurrence of the Disaster would essentially bring into force the following :

- The Emergency Operations Centre will be put on full alert and expanded to include Branch arrangements, with responsibilities for specific tasks, depending on the nature of disaster and extent of its impact. The number of branches to be activated will be decided by the Chief of Operations.
- All Branch Officers and Nodal Officers will work under the overall supervision and administrative control of the Chief of Operations. All the decision taken in the EOC have to be approved by the Chief of Operations.
- Immediate access to the disaster site.
- Telephonic and VSAT, wireless communication and hotline contact with the Divisional Commissioner, and Collector/s of the affected district/s will be activated.

The EOC in its expanded from will continue to operate as long as the need for emergency relief and operations continue and the long-terms plans for rehabilitation are finalized for managing long- term rehabilitation programmers, such as construction of houses, restoration of infrastructure etc. the responsibilities will be that of respective line departments. This will enable EOC to attend to other disaster situation, if the need be.

RESPONSE

Standard Operating Procedures:

Standard Operating Procedures encompassing preparedness and response will be laid down to ensure a well-coordinated and effective disaster management. Each ESF group will develop an SOP for use during ESF activation. The primary responsibility for development of this document lies with the lead agency in the individual ESFs. The SOPs so developed will be tied up at all functional levels.

i) State level:

Depending on the specific vulnerability of the state, detailed SOPs will be evolved by all related departments in consultation with the Department of Disaster Management. Each primary agency will be responsible for developing specific SOPs and implementing procedures for use in deploying its assts and resources during emergency. Each agency involved in a particular ESF

shall maintain control of its own personnel and assets during emergency operations. The SOPs will include:

- Procedures for notification of ESF agencies
- Mechanisms for communications between and among the various ESF components
- Procedures for establishing ESF groups at the EOCs at the state, district and sub-district levels.
- Identification of emergency capabilities of agencies tasked in the ESF
- Descriptions of the relationships of the lead and support agencies assigned to the ESF.
- Procedures for carrying out tasks and responsibilities assigned, which will include:
    - Logistics & resource requirements
    - Communications requirements
    - Requirements for development of specific agency implementing procedures
    - Procedures for coordinating ESF group functions/tasks with other ESFs
    - Dissemination of information to other ESFs, especially ESF related to planning and coordination
    - Procedures and policies for acquiring needed facilities, vehicles and other resource support
    - Procedures for coordination of planning sessions and guidelines concerning development of the SOP and various implementation procedures.

ii) District level:

SOPs for all relevant departments at the district level will be drawn up under the supervision of the Collector. However, regular updation, monitoring and evaluation will be carried out at the district level.

Level of emergencies:

To integrate disaster management on the same platform, different activities required for different magnitudes of disasters have been conceptualized. Four levels of emergencies have been identified for planning and response as follows:

- L0 is the backbone of all planning process, before the onset of a disaster. It encompasses all functions/activities required to be completed before the disaster strikes. Activities during this phase will focus on surveillance, mitigation and preparedness. These have to be monitored and ensured at the level of the nodal disaster management authority. DMPs have to be asked for and feedback given to all agencies and higher authorities.
- L1 is a district level disaster, which can be handled within the capabilities of the district administration.
- L2 is a state level disaster, which can be dealt with by the state, using its own capabilities and resources

- L3 is a national level disaster, requiring major direct intervention of the Central Govt in terms of funding, resources, trained personnel and other required support.

Role of local self-governments in disaster response:

The local self-govt institutions like PRIs and ULBs will play a vital role in the response stage in coordinating Search & Rescue, Relief, Shelter management & Relief Camps, Reconstruction and Rehabilitation, preliminary damage assessment etc. During this stage, coordinating with different relevant sectors for effective response will be crucial.

NODEL DEPARTMENTS

The government by a separate decision has designated some departments as Nodal Department to deal with all the matters relating to the respective disaster. The List of Disasters identified by the High Powered Committee and their nodal departments are as under:-

I	**Water and Climate Disasters** 1. Floods and Drainage Management 2. Cyclones 3. Tomadoes and Hurricanes 4. Hailstorm 5. Cloud Burst 6. Thunder and Lightening 7. Snow Avalanches 8. Heat Wave and Cold Wave 9. Sea Erosion 10. Droughts	Relief Department
II	**Geologically related Disasters** 1. Earthquakes 2. Landslides and Mudflows 3. Dam Bursts 4. Mine Fires	Relief Departments Irrigation Department Mines Department
III	**Chemical, Industrial & Nuclear Disasters** 1. Chemical and Industrial Disasters	Secretary Industries
	2. Nuclear Disasters	Home Department (Civil Defence)
IV	**Accident related Disasters** 1. Urban fires 2. Village Fire 3. Forests Fire 4. Electrical Disasters & Fires 5. Serial Bomb Blasts 6. Oil Spill 7. Festival related Disasters 8. Air, Road, & Rail Accidents 9. Boat Capsizing 10. Mine Flooding 11. Major Building Collapse	UDH Department Revenue Department Forest Department Energy Department Home Department Home Department Home Department Revenue Department Mines Department PWD Department

V	**Biologically related Disasters**	Medical & Health Departmentt.
	1. Biological Disasters and Epidemics	Agriculture Department
	2. Pest Attacts	A.H. Department
	3. Cattle Epidemics	Medical & Health Departmentt.
	4. Food Poising	

The responsibilities of nodal departments are:

a) Take all necessary steps for prevention, preparedness and mitigation of the disaster.

b) As soon as disaster occurs, inform the Chairman of Disaster Management Group and set the disaster Response Mechanism in motion without any delay.

c) Co-ordinate various government/ non-government agencies for prevention, preparedness and adequate response to the disaster.

d) Prepare & Update Disaster Management and Contingency Plan from time to time and also take necessary steps for its effective implication in the field.

e) To take necessary steps to educate and inform the masses on various issues relating to the disaster.

DAMAGE ASSESSMENT AND IMMEDIATE REHABILITION REHABILITATION

Immediately after the rescue operations are over the rehabilitation process has to be taken up. A quick assessment of damages to houses eligible for grant of remuneration, of families, who have lost their lives should be done. The RDOs should earmark a separate staff for carrying out intensive enumeration of 1) people dead 2) Cattle dead 3) damages to the houses/ damages to crops etc. in form No 20A. A duty chart should be neatly drawn involving all revenue personal and earmarking area if possible in batches of revenue staff should be listed out and kept ready to depute them to the affected areas as soon as the calamities are over. As far as possible, the personnel assigned with rescue operations may be left out from enumeration work, as the enumeration will have to be undertaken quickly and simultaneously. As and when the assessment of damages is over the payment of cash doles, issue of free rice and distribution of clothing shall follow according to standing orders on the subject amended from time to time.

Relief amount

As per the existing rule (G.O. Ms. No. 630 Rev. (NC-III(2) Department dated 29.10.2007) a relief amount of Rs.1,00,000/- is given for loss of life to families of victims in cases of death due to natural calamities and RDO is the sanctioning Authority as per the above Government Order. The Tahsildar is responsible for granting this amount to the affected family within 24 hours after ensuring that the death is due to the disaster and collecting the necessary documents like FIRs and post-mortem certificate. As per the rule (G.O.Ms. 632/ Rev.NC-III) Department dated 25.11.2010 a relief amount of ARs. 1, 00,000/- is given for the loss of life to families of victim in cases of due to natural calamities. The relief amount to be released from the general relief fund of the Chief Minister the proposal sent to the revenue Department through District Collector. The relief amount is given for loss of dwelling houses as per G.O.Ms. No. 651 (Rev NC-II) Dept. Dated 30.11.2010 and G.O. Ms. 342 (Rev. NC-II) Dept. dated 09.11.2011 as follows.

Immediate relief to be granted to victims

Hut Damaged Fully	5000	
Hut Damaged Partly	2500	
Kerosene	1 litre	Relief Centre Families
Free Clothing	1 Saree and 1 Dhothi	
Free Rice	10Kg with Rs.1000/-	
Cattle Loss		
Cow loss as per one	Rs.20000/-	
Goat loss as per one	Rs.2000/-	
Hen loss as per one	Rs.100/-	

For the purpose of giving one Dhothy and Saree to be supplied to each affected family the Manager, Co-optex, Kanniyakumari will be keeping in reserve sufficient number of sets at their sales depots. The moment a cyclone/ flood hits the district and the damages are known it should be possible for the Revenue Divisional Officer to estimate with in 24 hours asses the approximate number of houses/ families might have been affected and the number of sets of clothing required. The Revenue Divisional Officer should arrange to collect this information from the zonal officers and place their indents direct to the Manager, Co-optex, Kanniyakumari who will arrange to issue instruction to their sales depots to supply the required number of dhoties and sarees to the Tashilars concerned who in turn will arrange to take delivery of the cloths and distribute them to the eligible persons.

Relief to weavers and fishermen

As regards relief to weavers and fishermen, the Assistant Director of Handlooms and Deputy Director of Fisheries usually arrange to assess the loss sustained by the members of the community and the relief is granted, through these departments. In order to avoid delay and to get up to date information the RDO should arrange to get the in formation through the zonal officer about affected weavers (ie) number of weavers affected number of looms lost and details of other damages if any. So also the zonal officers of firkas should make a Quick assessment of the damages to the boats and nets and loss of lives of fishermen. The RDOs should arrange to get the information relating to this two communities daily any include it in the house enumerations, separate statistics should be obtained from weavers and fishermen and necessary separate register maintained so that they can be checked up with the handlooms and fisheries department before finalizing the patterns of relief and quantum of relief is judged.

Assessment of cattle losses

Similarly for the loss of cattle also enumeration is done and relief granted after obtaining the certificate from the joint Director of Animal Husbandry. The veterinary doctors should visit the villages where the loss of live stock is reported and conduct the postmortem and then only the owners can get the relief amount. The rate of relief grant for cattle loss as per G.O. Ms. No.515, Revenue (NC2) department 03.10.2000 are given as follows:

Relief for cattle death

1. Relief amount will be paid only for two cattle.
2. Relief amount will be paid to all without income basis, if the cattle are not insured.

1	Adult cattle (cow, bullock, buffalo)	Rs.10,000/-
2.	Calf of Cow	Rs.5,000/-
3	Sheep, Goat	Rs.1,000/-

Assessment of damages to crops

A preliminary and immediate assessment of the damages and the relief measures required should be reported to the Collector by the Joint Director of Agriculture that the Government can be approached for necessary funds etc.

As it has been usually the practice to move seeds from far offices to the places affected, the J.D of Agriculture, as soon as the calamity is reported, chalk out a programme for movement of seeds and pesticides etc., and arrange to move them to the needy areas with sufficient quantity. Similarly the Joint Register of Co-operative societies in consultation with the J.D of Agriculture should move the stock of fertilizers to the affected areas immediately. As regard crop damages, the assessment is done by the Joint Director of agriculture and Assistant Director of Horticulture and relief assistance given as per G.O. Ms. No.651 Revenue Department dated 13.12.1999 as detailed below. G.O. Ms. No.651 Revenue Department dated 13.12.1999 as detailed below. G.O. Ms. No. 181 Revenue (NC II) Department dated 28.03.2008.

Relief for crop loss:

1	Paddy	Rs. 7500/- Per hactare
2	Horticulture crops	Rs. 4000/- Per hactare
3	Groundnut	Rs. 2500/- Per hactare
4	Sugarcane	Rs. 4000/- Per hactare
5	Pulses	Rs. 2000/- Per hactare
6	Cotton	Rs. 1500/- Per hactare
7	Tomato, chow chow	Rs. 2000/- Per hactare
8	Millets (Cholam, Cumbu, Ragi)	Rs. 400/- Per hactare

The executive Engineer, PWD concerned is responsible for sending daily reports on the damages to major irrigation sources such as rivers, canals and dams the PUCs should send daily reports regarding the damages caused to minor irrigation tanks and the roads under their control. Similar reports should be sent by the DE National Highways, DE (Highways and Rural works), DE (RR), AD (Town Panchayst) and Municipal Commissioners for the roads under their control.

Damage Assessment by other departments

After the occurrence of the disaster the quantum of damages pertaining to other departments are also assessed immediately to give the required assistance and to take up the restoration works.

1	Damages to Electrical power system	Tamil Nadu Electricity Board
2	Damages to roads Highways	Rural works
3	Damages to public Buildings	Public Works department
4	Damages to telecommunication system	Telecom Department
5	Damages to irrigation sources	Public works Department (WRO)
6	Damages ton fishermen community such as boats and fishing net	Fisheries department

Based on the assessment received from the concerned department about the damage, requisite funds are reconstruction and restoration works are perused by the respective department.

PLAN FOR MEDIA MANAGEMENT

Objective

- To provide factual information to public with regard to occurrence of disaster.
- To convey any other information which is of useful to public.
- To convey specific information which is of use to relatives/dependents of dead and injured persons.
- To create a positive public opinion.
- To create a healthy relationship with the press and electronic media.

Duties of District Administration & Nodal Department of the Disaster

- District Administration, Nodal Department concerned and DPR and his team will collect whatever information is available and released it to the media within 60 minutes of intimation of occurrence.
- The information shall include telephone numbers of Helpline Enquiry Booths.
- Photographers with digital and video cameras should also be taken to the occurrence site.
- Responsible Public Relation Officers should be deputed during night shift for interacting with the media, if necessary.
- DPR & District PRO will organise press briefings at fixed timings.
- Department of Public Relation shall monitor various important media channels to keep track of media reporting. Suitable corrections/clarifications may also be issued. If required.

Spokesperson

- Only concern Minister/Secretary of Nodal Disaster Management concerned and District Collector are competent to interact with press and electronic media.
- Apart from the above, any other officer authorised by competent authority is competent to interact or give interview to press and electronic media.
- They should ensure that only factually correct and confirmed information is relayed.
- No inflated or exaggerated version of any fact should be relayed to the media.

Nobody shall express or voice any criticism, or express his personal opinion or views about the occurrence of disaster, at any point of time.

Information to be relayed to Press and Electronic Media

Information to be given to media can be broadly segregated in to following categories:

A) Occurrence of Disaster

- Nature of the disaster, i.e. date, time, exact location
- Details of how the disaster most probably occurred.
- Prima-facie cause of the occurrence will be relayed to media only with the approval of competent authority.
- Regular reports regarding progress of Rescue and Relief work.
- Expected date and time of restoration.

B) Uninjured persons

- Steps taken to provided food, shelter and first aid treatment to uninjured persons.
- Steps taken by Administration for clearance of uninjured persons.

C) Dead and Injured persons:

- Steps taken by District Administration to render immediate medical attention
- Number of persons rescued.
- Breakup of the injured persons both grievous and simple.
- Name of the hospitals where injured are being treated.
- Approximately how many patients have been admitted in each of these hospitals.
- Names of injured persons.
- Communication facilities like cell phones, STD phones provided at these hospitals.
- Payment of ex-gratia.
- Facilities offered to relatives/dependents of victims.
- Number of dead bodies recovered and number of bodies identified.

D) Helpline Enquiry Booths & Control Room

- Setting up of Helpline Enquiry Booths & Control Room
- Details of Helpline Enquiry Booths & Control Room:
  - Places where these have been opened.
  - Telephone Nos.
  - Fax Nos.

E) Casualty figures

- In all disaster accidents, as long as Rescue & Relief work continues, there is always a

difference between casualty figures given by the district administration and casualty and casualty figures quoted by the media.

- The reason for this difference is that district administration gives figures based on actual number of dead bodies recovered, whereas media estimates casualty figures based on the damage visible.
- During Press briefings, this point should be clarified that till the present time, so many bodies have been recovered.
- However, it should also be made clear that casualty figures are likely to go up since rescue work is still continuing.
- Assessment regarding likely number of deaths and injuries may also be made if considered necessary.

G) Press Briefings at disaster site:

- District Collector or his authorised representative shall collect factual information from the Site and relay the same to the media and State Headquarter. Thus an on-line communication channel will be established to keep media informed of all the important details.
- PRO or DPR should be available during press briefings in HQ.
- There should be a fixed time for press briefings so that there is no confusion regarding different versions given to separate channels at various points of time.
- Simultaneous press briefings should be held at disaster site, at District Headquarter and at State level, as per the time intimated, so that the same version is given by all concerned.
- The priority of information release to various media will be as under:
  - TV Channels
  - News Agencies like UNI, PTI
  - Print Media
- Convenience of media shall be taken care of by PR personnel with assistant of representatives of District Administration at site. Tour of media persons should be conducted to hospital where injured are being treated.

INFORMATION ABOUT THE RELIEF CENTRES VULNERABLE AREAS AND AREA FOR CO- ORDINATION

The crucial areas for the forthcoming season have been identified in consultation with Executive Engineer (P.W.D.) and Executive Engineer Anti. Sea Erosion. The Relief Centres have been identified with the consultation of the Revenue Divisional Officers and Tahsildars. Their contact phone numbers are also given below.

Vulnerable points	Relief Centres	Contact Numbers
Agasteeswaram Taluk		
Nagercoil, Ozhiginasery	N.S.K. High School, Ozhiginasery	277628
Ashramam	Government Middle School, Suchindrum	9486864362

Vulnerable points	Relief Centres	Contact Numbers
North Tamaraikulam	Government High School, North Thamaraikulam	257300
Parvathipuram	Government High School, Chenbagaramanputhenthurai	9442911252
Thovalai Taluk		
Therisanamcope	Government Middle School, Therisanamcope	9940977150
Bhoothapandy	Government Higher Secondary School, Bhoothapandy	282339
Kadukarai	Government High School, Kadukkarai (Ananthapuram)	283790
Thirupathisaram	Government High School, Thirupathisaram	276242
	Government High School, Vellamadam	285772
Kalkulam		
Attoor	Government Primary School, Villunni konam.	9442189082
Thiruvattar	Government High School, Thiruvattar	04651 – 283093
Manavalakurichy	Government Girls Higher Secondary School, Manavalakurichi (Kadiapattinam)	04651-238689
	Babuji Memorial Higher Secondary School, Manavalakurichi	04651-237769
Kadiyapattinam	Thuya Sacred Heart High School, Kadiyapattinam	04651- 239423
Orapanavilai	Sarojini Memorial Higher Secondary School, Orappanavilai	04651-238209
Villukuri	St. Lawrence Madathattuvilai Higher Secondary School, Madathattuvilai	04651-223379
Eraniel	Government Girls High School, Eraniel	04651-223379
Vilavancode Taluk		
Kuzhithurai	village Government Higher Secondary School, Marthandam	04651-270033 (Boys) 04651-270635 (Girls)
	Government High School, Unnamalaikadai	04651-274397
Municipal Panchayat	Government Higher Secondary School, Vilavancode	04651-262014

Vulnerable points	Relief Centres	Contact Numbers
	Government Primary School, Pazhugai	8903113138
	Government Higher Secondary School, unchirai	04651-235015
	Government Primary School, Mangadu	9442653093
Ezhudesam village	Government Higher Secondary School, Ezhudesapattu	04651-241106
Thengapattanam	Government Middle School, Painkulam	9442079402
Keezhkulam	R.C. Church Enayam	

INFORMATION ABOUT THE LINE DEPARTMENTS AND DISTRICT ADVISORY COMMITTEE

Collectorof Kanniyakumari District, Nagercoil	279090(O) 279091(O) Mobile: 9444188000 Camp 260666, 260999	Chairman
District Revenue Officer, Kanniyakumari District	278725(P) 270990(O) 279091(O) Mobile: 94450000930 Camp: 260015	
Project Officer, District Rural Development agency	279889(P) 279673 Mobile	Member
Superintendent of Police, Kanniyakumari District.	220167 (P) 220787 (O) Mobile : 9003582233	Member
Superintending Engineer (PWD) Buildings, (Tirunelveli	04652-257611	Member
Superintending Engineer, TNEB, Kanniyakumari	230160 9443130460	Member
Superintending Engineer,TWAD, Tirunelveli	95462-2540596 9442114264	Member
Municipal Commissioner, Nagercoil	230984, 230985 9486221521	Member
Executive Engineer (PWD-WRO), Nagercoil	222064 9443150144	Member
Divisional Engineer (H&RW) Nagercoil	222192 9443500450	Member

Divisional Engineer (Rural Roads) Nagercoil	225273	Member
Senior Regional Manager, TNCSC, Nagercoil	261214, 260224 9443581923	Member
Joint Registrar (Co-op), Nagercoil (A.R)	278976 9488002060	Member
Revenue Divisional Officer, Nagercoil	279833 9445000482	Member
Revenue Divisional Officer, Padmanabhapuram.	04651-250722 9445000483	Member
Joint Directorof Health Services, Nagercoil	244168, 245158 9444982668	Member
Regional Transport Officer, Nagercoil	265056, 9790095255	Member
Public Relations Officer, Nagercoil	279262 9498042430	Member
Deputy Director of Health Services, Nagercoil	275089 9443177707	Member
Assistant Director of Panchayat, Nagercoil	279882, 7402608627	Member
Assistant Director of Town Panchayat, Nagercoil.	279400, 9994166600	Member
Deputy Superintendent of Police, Nagercoil	260403, 9443984423 220197, 320100	Member
Deputy Superintendent of Police, Kanniyakumari.	246947, 9487871001	Member
Deputy Superintendent of Police, Thuckalay	04651-250741 9842411688	Member
Deputy Superintendent of Police, Colachel	04651-226227 9849627007	Member
Executive Engineer (Building constructions and Maintenance Division), Nagercoil	278330 9443258270	Member
Joint Director of Agriculture, Nagercoil	275391 9443282270	Member
Commanding Officer (NCC) Nagercoil	236585 9159894852	Member
Assistant Director of Animal Husbandry, Thuckalay	9445001194 04651-276722	Member

District Supply Officer, Nagercoil	278035, 9445000391	Member
Divisional Fire Officer, Nagercoil	226571, 276331 9445086249	Member
Area Commander, Home Guards, Nagercoil	279583 9443168789	Member
Chief Educational Officer, Nagercil.	227275, 9688359805	Member
Personal Assistant (G) to Collector, Nagercoil.	278019, 9445008193	Member
Special Deputy Collector (SSS) Nagercoil	279090 / 279091 8870618525	Member
Personal Assistant (PD) to Collector, Nagercoil	279092 7402608624	Member
Personal Assistant (Small savings)	279047, 9443470866	Member
Personal Assistant (Agri)	279090 / 279091 9487426505	Member
Personal Assistant, Noon Meals, Nagercoil	279048 9442130569	Member
Thiru. S.K. Subramony, Executive Engineer, PWD/ WRO., Kodayar Basin Division, Nagercoil.	04652-222064 9443150144	Member
Thiru. T. Vijayakumar, Technical Personal Assistant PWD/WRO., Kodayar Basin Division, Nagercoil.	04652-222064 9442624571	Member
Thiru. K.V. Dhanraj, Assistant Executive Engineer, PWD/WRO., Pazhayar Basin Sub Division, Nagercoil.	04652-228817 9585583098	Member
Tmt. S.S. Anittasanthi, Assistant Executive Engineer, PWD/WRO., Kodayar Basin Sub Division, Thuckalay	04651-251955 9486798429	Member

Thiru. K. Murugan, Assistant Executive Engineer, PWD/WRO., Kodayar Basin Sub Division, Cheruppaloor.	04651-279811 9443605964	Member
Thiru.P.Muthu Samy Kumar, Assistant Executive Engineer, PWD / WRO., Pattanamkal Sub Division, Kuzhithurai.	04651-262055 9448259514	Member

IMPORTANT TELEPHONE NUMBERS AND INFORMATION ABOUT RELIEF CENTRE NAGERCOIL EDUCATIONAL DISTRICT GOVERNMENT AIDED HR. SEC. SCHOOLS

ADDRESS	PHONE NUMBER
Carmel Hr. Sec. School, Nagercoil – 629004	04652 264765
D.V.D. Hr. Sec. School, Kottar – 629002	04652 232543
Dathi Girls Hr. Sec. School, Nagercoil – 629001	04652 279076
Little Flower Girls Hr. Sec. School, Nagercoil – 629004	04652 264111
S.M.R.V. Hr. Sec. School, Vadaseri – 629001	04652 274751
Scott Christian Hr. Sec. School, Nagercoil – 629001.	04652 278768
St. Joseph's convent Hr. Sec. School, Nagercoil – 629001	04652 223375
SMSM Hr. Sec. School, Suchindrum – 629704	04652 240417
L.M.S. Hr. Sec. School, South Thamaraikulam – 629708	04652 258221
St. Antony's Hr. Sec. School, Kanyakumari – 629702.	04652 246608

NAGERCOIL EDUCATIONAL DISTRICT GOVERNMENT HR. SEC. SCHOOLS

Government Hr. Sec. School, Bhoothapandy – 629852	04652 282339
S.S.P. Government Hr. Sec. School, Edalakudi, Nagercoil – 629002.	04652 241486
S.L.B. Government Hr. Sec. School, Nagercoil – 629001	04652 232867
K.D.V.P. Government Girls Hr. Sec. School, Nagercoil – 629002	04652 245110
Government Hr. Sec. School, Vadaseri, Nagercoil – 629001.	04652 274022

THUCKALAY EDUCATIONAL DISTRICT GOVERNMENT HR. SEC. SCHOOLS

Government Girls Hr. Sec. School, Kadiyapattinam, Manavalakurichi Post – 629252	04651 238689
Government Hr. Sec. School, Rajakkamangalam, Ganapathipuram post – 629503.	04652 250983
Government Hr. Sec. School, Ammandivilai – 629204.	04651 239199

THUCKALAY EDUCATIONAL DISTRICT GOVERNMENT AIDED HR. SEC. SCHOOLS

St. Mary's Hr. Sec. School, Colachel – 629251	04651 226342
VKP Hr. Sec. School, Colachel – 629251	04651 226224
St. Peter's R.C. Hr. Sec. School, Chekkal, Thiruparappu post	04651 278606
AVD Hr. Sec. School, Ganapathipuram – 629502	04651 208775
Devi Girls Hr. Sec. School, Kunnenkal, Vaniakudi Post – 629156.	04651 226249
St. Lawrance Hr. Sec. School, Madathattuvilai, Villukuri post – 629180	04651 258056
Babuji Memorial Hr. Sec. School, Manavalakurichi – 629252.	04651 237769
Devasam Board Hr. Sec. School, Mandaikadu – 629262.	04651 222598
All Saints Hr. Sec. School, Muttom-629202.	04651 239149
St. Jude Thadeus Hr. Sec. School, Pallam – 629601.	04651 286586
St. Jude Thadeus Hr. Sec. School, Pallam – 629601.	04651 286586
St. Ignatius Hr. Sec. School, Kurumbanai – 629251. Sarojini Memoral Hr. Sec. School, Orappanavilai, Ammandivilai post – 629204 04651 238209	04651 226146
Providence Hr. Sec. School, Ritapuram – 629159.	04651 228479

General Awareness:-

1. All the electrical works to be done only by licensed electrical contractors.
2. Use only ISI marked electrical appliances, cables and wires.
3. Switch off the supply before inserting and removing the plug socket outlets.
4. Electricity supply for Refrigerator, Wet grinder and other home appliances should be availed through 3 pin plug sockets with earthing provision.
5. Use 'ELCB' the "LIFE SAVER' at the consumer's main supply point.
6. Replace damaged electrical components like switches; plug sockets etc., immediately when noticed.
7. While installing the T.V. antennas:
   a. Don't install them nearer to the OH electrical lines
   b. Don't tie the stay wires of T.V. antenna poles to the structures of 'Electrical installations (eg. service poles, lamp fittings etc)
   c. Don't carry the cable T.V. wires nearer to the OH electrical lines.
   d. Provide and maintain earth electrodes to earth the conducting body of Electrical appliances.
8. Install switches; plug sockets etc., at an inaccessible height and away from the approach of children.

9. Periodically test the electrical installation for insulation strength and replace if required.
10. Avoid using stay wires and electrical fixtures as poles / supports to tie wires/ ropes to dry wet clothes.
11. Do not install switches inside bathrooms, toilets & other wet places.
12. Do not nail on the wall where concealed PVC conduit wiring are done.
13. Make sure that extension cords of portable / hand held appliances are free from cutes (breaks) improper insulation patched –up insulation, kinks or joints.
14. Do not secure poultries / domestic animals to the electric poles or the stay wires.
15. Don't use electric poles as support to pandals or displaying advertisement, boards.
16. Don't go near or touch the transformers, pillar boxes , electrical poles, stay wires, fencing etc.,
17. If any snapped electricity conductor is noticed, inform the TANGEDCO officials don't touch or go near them.
18. Don't construct buildings near the electricity lines, consult TANGEDCO officials before planning for such construction.
19. Don't go near the fencing of electrical transformers / structure yard on streets for nature's call.
20. Approach TANGEDCO officials to trim the tree branches touching the OH lines. 144
21. Make sure that there is easy access to switch off the supply source quickly in case of an emergency.
22. Switch off electrical appliances when not in use.
23. (i) Do not use fire extinguisher on electrical equipment unless it is clearly marked for that purpose. Use sand and blanket instead.
    (ii) Never attempt to extinguish electrical fire with water.
24. In case of short circuit fault or a fire, switch off the Mains immediately.
25. Never over load an electrical point, while replacing electrical gadgets, and replace with the same rating.
26. If there is thunder or lightning, seek shelter immediately.
    (a) Move to a large sturdy building or to metal topped vehicle such as car or bus
    (b) Do not take shelter under isolated trees or isolated huts, tents etc.,
27. Stay away from water or water logged areas.
28. If no shelter is nearby, find a low spot away from trees, Power lines and poles and metal fences.
29. Do not use electrical appliances and phones during lightning or thunder.
30. Do not stand near open windows or doors during thunder or lightning.

Disaster Management Framework and Disaster Risk Reduction (DDR), Koraput

SHUBHAM SAXENA, IAS

INTRODUCTION

Vulnerability of the Koraput District towards disasters, both natural and man-made is widely recognized. The district is vulnerable towards natural disasters like; floods, flash flood, cyclones, droughts, fire accidents, boat capsize landslide and the like. Losses caused by disasters continue to mount year after year. The need for an effective disaster management strategy to lessen disaster impact is being felt in many quarters and also for strengthening of organizational structure for disaster management. Along with, regular updating of Codes/Manual/Disaster Plans on the basis of experience gained and technological developments should be done.

This generic categorization of disasters is in no way intended to disturb handling of specific disasters by various departments. Precise actions, procedures and responsibilities have to be laid down well in advance in order to ensure timely response in case of any disaster. Therefore, a mechanism that takes into account multiple hazards and basic preparedness has to be articulated in the form of Quick Response Teams, Quick Assessment Teams, Reporting Procedures, Checklist and Handbooks. The mechanism also lays down crucial parameters, requirements and organizational composition of Emergency Operations Centers and Incident Command Systems.

DISASTERS

Types of Disasters: (Experienced in Koraput District)

Common Natural Disasters	Man Made Disasters
• Cyclone	• Fire Hazards
• Flood	• Communal Riot
• Flash Flood	• Accident – Road/ Railway
• Drought	• Rasta Roko
• Land Slide	• Forest Fire
• Hail Storm/ Whirl Wind	• Boat Capsize
• Lightning	

The Disaster Management Plans have been formulated starting from the village level up to the district level. The plan clearly indicates the role and responsibility of each player of the team. The Collector in the district level, Sub-Collector in the Sub-Divisional level and the BDO in the

Block level will head the team. The Sarpanch is the key player in GP level and the Community with guidance of Village Disaster Management committee formulates and carries out this plan in the village level. Civil society organizations also play a vital role during the implementation of this plan in the field.

DISTRICT PROFILE OF KORAPUT

Koraput is located in the southern part of Orissa, at 82°5' to 83°23'E (Longitude) & 18°13' to 19°10'N (Latitude), sharing its borders with Andhra Pradesh in the East and South (Viziyanagaram and Srikakulam district and Visakhapatnam and Viziyanagaram respectively and Malkangiri district of Orissa), Bastar district, Madhya Pradesh in the west, Nawarangpur and Kalahandi district in the North.

Koraput spread over a geographical area of 7897 Sq. Km. and is divided into two Revenue sub-divisions of Koraput and Jeypore. There are 14 Tahasils and 14 blocks, 1 Notified Area Councils (NAC) and 3 Municipality. There are 226-Gram Panchayats (GPs) and 1958 inhabited villages.

Koraput District enjoys an average rainfall of 1567 mm, during rain season.

The district is declared as a tribal area. The principal tribes are Poraja, Kondha, Gadaba, Bhumia and Bhatra. There are some minor tribes like the Bonda, Dhuria, etc. in the district.

RISK ASSESSMENT AND VULNERABILITY ANALYSIS

Disaster, Impact & Vulnerable Area

Type of hazards	Time of occurrence	Potential impact	Vulnerable areas
Flood	June-September	Loss of life, livestock, crop and infrastructure	Kotpad, Dasmantpur, Borigumma
Cyclone	June-October	Loss of life, crop, infrastructure and animals	Entire District in mild form
Drought	July-October	Crop Loss, Water scarcity	Entire District except partof Kotpad, Dasmantpur and Borigumma
Heat Stroke	April-June	Loss of Life	Bandhugaon, Narayanpatna, Jeypore, Borigumma, Kotapad, Boipariguda
Epidemics	Anytime	Loss to human life	Entire district
Fire Accidents	March-May	Human Loss and house damage	Entire district
Earth Quake	Anytime	Loss of Life, Livestock and Infrastructure	Entire district

Type of hazards	Time of occurrence	Potential impact	Vulnerable areas
Chemical Hazard	Anytime	Loss of Life, Livestock	Peripheries of industries
Lightning	June-September	Loss of Life, Livestock and Infrastructure	Entire district

DISASTER PROBABILITY

Flood:

During rainy seasons, the major rivers in the district carry gallons of water pose potential threat of flood in three blocks. Things get worse as the flood devastates the crops in the affected area and is also a source of epidemics. The list of flood prone GPs/Villages has been mentioned in this plan.

Cyclone:

The impact is felt in mild form as the district is away from coast and full of hills and mountains. However the district is not altogether free from the risk of the grip of cyclone.

Fire Accidents:

Fire accidents present a serious problem to the houses in Koraput district. This is mostly due to the peculiar housing pattern adopted in the villages. These houses have generally mud-built walls with thatched roofs made out of timber, bamboo and straw. They spring up in clusters. Any occurrence of fire destroys houses and properties thereby causing serious damage to the affected people.

Draught:

Sometimes want of rain at the proper time either defers commencement of agricultural operations or affects growth of crops. Occurrence of drought is frequent in some part or the other in the district. Drought adds to the suffering of the people in the district.

Heat Stroke:

During summer months, severe heat wave causes dehydration and also serious threat to lives.

Earth Quake:

Though Koraput district has not experienced severe earthquake causing damage to lives or infrastructure, the possibility can never be ruled out as it can happen any time.

Vulnerable Areas For Chemical/Industrial Disasters

The Peripheries of industries present in the district are prone to chemical or industrial disasters. The list of GPs and villages, industry wise is listed separately in the off-site plan for industries in particular. Koraput is rich with industries small, medium and large scale. So the vulnerability to

above-mentioned disaster is also more. Peripheral villages to the industries are mostly from the Koraput, Semiliguda, Jeypore, Kundra, Boriguma blocks of the district.

CAPABILITY ANALYSIS

Rain Recording Stations

There are a total fourteen Rain Recording stations in the District. The location of Rain Recording stations: 13 are at block office premises except in Jeypore; in Jeypore it is located at Tahasil office.

Network & Communication

Road Network

NH-43, from Visakhapatnam to Raipur via Koraput. Koraput to Nabarangpur, Bhawanipatna, Bolangir. Koraput to Rayagada, Berhampur. Koraput to Malkangiri via Jeypore & Boipariguda.

Railways

Well connected with Vizianagaram, Vishakapatnam, Rayagada & Bhubaneswar by express trains.

Internet Facilities

The HQ & all the block offices are connected with either Internet or v-sat facilities.

Earth Moving And Road Cleaning Equipments:

The Earth Moving and Road cleaning equipments are with ODRAF (3rd Bn. O.S.A.P), NALCO, HAL and E.E, Works Department in the district, the details of description and address of the concerned persons are in the IDRN. It is updated time-to-time, receiving data from different agencies. The same can be in immediate use during requirement.

INSTITUTIONAL ARRANGEMENT AT THE DISTRICT LEVEL

To deal with disaster situation and address the related problems, there is an institutional arrangement in the district. There is a District Disaster Management Committee under the chairpersonship of the Collector and District Magistrate in which various departmental heads are the members. Each of the members is having their specific responsibilities while addressing the disaster situation.

Disaster Management Committee At The District Level:

The District Disaster Management Committee (DDMC)/District Natural Calamities Committee (DNCC) came into currency because of the frequent occurrence of disasters in the district. The primary aim of the committee is to have proper coordination among all the line departments. The Collector is the Chairman or District Disaster Manager of the DDMC and the district level response is coordinated under her guidance. The District Disaster Management Committee exists to assist the Collector in

- Reviewing the threats of disaster
- Analyzing the vulnerability of the district to such disasters
- Evaluating the preparedness and
- Considering suggestions for the improvement of the District Disaster Management Plan

Responsibilities of the committee

- To educate the public on different flood and cyclone hazards and what protective steps should be taken
- To make arrangements for emergency action
- To effect evacuation from the flood affected Villages when necessary
- Rescue and Rehabilitation
- Post disaster action and review

District Disaster Management Committee (DDMC):

01	Collector & District Magistrate, Koraput Chairperson, Ex-officio.
02	Chairman, Zilla Parishad Co-Chairperson, Ex-Officio
03	Superintendent of Police, Koraput Member, Ex-officio
04	Chief District Medical Officer, Koraput Member, Ex-officio
05	Executive Engineer in charge, Embankments Member, Ex-officio
06	Addl. District Magistrate, in charge of Emergency Chief Executive Officer, Ex-Officio
07	Executive Engineer, Rural Development Department Member
08	Project Director, DRDA Member
09	Deputy Director, Agriculture, Member

DISTRICT CONTROL ROOM (DCR)

The District Control Room under the control of District Collector will operate round the clock and will be the nerve center to :

- Monitor
- Co-ordinate
- Implement the actions/activities for Disaster Management.

In a disaster time the District Control Room will operate under the central authority of the District Collector, exercising emergency power to issue directives to all departments to provide emergency response service. He/She will also co-ordination with the State Response Machinery like: State Relief Commissioner, Orissa, Bhubaneswar and Orissa State Disaster Mitigation Authority for appropriate support and smooth flow of information. The Control Room should be manned round the clock. The District Control Room is placed in the Emergency Section of the District Collectorate.

WARNING ON OCCURRENCE OF DISASTER

The warning on occurrence of disaster will be communicated to:

- Chief Secretary, Relief Commissioner, Emergency Operation Center
- Office of the Divisional Commissioner
- All district level officials, DDMC, Municipality Chairman
- The officials of the Central Government located within the district
- Non – officials namely Guardian Minister of the district, *Zilla Parishad* President, MPs and M.L.As from the district or affected area
- Local units of the Defense Services

In the absence of the Collector, ADM or Sub-Collector will officiate and exercise all the powers and responsibilities of the District Disaster Manager.

On the receipt of warning, all community preparedness measures and counter-disaster measures would come into operation.

MITIGATION STRATEGIES FOR DIFFERENT HAZARDS

Short Term Measures

When the disasters are inevitable, the only way is to mitigate its impact. This falls under the Short Term Measures like immediate relief, reducing the response time to avert any losses, provide the vulnerable and affected people with the basic needs, supply of minimum essential items to those who have lost their properties and movables, grant of long/short term loans at a concessional rate.

Long Term Measures

The Long Term Measures to be followed include maintenance and repair of the embankments of the rivers and canals going through the district, construction of embankments, bank protection and watershed management, bio-mass production by the forest/horticulture department.

Mock Drill

For the DDMP to be successful it is important that a mock drill of the plan be carried out the in the presence of and under the observation of officer deputed from the other district and the District Collector. The mock drill should be enacted in the pre disaster season, twice a year after the District Natural Calamity Committee/ DDMC Meeting is convened. The mock drill should start from the Control Room. This will help in finding out the preparedness level of the district level functionaries. According to work plan of DRM program it would be carried out.

INFORMATION, EDUCATION AND COMMUNICATION

Plan Dissemination

The responsibility of plan dissemination is vested with the DCR, at the Collectorate. In order for the DDMP to be effective it must be disseminated at two levels:

a. To the district authorities, government departments, NGOs and other agencies and institutions within the district and

b. To general public

Dissemination of other Iec Materials

The DI & PRO at the district level will carry out the dissemination of IEC materials and NGOs at the block and village level during normal time (selected during Past Natural Calamity Committee meeting). The activities of the DI & PRO and NGOs would include

- Walling,
- Preparation and distribution of posters, pamphlets and brochures
- Pada-yatra,
- Street plays
- Volunteers training,
- Task force training, etc.

Training and Drills

The training programmes are organized for different levels of functionaries from district level officials, identified NGOs, volunteers, Private Sector Organizations in order to equip them to extend training facilities to functionaries at blocks and village level as well as organize simulation exercises within the community.

The objective of full scale drill include evaluation of the following

- Practicality of the plan (structure and organization)
- Adequacy of communication and interactions among the agencies and the public
- Effectiveness of the emergency equipments
- Adequacy of first aid and rescue procedures
- Adequacy of the response and training of the emergency personnel
- Public relation skills
- Evacuation and count procedures
- Timely updating of BCPS
- Coordination with the CBOs / NGOs

Community Based Disaster Preparedness And Mock Drills

Role of the Community

- First responder to disaster
- Participate in preparedness programme
- Sharing of disaster preparedness cost
- Playing as pressure group / working for advocacy
- Stockpiling of emergency goods and Coordination
- Supporting communication System

The Community Based Disaster Preparedness should be move as per the following stages

- Formation of Block Level Disaster Committee
- Training of line department and volunteers
- Formation of GP level Committee
- Developing Community Contingency Plans in the Villages
- Training of Task Forces
- Periodic mock drills
- Coordination of GP and Block
- Updating information

Mock drills are important in normal times as well as during the emergency. The mock drill and preparedness for disaster are considered as a part of police duty. Every six months, there should be a mock drill in all of the police stations of the district to make them alert / fit to cope with any situation. Security Plan for all industries to be reviewed and approved by CISF at regular intervals. Similarly all police stations should have internal security scheme, based on which they should have mock drills and update it for safety measures as per requirement.

Besides a contingency drill should be enacted during the cyclone/ flood season so that everyone knows what he/she should do and where he/she should go. It is advisable to have a mock drill at night during the rain, by cutting of the electricity in the village/ block/ district (as per the time chosen for the mock drill at each level). This exercise will help learn possible problem that would be faced. These learned lessons could be utilized in preparing the contingency plan in a much-prepared manner.

Strengthening Volunteer Force – Identification And Training

An analysis of the situation of the village community forms the first task for preparedness. After analysis, the villagers would form different groups to carry on the activities for disaster preparedness. The motivated and willing male and female group members have to find out the roles and responsibilities of each group. The groups may be formed for warning, rescue and evacuation, water and sanitation, relief and food, damage assessment, shelter management, etc. This will form the Disaster Management Teams.

For warning group, members could be young boys and girls of the village (17 to 25 years) who will be trained to understand radio warnings and act fast to spread the warning throughout the village.

The members for Rescue And Evacuation Group need to be physically strong (both men and women) and in the age group of 18 to 35 years. Gram Rakhis/Chaukidars should be the members of this group. Inclusion of civil defense personnel would be useful if available in the village. This team can coordinate with the government to avail the facilities for rescue and evacuation, both in terms of rescue training, rescue infrastructure and equipment and ensuring the alertness of the rescue team of the government.

There can also be a First Aid and Medical Group, with equal numbers of men and women, Those with some knowledge of nursing (such as trained dais and AWW/ ANM) will be preferable.

GENERAL PREPAREDNESS - STANDARD OPERATING PROCEDURE (SOP)

1. Officer in charge of Control Room: The control room shall be in overall charge of the Collector. In the absence of Collector, ADM (General), PD, DRDA, District Development Officer, Emergency officer or any other officer or staff on duty at that point of time shall remain in charge of Control Room. The person in charge of control room shall be personally responsible for implementing the SOP. She/he shall take all decisions as outlined below and sign for the Collector on all reports mentioned below. She/he shall not wait for orders from anybody.
2. Assembly in Control Room: Following staff and officers shall assemble in the Control Room on getting any information from any source about any emergency. Apart from these, any other officer or staff who gets the information from any source will reach the Control room.
   - 2.1. Collector, ADM, PD DRDA, District Development Officer, Emergency Officer, Sub-Collector Koraput, Excise Superintendent, GM DIC, Tahasildar Koraput, CE CMC, CSO, DIPRO and RTO.
   - 2.2. All staffs of emergency section, representatives of development section, Stenos to Collector & ADMs.
3. Getting the Control Room ready: Following preparatory steps will be taken up for keeping the control room functional during emergency.
   - 3.1. Shift two more phone lines to control room.
   - 3.2. Shift the police VHF of Collector's room to Control room.
   - 3.3. Keep a radio with new batteries ready.
   - 3.4. Hire 3 generator sets.
   - 3.5. Stock 2 barrels of Kerosene and Diesel for running the generator sets.
   - 3.6. Charge the battery of VHF set of control room and staff car.
   - 3.7. Charge the battery of inverter.
   - 3.8. In case of cyclone warning, arrange four extra batteries.
   - 3.9. Charge the satellite phone and test it.
4. Alert all field officers: BDOs, Tahasildars, MOs, VAS, Police, Industries, Telephone, Agriculture, RWSS, RD, R&B, ICDS, Irrigation, CESCO, NH, PHD, Municipality, MLAs, MPs, MIs, CI/DI/Sis, Station Director, All India Radio. DIPRO shall inform the media.
5. Call up the officers and ensure that they remain in headquarters.
6. Prepare a logbook for recording chronological sequence of events.
7. Food and Kerosene:
8. Check availability of sand bags

8 Vehicles: Requisition 15 small and 15 big vehicles immediately. Further requisition will be made as per need.

9 Empower field officials to requisition vehicles. Send 10 requisition forms to each Tahasildar, BDO and Police station.

10 Boats: Requisition boats from other districts. Requisition boats from Paradeep/Chilika/ Ganjam/ Board of Revenue/ Fire Office/ Sports Authority of India.

11 Ask Collectors of Rayagada, Nabarangpur, Gajpati, Kalahandi etc to remain ready for supply of stocks of rice and chuda.

12 Close educational institutions after making an assessment of the seriousness of the emergency.

13 Veterinary measures: Immediately contact MD, OMFED and tie up the supply of cattle feed. CDVO shall make assessment of vaccines and fodder availability.

14 Air Dropping Zones: Use the lat-long book for identifying the air dropping zones. Make an advance list of villages where air dropping may be needed.

15 Each JE of RD, R&B, and NH & IRRIGATION shall keep ready a gang of 20 persons (severe cyclone- 40-person gang) with axes and saws. They will also have one chain-pulley system ready.

16 Requisition the services of officers who have been effective in the past. Allot areas to them with full powers of decision making on the spot.

17 Make a thorough assessment of relief items available in stock at different places.

18 Civil Society Organizations: Get in touch with civil society organizations. Allot them areas or functions. Get them introduced to the field functionaries. Ask them to prepare a list of volunteers. Make a quick inventory of their resources. Contact UNICEF, UNDP, WFP, CARE, OXFAM, Action Aid, LWS, CRS and other international agencies. Make a quick assessment of district needs and expectations from different agencies.

19 Press briefings: Press briefings play a very important role in disaster management. Daily press briefs will be issued at 1600 hours. Written information will be issued.

20 Message to public over All India radio should be specific.

21 Regularly contact OSDMA, R.D.C., S.R.C., Home Secretary, Revenue Secretary, PS/ Secretary/ Addl. Secretary to Chief Minister, Chief Secretary and Health Secretary.

22 Give written orders for identifying places for starting free kitchens. Issue clearance for 3 days.

23 Regularly check up http://www.npmoc.navy.mil/jtwc.html, www.imd.ernet.in, www.cnn.com/ weather , www.bbc.co.uk/weather and other web sites.

24 Keep spare copies of district maps. Jurisdiction maps of all irrigation divisions shall be kept ready in good numbers.

25 Get mobile phones for Sub-Collector and other officials and neighboring BDOs/ Tahasildars.

26 Contact State Bank of India and BSNL for making available VSAT network in case of failure of all communication channels.

27 Contact Flood Cell of the Govt. of Orissa.

28 Requisition all IB/ Rest sheds.

29 Requisition School/ College for army/ police forces.

30 Direct all field officers to hire generators and keep sufficient oil for running them.

31 Direct all police stations to keep spare batteries for VHF.

32 Looking at the onset of emergency and after making quick preparations, convene Emergency meeting of important official and non-official agencies. Give them clear instructions.

33 Make a duty roster. Important officials cannot afford to break down together.

CASE STUDY-CYCLONE HUDHUD

The Onslaught

Landfall: 11:00 IST, October 12, 2014

Wind speed: 80-90 km/hour

Rainfall: Heavy to very heavy rain across the district. (290mm at Narayanpatna Block on 13.10.14) Path: From Vizag to Southern Odisha, and then North-Westwards towards Jagdalpur, Chattisgarh.

The Preparation

Emergency meeting was held on 9th October with all the district level Line Department Officers, BDOs, and Tahsildars to chalk out a detailed plan of action to face the cyclone.

Detailed vulnerability mapping was done using IMD data, and international cyclone tracking website of US navy to chalk out an evacuation plan.

A Control Room was set up at the District level as well as in all the Block HQs to share vital information and directions.

66,494 people were evacuated timely in426 cyclone shelters across the district.

Arrangements for hot cooked meal, medicines, and water were made to take care of the evacuated people for at least four days.

Deployment of NDRF, ODRAF, Fire Department teams, and local police was made according to the vulnerability mapping before the landfall.

Extent of Damage

No. of villages affected: 1204

No. of ULBs affected: 4

Population affected: 3.93 lakhs Houses damaged: 10158 nos. Crop damaged:

Total area affected 41246 Ha. More than 50% crop loss 9666 Ha. Casualty: ZERO

RELIEF, REHABILITATION AND RESTORATION

The Control Room functioned round the clock to ensure immediate response to the information received from different quarters.

Crucial transport and communication links were restored within 24 hours of the cyclone.

Damage assessment was done in a detailed manner and relief in shape of polythene and cash assistance was provided immediately.

Disaster Management Framework of Pathanamthitta

Dr. Sriram Venkitaraman, IAS

INTRODUCTION

Disasters are first and foremost a major threat to development, and specifically to the development of the poorest and the marginalised people of the world. A disaster seeks out the poor and ensures that they are poor. It is a well known fact that natural disasters strike countries, both developed and developing, causing enormous destruction and creating human sufferings and producing negative impacts on national economies. Due to diverse geo-climatic conditions prevalent in different parts of the globe, different types of natural disasters like floods, droughts, earthquakes, cyclones, landslides, volcanoes, etc. strike according to the vulnerability of the area.



India is considered as the world's most disaster prone countries. It has witnessed devastating natural disasters in the recent past like droughts, floods, cyclones, earthquakes, landslides, etc. Disasters occur in India regularly causing wide spread loss to human life, assets and livelihood. In the present context, the District Administration is bestowed with nodal responsibility of implementing the disaster management strategies and co-coordinating the activities. It is widely observable that there is a paradigm change in the disaster management activities, from the reactive response orientation to proactive prevention mechanism. This change suggests a fool-proof system including the components of prevention, mitigation, rescue, relief and rehabilitation. For the efficient response to a disastrous situation, the pre- disaster planning is essential. A well planned and well-rehearsed response system can deal with the exigencies of calamities and also put up a resilient coping mechanism. In view of these concepts, it is clear that the nodal agency for disaster management is the district administration and the district administration has to prepare the District Disaster Management Plans (DDMP). Each DDMP differs on the basis of:

1. vulnerability of the district to various type of hazards

2. chances of exposure by the people
3. mitigation strategies available

Need for Planning

Disasters occur with unfailing regularity in India causing immense loss of life, assets and livelihood. Repeated disasters threaten sustainable development. In the past twenty years, earthquakes, floods, tropical storms, droughts and other calamities have killed more than

3 million people globally, inflicted injury, disease, homelessness and misery on one billion others and caused damages worth millions of rupees. Disasters destroy decades of human effort and investments, thereby placing new demands on society for reconstruction and rehabilitation.

Pre-disaster planning is crucial for ensuring an efficient response at the time of a disaster. A Disaster Management Plan focusing on hazard, risk, vulnerability and resource assessment in addition to improving the level of response following a calamity, provides insights to link it with development initiatives. Optimal utilisation of scarce resources for rescue, relief and rehabilitation during times of crisis is possible only with detailed planning and preparation. Keeping in view the nodal role of the district administration in disaster management, preparation of District Disaster Management Plans (DDMP) is imperative. The National Disaster Management Framework prepared by the Ministry of Home Affairs also emphasised on preparation of District Disaster Management Plans (DDMP). The national disaster management frame work envisages District Disaster Management Plans with the following features to be drawn up under the supervision of District Magistrate/Collector and to include mitigation, preparedness and response.

(i) Emergency Support Functions by various Departments to be included.
(ii) To be drawn up in consultation with all relevant Departments.
(iii) District inventory of resources to be maintained.

Paradigm shift in approach to Disaster Management

Till recently, the approach to Disaster Management has been reactive and relief centric. A paradigm shift has now taken place at the national level from the relief centric syndrome to holistic and integrated approach with emphasis on prevention, mitigation and preparedness. These efforts are aimed to conserve developmental gains as also minimize losses to lives, livelihood and property.

A typical Disaster Management continuum as shown below, comprising of six elements i.e., Prevention, Mitigation and Preparedness in pre-disaster phase, and Response, Rehabilitation and Reconstruction in post-disaster phase, defines the complete approach to Disaster Management.

Objectives and Methodology of Plan Development

The first step in preparation of District Disaster Management Plan is to understand the vulnerability of the district to various hazards, and to identify the areas vulnerable to these hazards, based on history and seasonality of hazards and the physical features of the region. The capacity of the district to cope with the threat or resist the impact of the hazard, in terms of the material and human resources, needs to be assessed. It is on the basis of this analysis that suitable strategies for prevention and mitigation of various hazards will be proposed. Natural hazards cannot be stopped, but disasters can be prevented, through mitigation, prevention and preparedness. Preparedness measures against possible hazards need to be taken up.

The District Disaster Management Plan (DDMP) should also include response and recovery plan for the district. Thus the DDMP should give an outline of the measures to be taken up by various stakeholders, before, during and after the disaster to reduce the possible impacts of the disaster event. The plan should be practiced through mock drills. DDMP should also have provision for revising the plan on a regular basis, based on inputs from mock drills conducted, or based on the performance during an actual disaster event. Hazard specific management strategies should also be included in the plan.

DISTRICT PROFILE

Pathanamthitta at a glance

Nature in its true spirit is seen in Pathanamthitta district with evergreen forests, rivers, hills and Plains. Situated near the Western Ghats and bordered by the hills, Pathanamthitta is a treat to the eyes, with its vast unending stretches of forests, rivers and rural landscapes. Blessed by nature, the district is famous for its scenic beauty, fairs and festivals.

Pathanamthitta is a true tropical diversity adorned with fertile agricultural land, plantation and forests. Paddy, tapioca, a variety of vegetables and spices like cardamom, pepper etc. are extensively cultivated. The district also abounds in extensive rubber cultivations.

The district is renowned for religious tourism. Sabarimala, one of the most famous pilgrim centres in India, is 72 Km away from Pathanamthitta town. The Pilgrimage season starts from mid November and ends in mid January. A mammoth Christian religious convention is held at Maramon near Kozhencherry, every year on the banks of Pampa. Aranmula is the venue of the pageantry snake boat race which attracts a large number of foreign and domestic tourists.

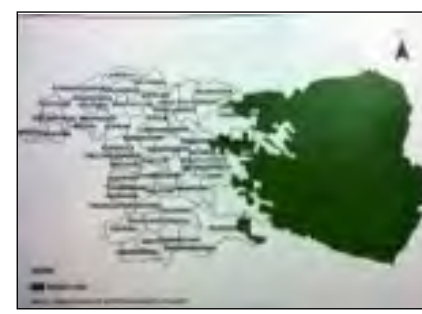
Administration

The district has two revenue divisions viz. Thiruvalla and Adoor. The district consists of five Taluks viz. Kozhencherry, Adoor, Ranni, Thiruvalla, Mallapally. There are 68 villages in the district. The head quarters of the district is Pathanamhtitta. There are nine block

Panchayats in the district. They are parakode, Pandalam, Kulanada, Elanthoor, Konni, Mallapally, Ranni, Koipuram and Pulikeezhu. The number of Grama panchayats in the district are 54. Adoor, Thiruvalla, Pathanamthitta are Municipalities.

Topography and Climate

The district consists of three natural divisions viz. The lowland, the midland and the highland. The highland stretches through the Western Ghats and descends to the midland in the centre, down to the lowland and coconut gardens on the western borders of Alappuzha district. The topography of the district is highly undulating. It starts from the tall hill slopes covered with thick forests, on the east along the mountains down the village and small hills to the flat land of coconut trees in the west.



The district has more or less the same climatic conditions as prevalent elsewhere in the state, viz. dry seasons from December to February and hot seasons from march to may. The south west monsoon from June to September and North east monsoon from from October to November provide fairly good rain. The southwest monsoon is usually very heavy and about 75% of the annual rain is received during this season.

Forest Cover

Forest covers an area of 1390.73 Sq.kms in the district. This is more than 50% of the total area of the district, while the optimum area fixed by experts is only 33%. The total cropped area in Pathanamthitta district is 1086.53 Sq.kms. The forests in the district can broadly be classified as evergreen, semi-evergreen and moist deciduous forests.

Timber is the most important forest product in the district. In fact forest is the main source of raw material for wood based industrial units. Teak, Rosewood, Jack tree, Manjakadambu, Anjili, Pala etc are some of the important varieties of timber available. Apart from providing raw materials for rayon, newsprint, plywood etc. these forests are a source for a number of useful products like Bamboo, Reeds Honey, Medicinal plants and Herbs.

Rivers

Three important rivers flow through this district. They are Pamba, Achankovil and Manimala rivers. The Pamba River is formed by the confluence of Pambayar, Azhuthayar, Kakkattar, Kakkiar and Kallar. The river Achankovil is formed by the confluence of several small streams originating from Rishimala, Pasukidamettu and Ramakkalteri and joins the Pamba at Veeyapuram in Alappuzha district.

The water resource is utilized by generating electric power using the Sabarigiri Hydro-Electric project situated at the Pamba basin in the district. The abundant water resource in the district is also utilized for irrigation purposes through the Kallada irrigation project and the Pamba irrigation project.

Pamba River:

It is the third longest river in Kerala and is formed by the confluence of Azhuthayar, Kakkattar, Kakkiar and Kallar. The Pambayar originates from the small streams flowing from Pulichimala (1792 m above sea level), Nagamala (1830 m above sea level) and Sabarimala (1816 m above

sea level). Pamba river descends from Sabarimala, flows through various parts of Ranni, Kozhenchery and Thiruvalla Taluks and enters Alappuzha district after joining with river Manimala and river Achankovil and empties itself into the Vembanad lake. Total length of this river is 176 km and about 98.5 km of this river flows through this district.

Achankovil River:

Achankovil River descends from Aruvithalimottayil about 1826 m above sea level, flows south and meets with Pamba at Parumala. From Parumala, Achankovil and Pamba rivers diverts and meet again at Veeyapuram in Alappuzha district.

Manimala River:

Manimala river has its origin at Tatamala hills and it passes through Kottayam, Pathanamthitta and Alapuzha districts. It meets with Pamba river at Keecheryvalkadavu in Pathanamthitta district. It has got a total length of 90 km.

Health

There are five government hospitals in the district viz. General Hospital Pathanamthitta, District Hospital with attached T.B centre at Kozhencherry, General Hospital Adoor, Taluk hospitals at Thiruvalla, Mallappally and Ranni. Apart from these hospitals there are Block Public Health Centres and Community Health Centres catering to the needs of the rural people. The primary health centres look after both curative and preventive needs. The total number of beds in Government Hospitals and Primary Health Centres is 1098.

In the private sector there are a number of major and minor hospitals. There are various branches like Medicine, Surgery, Orthopedics, E.N.T, Psychiatry, Clinical Histopathology, Microbiology,, Ophthalmology, Anaesthesiology, Physical Medicine, Gastroenterology, Micro Surgery, Cardiology, Pediatrics, Urology, Gynecology etc in the major private hospitals . These hospitals are well equipped with such facilities like Diagnostics, 'X' ray, Bio Chemistry Labs, Radiology & Ultra Sonography, E.C.G, Pathology, Clinical Laboratory, Blood transfusion services etc.

Some of the major private hospitals are Pushpagiri Medical College Hospital (Thiruvalla) Medical Mission Hospital (Thiruvalla), Mar Gregorious Medical Mission Hospital (Parumala), Menathottam Hospital and St. George Hospital (Ranni), MGM Muthoot Hospital, Pathanamthitta, Upasana Hospital (Koodal), N.S.S Medical Mission Hospital, Chitra Medical Centre and Archana Hospital (Pandalam), Holy Cross Hospital, Janatha Hospital, , Life Line Hospital, and Maria Hospital (Adoor), Muthoot Hospital (Kozhencherry), Poyannil Hospital, Belivers Church Hospital, Konni etc.

POPULATION

The district has a total population of 1231577 as per 2001 census. The female population is 643542 and male population is 588035. The SC and ST population is 160472 and 5644 respectively. Out of the total population the rural population comes to 1108004 and the urban 123573. The birth rate in the district is 12 and death rate is 4 The infant mortality rate is 12.



Transportation

Though the national highway does not pass through this district the state highways passes through various parts of the district. The two major highways are the one entering the district from Punalur passing through Adoor, Pandalam and Thiruvalla leading to Kottayam, and the bifurcation from Punalur through Konni, Pathanamthitta and Ranni leading to Kottayam.

The total length of all the roads in the district is 1331.389 Kms out of which the state highways occupy a length of 207.278 Kms. The length of major district roads is 479.506 Kms and the total length of other district roads is 597.95 Kms. The village roads in the district occupy a total length of 123.439 Kms.

The three major Kerala state road transport corporation depots in the district are at Pathanamthitta, Thiruvalla and Adoor. Thiruvalla is the only railway station with in the limits of Pathanamthitta district. The station is an important one of the Thiruvananthapuram – Eranakulam Broad gauge line.

Industry

The District Industries centre, Pathanamthitta, Kozhencherry is the nodal agency to promote small industries in the district. Under the Intensive Industrialisation Programme (IIP) started with effect from 1992-93 the DIC has simplified procedure for licensing, etc. Pathanamthitta district is generally considered as industrially backward. At present there are nine medium industries. The present industrial status of the district is as below.

There are 3 mini industrial estates in the district, one each at Adoor, Mallappally and Pandalam. The units in these mini industrial estates are engaged in the manufacturing of primer paint, bone meal, coconut oil, cattle feed rubber moulded goods, metal products etc. Storage of power and high cost of land are the threats to the industrial sector. There are ten 66/11 kV sub- stations with a total installed capacity of 70.6MVA. besides three 110 KV sub-stations are planned at Mallappally (under construction), Kozhencherry and Ranni. The first mini hydro project in the state was commissioned at Maniyar by M/s. Carborandum universal Ltd to generate 12MW power. Three more mini hydel projects are sanctioned in the district.

The government of India have sanctioned to the district an industrial growth centre with the scheme of developing industrial land of 250 acres with all infrastructure facilities in addition, M/s KINFRA is also setting up industrial development areas. Green channel is a committee under the district collector with all relevant district level officers as members set up to help entrepreneurs

get all sorts of licenses, clearances, electricity, water connection etc without delay. This functions at the district industries centre, Kozhencherry.

Education

Total numbers of Educational institutions in Pathanamthitta district are:

Lower Primary School: 426
Upper primary School: 141
High School: 171
Higher Secondary School: 49
Jawahar Novodaya School: 1
Kendriya Vidyalaya School: 1
Poly technic College: 4
Engineering College: 6
Medical College: 1
College of Arts and Science: 8
Teachers training College: 6
Vocational Higher Secondary School: 27

The District Institute of Education and Training (DIET) meant to provide academic and resources support at the grass root level for the success of various strategies and programmes being undertaken in the areas of elementary and adult education with special reference to universalisation of primary education and functional literacy in 15-35 age group was established in 1989. It is situated in Thiruvalla.

HAZARD ANALYSIS

INTRODUCTION

Natural hazards, the physical events of natural processes, can be considered as negative resources that alter/degrade the environment affecting a large human population. During the last decade, observed as International decade for natural disaster reduction (IDNDR), serious efforts were directed globally to abate imminent hazards. The efforts take the form of 1) investigations that seek to identify hazardous conditions 2) planning programmes to mitigate hazard risks 3) institute safety by design and law 4) disaster warning systems and 5) preparedness through contingent disaster plans and recovery process.

Kerala state, located in the southwest part of Indian peninsula, often experiences the fury of some of the natural hazards like floods, draughts, landslides, coastal erosion, lightning and earthquakes. In periods of prolonged and heavy rainfall the state experiences floods in the low lying areas and landslides in the steeply sloping segments of Western Ghats. Coastal erosion is a recurring phenomenon that is of grave concern especially in the segments with high density of settlement. The state is also rocked by minor earth tremors frequently. The incidence of

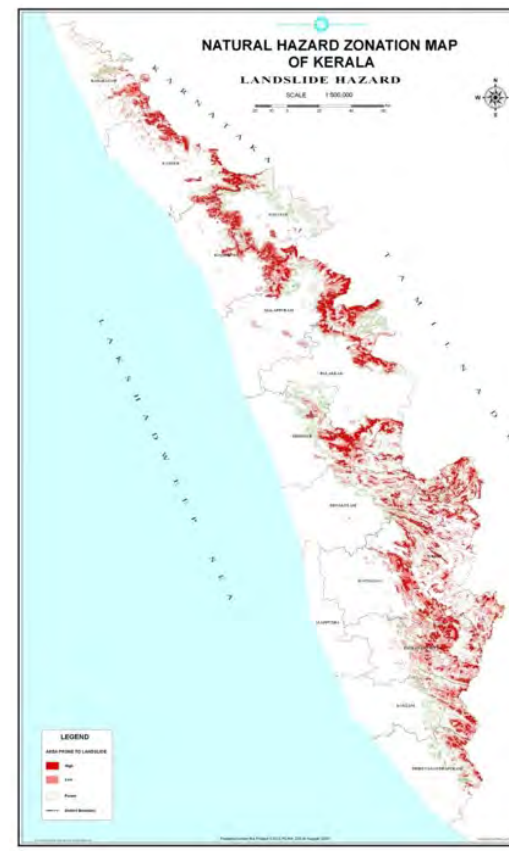
lightning in the state with casualties is one of the highest in the country. After the December 2004 earthquake, the State was also struck by tsunami taking a toll of more than hundred lives besides the crippling effect on the economy.

Realising the importance of the repetitive occurrence of these natural hazards and its crippling effect on the states economy, it is essential to work out disaster management plans. The studies carried out by Centre for Earth Science Studies till date has culminated in providing a wealth of information on natural resources, natural hazards and even the processes and causative factors of different hazards. Information on natural hazards, prediction capabilities and to certain extent disaster preparedness requires inputs from the R&D sector so as to crystallise viable management plans that can be translated into specific action programmes. In the present programme hazard proneness of the State is brought out in the form of maps by evaluating the causative factors and processes related to the natural hazards viz. floods, landslides, coastal erosion, earthquakes and lightning so to identify areas that are critically disposed. The results are integrated in GIS platform and brought out as multiple hazard maps at district level. The main purpose of multiple hazard maps is to gather together in one map the different hazards related information for each district to convey a composite picture of all the natural hazards. It also becomes a comprehensive analytical tool for assessing vulnerability and risk at the district level, an essential input to a planner. The output maps at district level are on 1:100,000scale. The area prone to flood, landslide and length of coast vulnerable to sea erosion are computed and given as a table in each map.

Floods

Floods are the most common of natural hazards that can affect people, infrastructure and natural environment. In Kerala, riverine flooding is a recurring event consequent to heavy or continuous rainfall exceeding the absorptive capacity of soil and flow capacity of streams and rivers. This causes a water course to overflow its banks onto flood plains; which by definition is a relatively flat land adjacent to a natural water course, composed primarily of unconsolidated depositional material derived from sediments transported by the related stream and subjected to periodic flooding. Flood plains are therefore 'flood prone' and are hazardous if the developmental activities in them exceed an acceptable level. Frequency of inundation depends essentially on rainfall, channel slope, relative height of the banks, materials that make up stream banks and landuse in flood plain. Reclamation and settlement in floodplain areas is a major cause of flood damage in Kerala. Defining the entire flood potential in a given area is a delicate task. In order to evaluate flood hazard, one has to know where floodplains are, how often and how long the

flood plain is covered by water and at what time of the year flooding can be expected. Gathering hydrologic data directly from rivers and streams for many years is useful in determining the statistical frequency of flood events, but is a time consuming effort. In the absence of stream gauging records for all the rivers in Kerala that too at close intervals, a direct measurement is not possible. Since flood plains can be mapped, the boundary of this unit is commonly used in flood mitigation programmes to identify the areas where risk of flooding is significant. Hazard assessments are then based on remote sensing, damage reports and field observations. To begin with, based on the form and process, the flood plains or the flood prone areas, are mapped on 1:50,000 scale using IRS P6 satellite images. There are several indicators of floodplain that are easily picked up from the satellite data. Smooth textured areas on either of major streams with high reflectance are often flood plains. The presence of meandering streams, terraces, minor interspersed water bodies etc. indicate low lying areas subjected to inundation. In addition, some of the data generated while evaluating natural resources like landform, slope of the land, type of soils, hydrologic information especially disposition of streams and changes in groundwater levels are also used in evaluating flood proneness. Changing nature of the flood plains both natural and manmade, loss of vegetation in upper catchments and land use practises that promote runoff are also taken into consideration while assessing flood proneness.



The study shows that 5642.68 sq.km of area which is 14.52% of the total area of the state is prone to floods. In Allepey district more than 50% percentage of area is identified as flood prone. These are mostly confined to the Kuttanad region that host seasonally waterlogged flat lands with anastomosing

waterways connected to Vembanad lake. The Kole lands of Thrissur district, the coastal tracts of Ernakulam and Malappuram districts and the western part of Kottayam district flanking Vembanad lake are other major areas prone to floods. Even though Wayanad district is located in an elevated plateau region flood prone areas are noted in the broad flat bottom valleys and flood plains adjacent to Mananthavadi river. Idukki district is the least flood prone area in Kerala owing to the rugged topography and absence of flat bottom valleys.

Landslides

Landslides include all types of mass movement of rock and unconsolidated materials down the slope under influence of gravity. Landslides are normally triggered by heavy rains, earthquakes, or rise in ground water and undercutting by rivers. In Kerala, landslides commonly occur in localised areas of the Western Ghat region where the slope is steep and the soil is over saturated as a result of prolonged rainfall. These events vary from events affecting a parcel of land to those larger ones with much causality. Only the larger ones with losses of lives have been highlighted and studied in detail. The smaller events also indicate landslide potential of an area. Previous case studies by CESS show that most of the events are of debris flow type triggered by excess rainfall and are influenced by terrain factors like slope, overburden thickness, landuse, relative relief, disposition of streams, landform at micro level etc. In the present study macro-Zonation is attempted on 1:50,000 scale following the methodology adopted by BIS (assigning weights to each landslide hazard evaluation factor). The weightage given to each parameter was modified for the Kerala region incorporating the findings of an earlier study done in a segment of Western Ghats. Rainfall is taken uniformly as landslides are initiated by peak rainfall in a short period. In most cases rainfall in excess of 20 cm a day has been the triggering factor. Slope is the main causative factor for landslides in Kerala. They are derived from the topographic sheets. Lithology depicted in geological maps provides the main rock types but not the degree of weathering or the weathered product. Most of the landslides in Kerala are debris flows affecting the cover material and not the basement rock. Hence the type of cover material on diverse landform was deciphered from the images. Landform forms the basis of the cover material. Structural aspects are limited to the lineaments derived from satellite images. Data on the structural disposition of individual litho units are not available in large scale. Drainage density and relative relief are derived from topographic sheets. Landuse/land cover is taken from the images. The entire area is divided into 250 x 250 m grids and the assigned weights of individual parameters for each grid are summed up. Based on the total value each grid area is categorized into different zones of hazard.

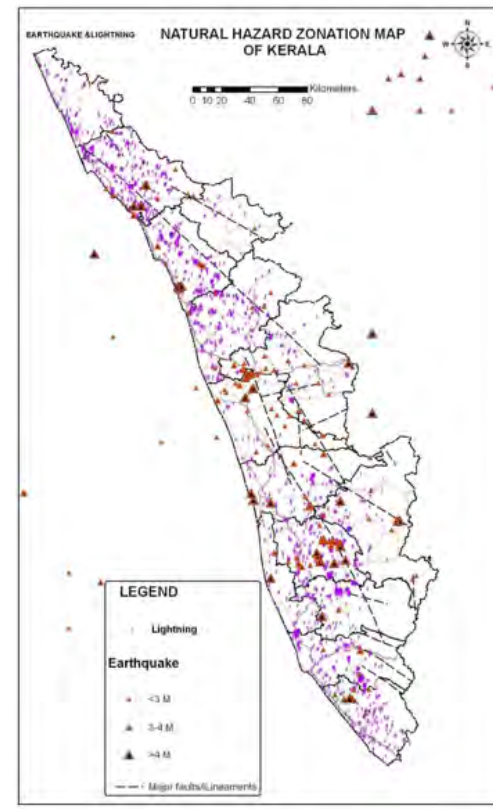
The study reveals that 1848 km or 4.71% of the state is under high and 3759 km or 9.77% under low hazard category. Devikulam, Vythiri, Nilambur, Mannarkad and Ranni are the most landslide prone taluks in the state. A comprehensive picture of landslides in the state is given in map 2.

Earthquakes

An earthquake is caused by sudden release of strain energy slowly accumulating along a fault within the earth's crust. Depending on the size and location, an earthquake can cause ground shaking, surface rupture, ground failure, and in some cases tsunamis. Kerala region forms part

of the stable continental region where the deformation is slow when compared to the active plate boundaries like the Himalaya and Andaman. Kerala region has experienced occasional mild tremors since historical times. None of them are reported to have caused casualties or major damages to built-up structures. A seismic hazard map with 10% probability of exceedance in 50 years assigns low-level hazard to regions falling in Kerala. However pockets of higher ground acceleration have been identified in central Kerala. In this region higher levels of earthquake hazard are expected calling for the introduction of better building practices. Experience shows that sudden release of accumulated strain energy along planes of weakness in the earth's crust can generate large earthquakes and no region is safe from earthquakes (Latur earthquake). In Kerala, several deep seated faults exist, the notable among them are Periyar fault, Idamalayar fault, Muvattupuzha fault, Bhavali fault and Kuthuparamba fault. Besides there are many more minor faults and fractures that can generate minor tremors as a result of crustal readjustment. Minor tremors in Kerala are also explained by hydroseismicity model wherein pressure transients generated due to sudden increase in hydrostatic heads especially after rains results in increased pore pressure and movement along pre-existing faults.

The availability of monitoring stations in Kerala permits a better documentation of seismic events. Presently the IMD has an observatory at Thiruvananthapuram with a three component broadband station. CESS with the funding of DST has established another broad band station at Peechi in Thrissur district and is functional from 2000. The network of stations operated by KSEB for monitoring seismicity in the hydroelectric project areas also contribute to the instrumental data base. Thus the earthquake monitoring in the state is fairly adequate.



In the past fifty years, only four earthquakes have occurred in Kerala with more than 4 M. In the regional seismic zonation map of India, Kerala has been placed in Zone III where the maximum expected intensity is VIII in MM scale or 5.6 M in Richter scale. Though small and medium earthquakes have occurred in Kerala region, large earthquakes with casualty are yet to occur. The destruction due to earthquakes is limited to ground cracks and damages to buildings. The locations of the earthquakes that have occurred in the Kerala region for which t cords are available are plotted on to the district maps (rrap 3). Based on the magnitude 1hey have been cate Prised into three classes viz. <3, J.4 and 4. Major faults and lineaments at also plotted. Higher levels of seismicity are seen in ttl!yam-ldukki districts and Thrissw-Palakkad districts. Other districts like Thiruvananthapuram, Kannurand zhikode also show rroderate levels of seismicity.

Lightning

Demarcation of the areas prone to lightning is a delicate task as reports on this specific hazard are limited to events with casualty. Much of the other lightning events striking the land or vegetation go unreported. Present studies indicate that these are essentially caused by transfer charge from CB clouds especially during NE monsoon and pre-monsoon periods. However plotting the historical data collected on large-scale maps will provide a first approximation of the prone areas. This requires enlarging the database available on the reported occurrence of lightning.

The data used for this map is of seventeen years between 1986 and 2002. As the data is derived from felt reports it is an underestimate of the actual lightning frequency and/or total lightning discharges. There is so to say, a season for lightning occurrences in Kerala. Sixty two percent of the annual lightning incidence occurs in the month of April, May, October and November. As the rest 38% of the total incidence is distributed over eight months it is clear that the lightning incidence in these months is less. Because of this nature of intermittent occurrence, the data is to be considered as the result of repeated sampling for 17 years. Even though the frequency and distribution of lightning at a place is not a constant, because of repeated sampling the possibility of error in spatial distribution as presented in the map should be low. This was later proved to be correct from further investigations by CESS.

While looking at the distribution of available data on lightning it can be generally stated that the foot hill zone of Western Ghats have higher number of lightning strikes (Map 3). The major areas that need mention are around Kadakkal and Oachira in Kollam district, Kuttiyadi in Kozhikode district and Taliparamba in Kannur district.

Hazard Zonation - Pathanamthitta

Water and Climate related disasters	Geologically related disasters	Biologically related disasters	Chemical, Industrial & Nuclear related disasters	Accident related disasters
Flood Thunder & Lightining Cyclone Drought	Earthquakes Land slides Dam Bursts	Epidemics Cattle epidemics Food poisoning Pest Attacks	Chemical & Industrial disasters	Village fires Urban fires Forest fires Festival related disasters Electrical disasters and fires Serial bomb blasts Building Collapse Boat Capsizing Rail & Road Accidents

Festival related disasters

Pathanamthitta can be called as the spiritual capital of 'God's own Country', Kerala as it covers major pilgrim spots of the state. At the same time these areas are the possible areas of disasters.

Sabarimala

The best known pilgrimage destination in Kerala is Sabarimala temple, which is situated high up in the Sahyadri mountains. Sabarimala Sri Dharmasastha Temple is the most famous and prominent among all the Sastha Temples. It is the 'Sacred Abode of Lord Ayyappa' and one of the most important Hindu pilgrim centre in the country. The holy shrine is located amidst dense forests in the rugged terrains of Western Ghats. Inhabited by various wildlife species. Millions of pilgrims from all over the Country assemble here during the most arduous festivals called as 'Vishu Vilakku' in April, 'Mandalapooja', in the months of Vrichikam Dhanu (Nov. - Dec) and 'Makaravilakku' in mid January, coinciding with Sankramam.

Maramon Convention

The Marthoma Maramon Convention is the biggest religious gathering of Christians in Asia. It is held on the banks of river Pamba, Maramon, near Kozhencherry since 1896 usually in the month of February. Thousands of people from all over India assemble here at this great occation. The Maramon Convention displays co-operation and union between different sections of Church in Kerala. It fosters ecumenical outlook.



It is also a source of spiritual inspiration and enlightenment for thousands. Convention is normally scheduled for a duration of 10 days, when the sand bed become dry to accommodate the sea of humanity. About a week before the convention, the vicinity of the venue becomes a scene of great activity for the preparation of the Pandal wide enough to accommodate about 80000-100000 people constructed out of bamboo poles. Huge crowds streamed across temporary bridges and sandbag walkways come to the Pandal for hearing the Word of God from all over India and abroad.

Parumala feast

The magnificent building also houses the tomb of celebrant Mar Gregorios metropolitan, a Saint of Malankara Orthodox Church. St. Gregorios Geevarghese popularly known as "Parumala Thirumeni" was born in the priestly family of "Pallithatta Thanagattu" in Mulunthuruthy near Cochin on 15th June 1848. Devotees from all over the state attended the special rites and prayers offered as part of the commemorative feast of the saint. The annual commemorative feast (Ormaperunnal) of the saint is celebrated with much pomp. There is a ceremonial procession on the day of the feast.

Aranmula Vallamkali

Aranmula Vallamkali (Boat race) is a famous water fiesta is held during Onam (August - September). The snake boats assemble near the Sri Parthasarathy Temple before the grand procession. Each boat is 100 ft. long and accommodates 4 helmsmen, 100 oarsmen and 25 singers. The snake boats move in pairs to the rhythm of full throated singing and shouting, watched by an excited crowd. The commencement of the event is marked by a snake-boat race in the afternoon. Early morning, the Snake Boats assemble near the temple, and take off in pairs. Snake-Boats in action, with incessant full-throated singing and vociferous shouting by the crowds in an exciting event.

Cherukolpuzha convention

Ayiroor Cherukolpuzha religious convention is another important annual feature on the river bed of Pamba. Ayiroor Cherukolpuzha religious convention of the Hindus is held at Cherukole on the banks of River Pamba, usually in February every year. This convention is attended by a large number of people and addressed by prominent religious scholars and cultural personalities.

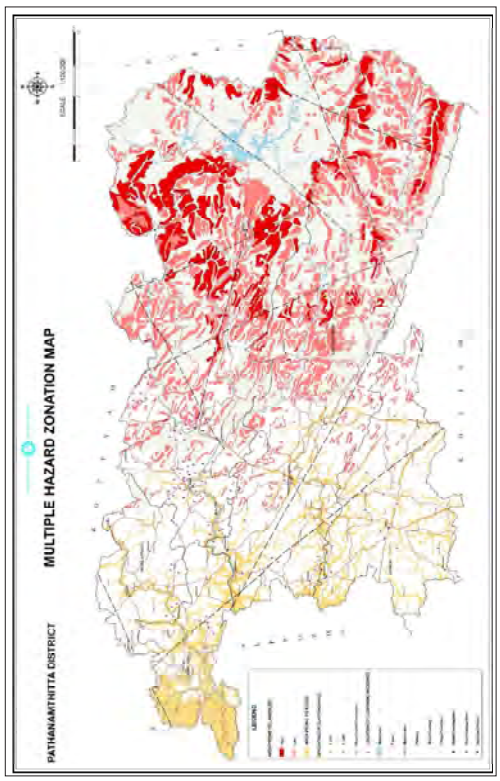
Chakulathukavu pongala

This is the phenomenally renowned festival that takes place in the temple during the month of 'Vrischikam' (November/December). This is the time when the glory of the Goddess is at its peak. Lakes of women devotees gather around the temple as early as even one week before the function. The temple premises will be overcrowded and the devotees arrange place for offering the Pongal on both sides of the mains streets. The queue usually extends to a surprising length of 20 km.

The Pongala in the temple is a symbolic reminder of this age-old incident. Devotees prepare the food as humble offering to the mother. It is believed that the Goddess herself offers her august presence near each Pongala hearth as the cooking is done. Several are the instances where the griefs, problems, and confusions of the devotees are washed away through the Pongal offering. It is also a symbolic reminder that devotion reaches the full circle through complete submission and total surrender at the lotus feet of the Mother. The Pongala festival in this temple is one of the foremost rituals compared to any thing of the same in the whole state of Kerala.

Institutional mechanism

In the past decades as a country prone to multiple



Disaster Management Framework of Pathanamthitta

hazards with a large population, our nation was carrying out only response, relief and rehabilitation mechanisms and had a well oiled system to carryout these activities. As the country had faced a tremendous increase in natural disasters, which accounted for loss of thousands of crores in terms of social and community assets, the Government of India have brought about a change in policy which emphasizes mitigation, prevention and preparedness. The new policy/ approach, mandates a priority to pre-disaster aspects of mitigation, prevention and preparedness and new institutional mechanisms are now in place to address the policy change.

India has a well defined administrative structure extending up to village level. But the primary responsibility for disaster management is the concern of State Governments yet the Central Government plays a key role for providing financial and logistic support in the case of major disasters and co-ordinate the effort of all Central Ministries/ Departments/ Organizations. The Government of India has put in place necessary institutional mechanism for drawing up and monitoring the implementation of disaster management plans, ensuring measures by various wings of Government for prevention and mitigating the effects of disasters and for undertaking a holistic, co-ordination and prompt response to any disaster.

District Level

At the district level, the District Collector/District Magistrate is the administrative head who coordinates all activities relating to prevention, mitigation and preparedness, apart from his existing responsibilities pertaining to response and relief. The District Coordination and Relief Committee headed by the District Collector prepare the plan for the district. The plan is divided into various chapters which specific activities. The Administrative part of the plan outlines specific responsibilities for Panchayati Raj and municipal institutions, non-governmental organisations and the media. The setting up of shelters and other facilities to accommodate affected people are underlined in the plans. It also calls for preparing the community to deal with disasters and a system to impart training to identify functionaries. The guidelines specify periodic simulation exercises (drills) as a test level of preparedness for all the functionaries and the community.

The response part of the plan involves alerting and strengthening the control rooms, alerting the community, restoring communication channels, organising rescue and medical relief, shelters for the affected population, coordinating relief from outside agencies and distribution of material. It also includes assessment of damages, organising of post-mortem examination and issue of death certificates, disposal of dead bodies and rehabilitation of the displaced.

The recovery component encompasses the restoration of physical infrastructure such as roads, public buildings and community centres and community services such as street lighting, water supply, sanitation, schools and medical services. A crucial element in medical assistance is psychological counselling of persons and families traumatised by the disaster.

The district-level disaster management plan also includes reappraisal of the plan in operation, comprehensive documentation on the management strategy and reporting to the Government.

The districts are divided into sub-divisions, each of which is under the administrative control of the Sub-Divisional Officer. Sub-Divisional Officers are responsible for disaster management at their levels.

Taluk/Village/Community level

The Taluk level activities are coordinated by Tahsildar as the administrative head of Taluk. Village officers are the officers who directly communicate with the public and carryout the field level activities.

The State Government is in the process of decentralizing the disaster management activities. Government has issued guidelines to local bodies to prepare decentralised disaster management plans that can be integrated into the district-level preparedness exercise. Local bodies will have to identify prevention and mitigation measures for each type of disaster and prepare an action plan with time schedule, based on the availability of resources. They are also required to generate private and institutional support for prevention and mitigation. The preparedness plan includes an inventory of human resources, transport facilities for emergency deployment, workshops and fuel depots and a list of equipment and stores for rescue and relief operations. An alternate communication system and a coordination mechanism for incoming relief materials and teams is an essential component of the plan.

Gramapanchayats, municipalities and corporations have been directed to come up with location-specific plans focussing on vulnerability to hazards, prevention, mitigation and preparedness plans and a response mechanism to handle relief and rehabilitation of affected people.

This grass root level disaster management activities are to be revamped by introducing Disaster Management Committee (DMC) consisting of elected representatives, local authorities; Government functionaries including doctors/paramedics of primary health centres located in the village, primary school teachers etc. The Disaster Management Teams consisting of members of youth organizations like Nehru Yuvak Kendra Sanghathan (NYKS) and National Service Scheme (NSS) and other non-governmental organizations as well as volunteers from the village are to be formed for better response. These teams are to be provided with basic training in evacuation, search and rescue, first aid, trauma counseling etc. The Disaster Management Committee need review the disaster management plan at least once in a year. It would also generate awareness among the people in the village about dos' and don'ts for specific hazards depending on the vulnerability of the village.

Legislations

The National Calamity Management Act (2000) for ensuring the efficiency and effective management of natural and other calamities was formulated in 2000. This Act clearly states the authorities, their powers and functions during a calamity at national, state and district.

Disaster Management Act (2005) was formulated for providing effective management of disasters by the Central Government. The Act has provisions for formation of National, State, District and Local disaster management authorities. The act also clearly states the duties and functions for various authorities.

DISTRICT DISASTER MANAGEMENT PLAN

As per session 31 of the Disaster management act, 53 of 2005:

1. There shall be a plan for disaster management for every district of the State.
2. The District Plan shall be prepared by the District Authority, after consultation with the local authorities and having regard to the National Plan and the State Plan, to be approved by the State Authority.
3. The District Plan shall include:
    a. the areas in the district vulnerable to different forms of disasters;
    b. the measures to be taken, for prevention and mitigation of disaster, by the Departments of the Government at the district level and local authorities in the district;
    c. the capacity-building and preparedness measures required to be taken by the Departments of the Government at the district level and the local authorities in the district to respond to any threatening disaster situation or disaster;
    d. the response plans and procedures, in the event of a disaster, providing for–
        i. allocation of responsibilities to the Departments of the Government at the district level and the local authorities in the district;
        ii. prompt response to disaster and relief thereof;
        iii. procurement of essential resources;
        iv. establishment of communication links; and
        v. the dissemination of information to the public;
        vi. such other matters as may be required by the State Authority.
4. The District Plan shall be reviewed and updated annually.
5. The copies of the District Plan referred to in sub-sections (2) and (4) shall be made available to the Departments of the Government in the district.
6. The District Authority shall send a copy of the District Plan to the State Authority which shall forward it to the State Government.
7. The District Authority shall, review from time to time, the implementation of the Plan and issue such instructions to different departments of the Government in the district as it may deem necessary for the implementation thereof.

CRISIS RESPONSE STRUCTURE OF DISTRICT ADMINISTRATION

District Collector and District Magistrate

District Collector, empowered with the magisterial powers, is designated as the Chairman of the District Disaster Management team. On receipt of any information about the occurrence of disaster, the collector will pass on the information immediately to Superintendent of Police for confirmation and immediate necessary action. The District Collector will subsequently inform the Revenue Divisional Officers, Adoor & Ranni and the rest of the District Disaster Management team members and will provide necessary instructions to combat the disaster. The action taken

by the District Disaster Management team members will be analysed during review meeting held later on the very same day. District Collector will report the description of the disaster and the action taken by the District Disaster Management team members to the government of Kerala. Nodal Officer of the District Revenue Establishment will be the Deputy Collector (general) and Additional District Magistrate.

Superintendent of Police

On receipt of the information about the occurrence of a disaster, the Superintendent of Police, Pathanamthitta will enquire through the concerned Dy. Superintendent of Police regarding the authenticity of the information and will deploy sufficient number of police personnel with available equipments, at the site of disaster for rescue activities and further necessary action, as instructed by the chairman of District Disaster Management Team. The Nodal Officer of the Police is DySP Crime detachment.

Fire and Rescue Services

On receipt of the information about the occurance of a disaster, the Divisional Officer, Fire & Rescue will enqire require regarding the authenticity of the information from the nearest Police station and will deploy sufficient number of Fire & Rescue Services personnel, with available specialized equipments and vehicles, at the site of disaster for rescue activities and report the action taken to the District Collector. The Nodal Officer of the Fire & Rescue services department of Pathanamthitta is the Assisstant Divisional Officer, Pathanamthitta.

District Medical Officer

On receipt of the information about the occurrence of a disaster, the District Medical Officer (Health Services) will engage sufficient number of Doctors and support with Ambulances and available specialized equipments and medicines at the site of disaster for rescue activities and report the action taken to the District Collector. The District Medical Officer (Health services) shall pool the resources of major hospitals of the district, in case of greater number of causalities. The Nodal Officer (Health Services) Pathanamthitta is the RCH Officer.

Deputy Director Panchayats

Deputy Director of Panchayats, Pathanamthitta shall take necessary action at the time of disaster, on receipt of instructions from the District Collector. Necessary instructions or warnings to the concerned LSG institutions within his Jurisdiction shall be conveyed by him. The Nodal Officer of the Deputy Director of Panchayats, Pathanamthitta is the Assistant Deputy Director of Panchayat, Pathanamthitta

Ex. Engineer, Minor Irrigation

Executive Engineer, Minor Irrigation Division, Pathanamthitta shall provide technical advice, laborers, equipments and heavy vehicles required during the search and rescue operations at the site of disaster, on receipt of instructions from the District Collector and report the action taken to the District Collector. The Nodal Officer of the Executive Engineer, Minor Irrigation Division, Pathanamthitta is Assistant Executive Engineer, Minor Irrigation sub-division, Pathanamthitta

Asst. Ex. Engineer, Irrigation

Executive Engineer, Irrigation Division, kozhencherry, Pathanamthitta shall provide technical advice, laborers, equipments and heavy vehicles required during the search and rescue operations at the site of disaster, on receipt of instructions from the District Collector and report the action taken to the District Collector. The Nodal Officer of the Executive Engineer, Irrigation Division, Pathanamthitta is Assistant Engineer, Irrigation Section, Pathanamthitta.

District Supply Officer

District Supply Officer, Pathanamthitta shall provide necessary food materials and supportive systems at the rescue and rehabilitation centres, on receipt of instructions to that effect from the District Collector or the Government of Kerala and report the action taken to the District Collector. The Nodal officer of the District Supply Officer, Pathanamthitta, is the Senior Superintendent, District Supply Office Pathanamthitta.

Ex. Engineer, PWD (roads)

Executive Engineer, PWD (Roads Division), Pathanamthitta shall provide technical advice, laborers, equipments and heavy vehicles required during the search and rescue operations at the site of disaster, on receipt of instructions from the District Collector and report the action taken to the District Collector. The Nodal Officer of the Executive Engineer, PWD (Roads Division), Pathanamthitta is Assistant Executive Engineer, Roads sub-division, Pathanamthitta.

Dy. Chief Engineer, KSEB

Dy. Chief Engineer KSEB, Pathanamthitta, shall provide shall provide technical advice, laborers, equipments and heavy vehicles required during the search and rescue operations at the site of disaster for illumination and to avoid shock hazards, on receipt of instructions from the District Collector and report the action taken to the District Collector. The Nodal Officer of the KSEB, Pathanamthitta is the Executive Engineer, Pathanamthitta

Dy Director, KSEB (dam safety)

Dy. Director KSEB (Dam Safety), Pathanamthitta, shall provide technical advice, laborers, equipments and heavy vehicles required during the search and rescue operations at the site of disaster, on receipt of instructions from the District Collector and report the action taken to the District Collector. The Nodal Officer of the KSEB (Dam Safety), Pathanamthitta is the Deputy Director, Research & Dam Safety Division, Seethathodu.

Regional transport officer

Regional Transport Officer, Pathanamthitta shall provide technical advice and vehicles required during the search and rescue operations at the site of disaster, for the evacuation of the affected from the disaster site, on receipt of instructions from the District Collector or from the superintendent of Police and report the action taken to the District Collector. The Nodal Officer of the Regional Transport Office, Pathanamthitta is Motor Vehicle Inspector, Regional Transport office, Pathanamthitta.

District Information Officer

District Information Officer, Pathanamthitta shall maintain an updated directory of District Disaster Management team members and media persons and shall pass on authentic information about disaster to the media, on receipt of instructions from the District Collector. The Nodal Officer of District Information Centre, Pathanamthitta is District Information officer, Pathanamthitta

Ex. Engineer, PWD (buildings)

Executive Engineer, PWD (Buildings Division), Pathanamthitta shall provide technical advice, laborers, equipments and heavy vehicles required during the search and rescue operations at the site of disaster, on receipt of instructions from the District Collector and report the action taken to the District Collector. The Nodal Officer of the Executive Engineer, PWD (Buildings Division), Pathanamthitta is Assistant Executive Engineer, (Technical), Buildings division, Pathanamthitta.

Ex. Engineer, Kerala Water Authority

Executive Engineer, Kerala Water Authority, Pathanamthitta & Thiruvalla shall provide technical advice, laborers, equipments and heavy vehicles required during the search and rescue operations at the site of disaster, on receipt of instructions from the District Collector and report the action taken to the District Collector.

Communications (BSNL)

Communication System (BSNL), Pathanamthitta shall maintain an updated directory of District Disaster Management team members and provide technical advice, laborers, equipments and heavy vehicles required during the search and rescue operations at the site of disaster, for transmitting emergency communication on receipt of instructions from the District Collector and report the action taken to the District Collector. The Nodal Officer of Communication System (BSNL), Pathanamthitta is the General Manager, Thiruvalla.

Sabirimala Special Officer

On receipt of the information about the occurrence of a disaster, the Special officer, Pathanamthitta will enquire through the concerned department and devasom regarding the authenticity of the information and will inform District Collector and Superintendent of Police. Deploy sufficient number of Volunteer personnels with available equipments, at the site of disaster for rescue activities and further necessary action, as instructed by the chairman of District Disaster Management Team. The Nodal Officer of Sabirimala is the Chief Commissioner, Travancore Dewaswom Board

DISTRICT CONTROL ROOM

Present control room functioning

As part of preparatory and relief measures to be taken up in view of the ensuing South- West Monsoon, an advance meeting will be convened with all Tahsildars and other district officers. For

effective monitoring of the flood situation, Deputy Collectors will be assigned 'charge officers' of individual Taluks. Meetings will also be conducted at Taluk level under the guidance of the respective charge officer for briefing the necessary preparedness for facing natural calamities and the relief measures to be adopted in emergencies. 24X7 Control Rooms have already been opened at District and Taluk levels. The officers posted at the Taluk level control rooms will report calamities to the district control room before 11am and 3pm daily. A consolidated daily report shall be submitted to the State Level Control Room operating at the Land Revenue Commissionerate, Thiruvananthapuram before 1 pm every day.

Day to Day Functions:

Enquiring and Collecting Taluk wise Loss and Causality due to Natural Calamity Sending the District wise report to Commissioner 's office (Trivandrum) Releasing the District wise Calamity report to Media.

Registers Maintained at DEOC

1. Taluk wise Causality Register
2. Crop and live stock loss report
3. Resource Inventory - Contact Numbers of all Line Department, Hospitals, and NGOs etc.

Water and Climate Related Hazards

- For reducing the risk of a region to floods, the primary step involved is mapping of the flood prone areas.
- The problem of flood management revolves around two aspects- structural measures and non-structural measures.

PREVENTION, MITIGATION & RESPONSE MEASURES

GROUP OF DISASTERS	TYPES	PREVENTION & MITIGATION MEASURES	RESPONSIBLE DEPARTMENTS
Geologically related	Land Slide	Reinforcement, Drainage pattern change(contouring), Geometry Changes (Anchor, Steel wire mesh), Plantation of Vetiver	Geology Dept, PWD, Agriculture & Plantation Dep
	Earth Quake	Retrofit of the existing building stock.	LSG & PWD Dept
	Dam Bursts	Decommission of unsafe dams and monitor the strength of dam, reinforcement has to be done if needed	Dam Safety Authority
Water Related	Flood	Clearing the drainage patterns, widen the channels	Planning dept & Minor Irrigation
	Thunder & Lightning	Awareness generation, promote use of lightning arrest	Social welfare dept and KSEB
	Cyclone	Construct Cyclone Mitigation Shelters	Revenue & IMD
	Drought	Rain water harvesting techniques has to be promoted, proper water resource management strategies	LSGD
Biological	Epidemics	Control over mosquito, pest etc, keep the surroundings clean and promote personal hygiene	LSGD with people participation
	Cattle epidemics	Proper vaccination in time	Veterinary dept
	Food Poisoning	Ensure quality food materials, keep the Kitchen clean on the schools	Supply Officers, School Staff
	Pest Attacks	Pest control	Agriculture Dept
Chemical & Industrial Disasters	Chemical & Industrial Disasters	Get a chemical tender always be ready with administration, arrange sufficient number of civil defence personnal having proper training	Factories and Boilers

- Structural measures are in the nature of physical measures and help in “modifying the floods” while non- structural measures are in the nature of planning and help in “modifying losses due to floods”.

- Long-term measures are execution of watershed management, major flood control structures, land use regulations, strengthening of forecasting, monitoring and warning systems and public awareness.
- Medium term measures are bank protection; river training and flood control works.
- Short term measures are assessment of the vulnerability of the flood control structures, cleaning, desilting, flood plain zoning mapping etc. Community participation is of utmost importance, in prevention, mitigation and preparedness measures against flood.
- The main mitigation strategies for cyclone include engineering structures to withstand wind forces, incorporating wind safety requirements for non- structural elements, planting of wind breaks, provision of cyclone resistant community shelters in vulnerable areas.
- Hazard zonation maps can be prepared and least critical activates can be placed in vulnerable areas.
- Location of settlements in flood prone areas is at most risk. Coastal shelter belt plantations can be developed to break severe wind speeds. Flooding can result from a cyclonic storm. Flood mitigation measures should be incorporated.
- Drought monitoring is the continuous observation of rainfall situation, water availability in reservoirs, lakes, rivers and comparing with the existing water needs of various sectors of the society.
- Drought mitigation can be done through water rationing, watershed management practices, construction of irrigation structures, conserving soil and reducing erosion rates through soil conservation practices, introduction of flexible farming and cropping patterns etc.
- The nonstructural mitigation measures include land use zoning regulations, adherence to CRZ regulations, compulsory acquisition of land in high risk areas to prevent development and construction practices to reduce vulnerability of the building to flooding and wind hazard.

Geologically related Hazards

- Earthquake is a sudden onset hazard and gives no warning at all. But the damages due to earthquakes can be reduced through preparedness, prevention and mitigation measures.
- For new constructions, ensure Earthquake resistant features as specified by BIS standards.
- Analyse soil type before construction and do not construct on soft soil. To accommodate on soft soil, take safety precautions.
- Existing weak structures can be retrofitted.
- Many a times, the damages and loss of life in earthquake are due to failure of nonstructural elements in the building.
- Other long term strategies include initiatives in techno legal regime, insurance schemes etc.
- Landslide prone areas can be identified scientifically and hazard maps can be prepared.
- For landslide prevention, possible interventions are, use of natural fibre grids such as jute or coir, use of synthetic grids, surface and subsurface drainage systems, retaining walls, rock

bolts, pre-stressed anchors, regarding slope, afforestation, hazard zonation and land use control.

Biological Disasters

- Vulnerability to epidemics is high among those who are poorly nourished, people living in unhygienic sanitary conditions, poor water supply, individuals who do not have access to health services, or those who have weak immune systems.
- The outbreak of an epidemic situation where already a natural calamity has struck will cause life threatening situations.
- Organisational preparedness and the coordination mechanism is required right from the state up to the village level PHCs.
- An early warning system through a surveillance system is a primary requirement.
- Personal protection through vaccination of people at risk is an effective mitigation measure.
- Vector control through improvement of sanitary conditions, drive to check and fumigate breeding places of vectors, improving disposal methods of waste, disinfecting the water source etc are the other mitigation strategies.

Chemical, Industrial and Nuclear Related Disaster

- In case of industrial and chemical disasters, the industrial set up and the near environment is under immediate threat.
- Inventories and maps of storage locations of toxins or hazardous substances along with the characteristics should be displayed and known to all.
- The community residing staying in the immediate vicinity should be aware of this hazard and possible effects in case of an accident should be known.
- Land use planning measures like separating densely populated residential areas from industrial areas, shall be adopted.
- Improving fire resistance and warning systems, fire fighting and pollution dispersion capabilities, developing emergency relief and evacuation plans, insurance for industries and safety legislation are other mitigation measures.

RESPONSE MECHANISM

Warning

Alert / Warning indicates the onset of a disaster for which a warning system is essential. The system may range from alarms (ex: for fires), sirens (ex: for industrial accidents) to public announcement through radio, television etc (ex: for floods) and other traditional modes of communication (ex: beating of drums, ringing of bells, hoisting flags).

At district level, district administration is the prime agency responsible for issuing the disaster warning. The supporting technical agencies are listed below.

Disaster	Agency
Earthquake and other geology related disasters	IMD, GSI, CESS
Floods	IMD, Irrigation department
Epidemics	Health department
Road accidents	Police, RTO
Industrial and chemical accidents	Police, RTO, Department of Industries
Fire	Fire and Rescue Services, Police, Forest Department

The following aspects may be considered in dissemination of warning.

- All warning systems should and technologies should be maintained in working condition and checked regularly.
- Communities in disaster prone areas should be made aware of the warning systems.
- Alternate warning systems must be kept in readiness in case of technical failure.
- Only designated officers / agencies will issue the warning.
- The warning should be, to the extent possible, clear about the severity, the time frame, the area that may be affected.
- Warning statements should be conveyed in the local dialect, in simple non-technical language and incorporate day-to-day usage patterns.
- The do's and don'ts should be clearly communicated to the community to ensure appropriate responses.
- Warning statements should not evoke curiosity or panic behaviour.
- Rumor control mechanisms should be activated.
- All relevant agencies and organizations should be alerted.
- Once a warning is issued, it should be followed up by a subsequent warning in order to keep the people informed of the latest situations.
- In the event of a disaster threat tiding away, an all-clear signal must be given.

Evacuation

The disaster management plan provides indicative instructions for response since disasters by their very nature are different and often involves a combination of aspects which may not have been considered during the planning process. In case of immediate threat to community, ie, when the community is exposed to danger with in three hours and when evacuation with in one kilometer distance is to be effected, only designated persons may order evacuation on the site:

- In consultation with technical personnel (such as in cause of toxic gas container leak)
- In consultation with the local non- official (ex: Panchayat president)
- For appropriate security and law and order, the evacuation should be undertaken with the assistance from community leaders

All such evacuations should be reported to the District Collector and SP within six hours. All other evacuations, ie, threat after three hours or evacuation beyond one kilometer, can be ordered only by the District collector or the competent authority designated.

The following factors shall be considered for evacuation.

- Evacuation routes should be away from landslide or flood prone areas.
- In case of inadequate transport or limited time, encourage community for emergency evacuation, evacuating seriously injured and sick, children, women and handicapped, old and disabled persons first.
- In case of affected persons, evacuation must be carried out in the shortest possible time
- The affected persons must be shifted to relief camps and with in the shortest time possible they must be provided water, medicines, first aid and cooked food. Water supplied must be in accordance with acceptable standards of potable water.
- Emergency transport and medical care should be arranged for seriously injured persons.

Control room and Charge Officers

- Control rooms shall be established at Taluk and District level, and charge/ nodal officers shall be appointed either before/during a calamity season, or when a warning/ watch is issued by a competent agency, or in wake of a disaster.
- The control room shall maintain an updated list of emergency contact numbers.
- The control rooms shall operate on a 24X7 basis and duty officers shall be appointed for day time and night time duty.
- The control room duty officer shall make necessary entries in the duty register regarding incoming and outgoing messages and action taken.
- Charge officers for each Taluk shall visit the vulnerable/affected areas and coordinate prevention, preparedness, mitigation, relief and response operations.
- Charge officers shall identify safe shelters that can be used as relief camps in vulnerable areas.
- Charge officers shall take measures to evacuate vulnerable population to safe shelters/ relief camps, if needed. Immediate financial and medical assistance, food, drinking water etc shall be provided to the families accommodated in relief camps. Other essential services like water supply, electricity, sanitation facilities, measures to prevent epidemics etc shall be ensured.
- The details of relief camps (location of relief camp, number of families, persons accommodated in each camp, details of medical camps conducted, and other facilities provided) shall be reported daily to the Taluk and district control rooms.
- Charge officers shall ensure proper documentation of damages and arrange for video recording/ taking photographs of damages.
- Charge officers shall ensure that the daily reports on the disaster are communicated to District/ State control rooms.
- Charge officers shall establish local control rooms at disaster site, if necessary

Duties and responsibilities of various departments/ Officers

The duties and responsibilities of the various departments/ officers outlined below are indicative and every department shall preferably prepare Standard Operating Procedures for inter and intra departmental coordination. Revenue department should co-ordinate and control all activities. General guidelines for all departments are as given below.

Village Officers

Village officers shall collect and maintain an updated emergency contact directory and inventory of human, material and institutional resources available with in and in the vicinity of the village.

Village officers shall assess and report the damages and losses on a day-to-day basis. They shall assist the officials from other departments like Agriculture Department in conducting Joint Damage Assessments for different sectors.

The daily reports and first information reports shall be sent in specified formats to the Taluk control rooms.

In case of a major calamity, village officers shall not leave the headquarters without prior permission of the Tahsildar.

The village officers shall take necessary actions for distributing the relief/ Exgratia etc with in 24 hours.

Health Department

Ensure preparedness of health department for mass causality management, relief operations, trauma care and psychosocial support to disaster victims.

Stock emergency medical equipment and drugs, which may be required after a disaster, and make arrangements for purchase if needed

Establish public information centre

Mobilize medical teams and supplies to provide immediate medical assistance in the vulnerable areas, affected areas and in relief camps

Take measures for disease surveillance and to prevent epidemic spread in endemic and vulnerable areas as well as relief camps

Plan for vector control programmes

District Supply Officer

Shall make sure the availability of food grain and other supplies in the depot's in vulnerable areas, for providing free ration to affected population if necessary

Agriculture Department

Provide information to all concerned about the disasters, likely damages to crops and plantations and information about ways to protect the same

Monitor the drought situation, establish pest and disesase monitoring systems and and advice the farmers on mitigation measures.

Assess the direct and indirect loss in the agricultural sector due to disasters and report the village wise details on a weekly basis and estimate needs.

ESTABLISH PUBLIC INFORMATION CENTRE

Education Department

Ensure the structural safety of school buildings before the commencement of every academic year.

Take measures to ensure that all schools improve their disaster preparedness and take up prevention and mitigation measures.

Direct schools to prepare School Disaster Management Plans and conduct mock drills twice in every academic year.

In case of a disaster in school or affecting school(s), coordinate with other departments and emergency management officials to ensure quick and efficient emergency response and relief operations.

Assist the revenue department in identifying schools for operating relief camps in vulnerable/ affected areas and make schools available for the same.

Kerala State Electricity Board

Review and update precautionary measures and procedures and check emergency tool kits Immediately undertake inspection from the time of receipt of warning of the high tension lines, towers, substations, transformers, insulators, poles and other equipments Conduct damage assessment through reconnaissance surveys and report the same Disconnect the main electricity supply to the affected area, if required Undertake repair/ reconstruction works Establish emergency supply/ temporary electricity supply for key public facilities – hospitals, public water systems, relief camps, control rooms, relief material godown.

POLICE DEPARTMENT

Establish radio/ wireless communication

Provide guards as needed for supply depots, convoys for relief materials Assist in warning dissemination, Assist evacuation of vulnerable/ affected population Assist search and rescue operations Maintain law and order, Traffic management, cordoning off the affected areas/ diverting traffic from affected areas, and patrolling on all access roads to disaster site Provide security to transit and relief camps, affected villages, hospitals and medical centers and Provide security arrangements for the visiting VVIPs and VIPs Assist district authorities to take necessary action against hoarders, black marketers and those found manipulating relief materials.

In conjunction with other government offices, activate public information center Make officers available to enquire into and record deaths, as there is not likely to be time nor person available to carry out standard postmortem procedures Monitor the needs of military and para-military personnel in the area.

Irrigation Department

Identify flood prone rivers and areas in the district and activate flood monitoring mechanisms Orgnaise round the clock inspection and repair of irrigation structures and equipments.

Animal Husbandry Department

Stock emergency medical equipments and drugs, which may be required after the disaster Take measures for disease surveillance and to prevent spread of cattle epidemics.

Water Authority

Continuously monitor the wells, lakes, ponds, intake structures, pumping stations, pumping mains, treatment plant etc to prevent contamination.

Establish procedures for emergency distribution of water if existing supply is disrupted, and in areas affected by saline intrusion, drought or other pollution in the regular water supply Arrangements for potable water supply in relief camps.

Public Works Department

Inspect all roads, road bridges including under water inspection of foundation and piers Inspect all government buildings and structures, and life line structures Assemble emergency tool kits and maintain inventory of resources Conduct damage assessments, loss assessments after a disaster.

CRISIS RESPONSE STRUCTURE

Incident Command System

The Incident Command System (ICS) is a standardized method of managing disasters. It is primarily a management system that is flexible and adaptable to suit any scale of natural as well as manmade emergency/incidents. Through ICS, the main intention is to transform the confusion during the early stage of an emergency situation into a well managed response process by providing answers to questions such as “who’s in charge? “ and “what’s my job?”

The ICS is broadly based on five-management principle :

a) Command
b) Planning
c) Operation
d) Logistics
e) Finance and administration.

Incident Command System (ICS) is “a set of personnel, policies, procedures, facilities, and equipment, integrated into a common organizational structure designed to improve emergency response operations of all types and complexities. ICS has been summarized as a “first-on-scene” structure, where the first responder of a scene has charge of the scene until the incident has been declared resolved, a superior-ranking responder arrives on scene and seizes command, or the Incident Commander appoints another individual Incident Commander.

In Indian context the system needs much flexibility, which is already prepared. But the ICS Indian version never recommends for emergency responding systems such as helicopters, Geographical information system based approach etc which are inevitable to handle a Mass Causality Incident (MCI).

STANDARD OPERATING PROCEDURES (SOP) FOR EMERGENCY SUPPORT FUNCTIONS

INTRODUCTION

Emergency Support functions assist and support the National, State and District Administration at the time of emergency for restoring the damaged public services and facilities of the affected area. The State level Departments and supporting agencies are responsible to respond for recovery and mitigation purposes during a disaster. The ESF (emergency support function) is an organized system of State/District level departments and agencies that are to be worked under a structured pattern for response and recovery according to National Disaster Response Plan (NDRP).

The Standard Operating Procedure (SOPs) explains about the basic concept of operations and responsibilities of leading and supporting agencies that are to be involved in the ESF system. The document also outlines, the purpose and scope for each function of operation that is to be followed by the respective ESF agencies when the Incident Commander activates the response plan during emergency period.

8.2.2 ESF Organizational Roles and Relationships

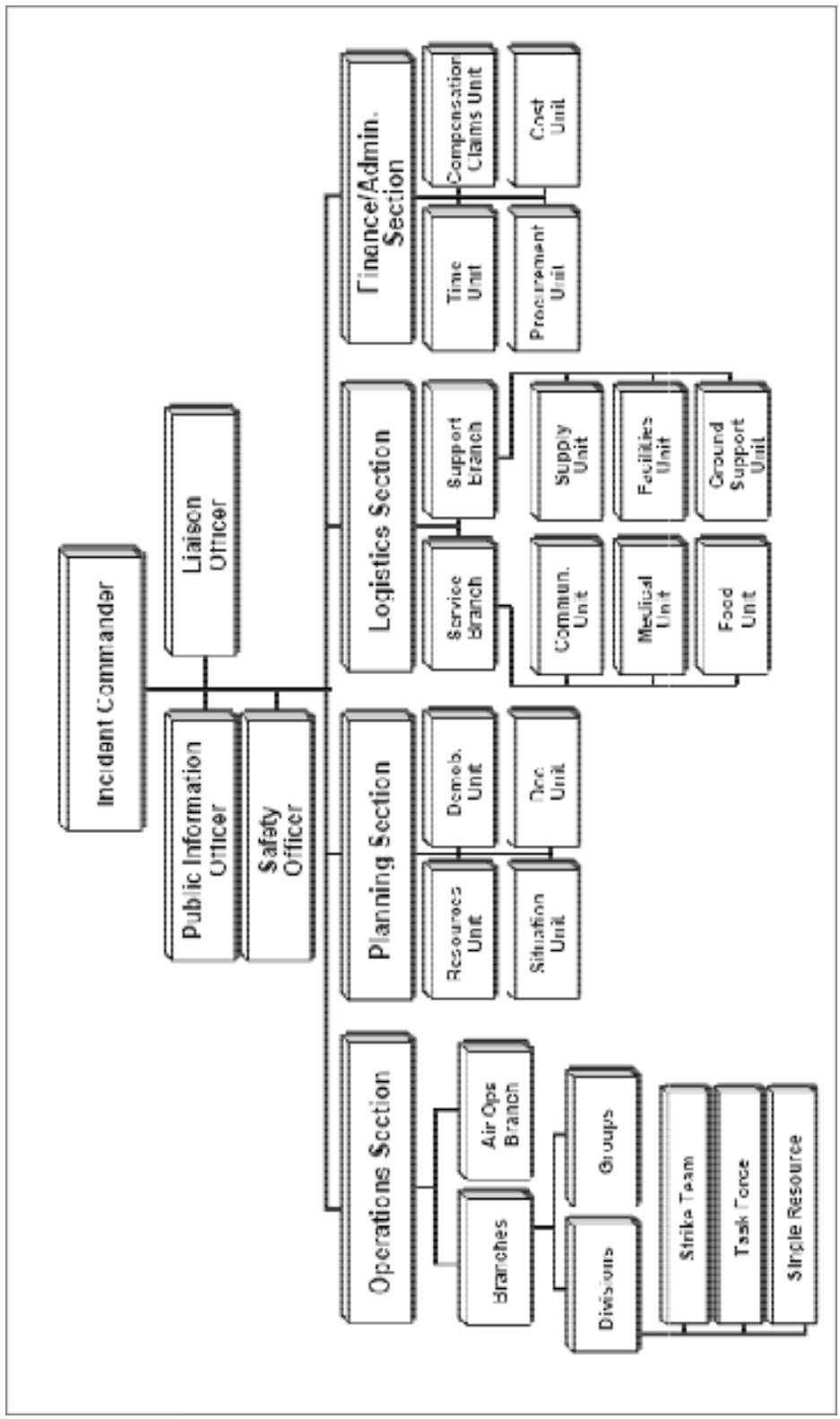
The head of each primary department, team leader (TL) and the nodal officer of the supporting agency has a responsibility to be prepared for potential hazards that might impact the district. These responsibilities are the execution of their mission according to the emergency conditions and the safety of the citizens in emergency situations. These departments/agencies have clearly identified their roles and functions under the National Response Plan (NRP) . The departments have been grouped into ESFs as per their nature and type of assistance they can provide so when the team leaders of these ESFs are located in the EOC, they would function for the overall state response.

The Emergency Support Functions (ESF) and Quick Response Teams will be formed at City level and the Ward Disaster Management (WDMT) will be formed at Ward level. The QRTs at headquarters will leave for site only if the disaster is not manageable at local level.

STANDARD OPERATING PROCEDURES

Incident Command System (ICS)

The District Collector (Divisional Commissioner in Delhi) is the official Incident Commander to activate the command system and to control and coordinate the resources required at the site of disaster. The ICS is a set of Emergency Management tools consisting the combination of facilities, equipment, personnel, procedures, and communications operating within a common


Incident Commander
Liaison Officer
Public Information Officer
Safety Officer
Operations Section
Planning Section
Logistics Section
Finance/Admin. Section
Branches
Air Ops Branch
Divisions
Groups
Strike Team
Task Force
Single Resource
Resources Unit
Situation Unit
Demob. Unit
Doc. Unit
Service Branch
Support branch
Commun. Unit
Medical Unit
Food Unit
Supply Unit
Facilities Unit
Ground Support Unit
Time Unit
Procurement Unit
Compensation Claims Unit
Cost Unit

Function	Nodal Agency/Team Leader	Participating functionaries / agencies
Coordination (Incident – Commander)	District Administration (District Collector)	SP, DFO, ADM, ADC, RDO, DMO, Tahshildars, Municipal corporation, NCC and other related agencies.
Communication	Bharat Sanchar Nigam Limited	Existing wireless operators (Police, Fire) Telecom Dept., mobile operators, FM Radio, Signals Regiment –, Ham Radio, satellite communication, Community Radio.
Law and Order	Police Dept.	Civil Defence and Home guards,Coast Guard
Search and Rescue	Fire & Rescue Service (Divisional Fire Officer)	Department of Revenue, Kerala Police, Civil Defence, Directorate of Health Services, Quick Response Team, WDMT, Coast Guard.
Evacuation	Revenue Divisional Office	Kerala Police, Fire Service, Directorate of Health Service, Civil Defence, Air Force, WDMT, Coast Guard.
Relief (Food, Damage Assessment, Donation, Shelter.....)	District Administration	Department of Food and Civil Supplies, NGOs, WDMT, Religious Organizations. Municipal Corporation, Electricity Board, KWA, Health dept, Education dept, PWD, BSNL, Animal Husbandry, Agriculture. NCC, NYKS, Blood Bank, Red Cross, NSS, Rotary Club, Lions Club, IMA, Y's Men, Corporate Bodies, Qualified Medical Practitioners Association, Nurses Association, Kerala, Vyapari Vyvasayi Ekopana Samidhi.
Emergency Medical Response and Trauma Counseling	Department of Health (DMO)	Dispensaries, Mobile Dispensaries, Hospitals, Ambulance Service, Blood Bank, NSS, Rotary Club, Lions Club, IMA. Private medical association, Medicine Stockiest. Indian Red Cross, Civil Defence, Fire Service, WDMTs, NGOs, CBOs.
Public Works Equipment support, debris and road clearance.	PWD	Municipal Corporations, Water Authority, KSEB, PWD, Builders Association, Railway, Fire force.

Function	Nodal Agency/Team Leader	Participating functionaries / agencies
Relief -Shelter	Revenue Department (ADM/ RDO)	Municipality, KWA, Local Civil Suppliers. PWD, Developmental Authorities, NGO representatives.
Cattle Resource Recovery and Care	Animal Husbandry (District Animal Husbandry Officer)	Animal medicine stockiest, Poultry Corporation NGOs, CBOs and religious organizations.
Logistics (Electricity-Water	Electricity – KSEB Water - KWA	DC Office, Electricity Board, Transport Department, KWA, Corporation, Private Road Ways, PWD, National Highway, Fire Force Dept, Police services, WDMTs, NGOs
Transport	Motor Vehicle (RTO)	KSRTC, Railway, PWD, Kerala Police, Municipality, , Private Bus Owners, Scout, NCC etc.
Public Information and Help lines- Warning Dissemination	Public Relations Department	Media (print/audio-visual), NSS, NYK, Scouts & Guides, Education Dept., Department of Information and Publicity, BSNL, AIR etc

organizational structure, with responsibility for the management of resources to effectively accomplish stated objectives pertinent to an incident.

Functions of ICS

- To create and integrate communication flow during emergency period;
- To manage incident scene, and report through integrated and coordinated command plan;
- To facilitate procedures and protocols according to ESF Departments within in the city / District;
- To put the communication system in place to receive, record, acknowledge incoming and out going information of any form during the disaster;
- To mange resources as per their availability such as– distribution of relief material with ESF agencies required during emergency etc;
- Monitoring functional areas during and post disaster phase.

ESF - 1 Communication

Background:

The communication ESF is primarily responsible for restoration of communication facilities. The ESF on Communication should ensure the smooth flow of information that can cater to the outreach in a time-sensitive manner at state level in response efforts. Situation Assumptions.

1. There would be a congestion in the network because of increased calls to control rooms due to panic created in the community.
2. The initial reports on damage may not give a clear picture of the extent of damage to communication network.
3. The affected site may cut off from the state control rooms and the officials on site and find difficulty in communicating to the District EOC.

Nodal agency: Bharat Sanchar Nigam Limited

Supporting agencies: Existing wireless operators (Police, Fire) Telecom Dept., mobile operators, FM Radio, Signals Regiment – Army, Ham Radio, satellite communication, Community Radio

- Identify a Team Leader from BSNL
- Identify Nodal Officers from Supporting Agencies.

SOPs for Nodal Agency:

- Team leader (TL) of Communication ESF will activate the ESF on receiving the intimation of occurrence of the disaster from the District EOC/ Other source.
- TL would inform Nodal Officers (NOs) of support agencies about the event and ESF activation.
- TL would establish contact with the district EOC for First Information Report.
- TL requests for reports from local ESF contact persons (this would be the local office of ESF Nodal Agency) to understand the current situation and action taken.
- Based on information given by the supporting agencies, TL decides on the need to launch an assessment mission to estimate the extent of damage to telecom services and network as well as to come up with possible arrangements to establishing reliable and appropriate network.
- TL communicates situation to supporting agencies and also requests to provide details on the status of equipment and infrastructure in the affected area(s).

  TL informs the Incident Commander on the status of telecom services.
- TL works out a plan of action for private telecom companies and convenes a meeting of all ESF members to discuss and finalize the modalities.
- TL issues orders to establish systems and reports to District EOCs on the action taken. New phone numbers and details of contact persons would also be communicated. If required mobile exchanges would be deployed. (need explanation---mobile exchanges).
- TL gets the temporary telephone facilities established for the public. Prior information on this would be announced through media.
- HAM (Full Form) radio operators would be informed about the current requirements and coordination mechanisms shared.
- TL monitors the situation and arranges emergency staff required to operate established systems.
- TL sends the Response team at the affected site with the required equipments and other resources.

SOPs for Quick Response Team on Communication

- The QRT(Quick Response Team) members will reach to the nodal office as soon as they will get instructions from the TL.

  Once the QRTs receive any intimation from the nodal officer to reach at the site they would rush to the site.

  At the emergency site QRT members will take stock of the situation from the IC and would also know about their counter parts.

  QRTs would assess the ground situation and would send sectoral report to the District.

  ESF agency. A sectoral report would contain following:

- An assessment of overall damage, listing specifically: Overhead route damage (in miles/ kilometers).

  Cable damage (in yards/meters). Specific equipment damaged.

  Establish a temporary communication facility for use by the public Identify requirements of manpower, vehicles and other materials and equipments. Give priority and concentrate on repairs and normalization of communication system at disaster affected areas.

  Begin restoration by removing and salvaging wires and poles from the roadways with the help of casual laborers.

  Carry out temporary building repairs to establish a secured storage area for the equipments and salvaged materials.

  Establish a secure storage area for incoming equipments and salvaged materials. Report all activities to head office.

ESF - 2 Law and Order

Background

The ESF on Law and Order maintains the law and protects the property and valuable commodities. It is mainly responsible to control crowd and avoid riots situations.

Situation Assumptions

There would be panic and people will gather at a place. The crowds may go out of control.

Riots may also take place.

Nodal Agency: Kerala Police

Support Agencies: Civil Defence and Home guards, central paramilitary forces, CISF, CRPF, Defence Service Core.

SOPs for Nodal Agency

- IC will call the TL of Primary Agency and get the ESF activated.

  TL of primary agency will call nodal officers of supporting agencies. TL would activate the City Quick Response Team.

The QRTs will be deployed at the affected site.

Cordoning of area to restrict movement of onlookers, vehicular and pedestrian traffic should be done.

- Any additional requirements at site to be taken care of.

SOP for Quick Response Team on Law and order

- Quick assessment of law and order situation in affected areas

  Support and coordinate with Local Administration

  Prepare updates on the law and order situation every 4-6 hours and brief the authorities

  Controlling situations like rioting and looting, and cordon off sensitive areas

  QRTs will guide property and valuables in affected areas. Control and monitor traffic movement.

  QRTs will provide diversion of traffic on alternate routes as and when it is necessary. The QRTs will also provide information about traffic flow along various corridors, especially heavy traffic or congested roads.

- QRTs will communicate to police control rooms, details on the field activities including deployment and reinforcement of staff and resources and communicate nature of additional requirements.

ESF - 3 Search and Rescue

Background

Search and Rescue operations are one of the primary activities taken up in a post disaster situation. The promptness in these operations can make a remarkable difference in the amount of loss of life and property.

Situation Assumptions

Local community task forces will initiate search and rescue at residential level

Spontaneous volunteers will require coordination

Access to affected areas will be limited.

Some sites may be accessible only through air routes only

Nodal Agency: Divisional Fire Office

Support agency: Department of Revenue, Kerala Police, Civil Defence, Directorate of Health Services, Quick Response Team, Coast Guard.

SOPs for Nodal Agency

- IC will call the TL of Primary Agency and get the ESF activated.

  TL of primary agency will call nodal officers of supporting agencies. TL would activate the City Quick Response Team.

  Quick Assessment of the S& R operations through Aerial surveys

  Assessments of the specific skill sets and the other equipments required.

Using IDRN network to check and map the availability of resources in and round the disaster site.

- SOP for Quick Response Team on Search & Rescue

  Assessment of damage (locations, number of structures damaged, severity of damage)

  The QRTs will be deployed at the affected site.

  Enlisting the types of equipment required for conducting the S&R

  QRTs will report the situation and the progress in response activities to the respective EOCs.

ESF - 4 Evacuations

Background

The ESF on evacuation is primarily responsible for establishing evacuation plans, identification of fastest evacuation routes and alternate routes and coordinating evacuation logistics during field operations.

Situation Assumptions

Most of the buildings would be damaged and would not remain serviceable.
Many structures would be damaged and there would be an urgent need to evacuate.

Nodal agency: Revenue Divisional Office

Suggested supporting agencies: Kerala Police, Fire Service, Directorate of Health Service, Civil Defence, Coast Guard.

SOPs for Nodal Agency:

- Team leader (TL) of Evacuation ESF would activate the ESF on receiving the warning of the disaster from District EOC.

  TL would inform Nodal Officers (NOs) of supporting agencies about the event and ESF activation.

  TL will direct the QRTs to be deployed at the affected site.

  TL will gather information on availability of predefined evacuation routes.
- Where the predefined evacuation routes are not available, the nodal officer would coordinate through District EOC with other ESFs nodal officers and the support agencies
- about clearing of routes and identifying alternate routes .

SOPs for Quick Response Team on Evacuation

- The QRT members will reach the nodal office as soon as they get instructions to do so from the TL.

  Once the quick response teams receive an order from the nodal officer for reaching the site they would rush to the site.

  On reaching at the site the QRT members will take stock of the situation from the Incident Management Team at the site and their counter parts.

The Quick Response Teams with the help of local task forces will start evacuating peoples to safe shelters or open areas.

The QRT members should concentrate more on evacuation in areas that have been worst affected by the disasters.

Reporting about all the activities to head office

ESF - 5: Relief - (Damage and needs assessment, Food and Relief Supply, Donations, Shelter)

Back Ground

In the event of a disaster there would be a need of disbursing relief materials due to massive destruction of life and property taken place. The ESF on Relief should ensure coordination of activities involving with the emergency provisions of temporary shelters, emergency mass feeding and bulk distribution of relief supplies to the disaster victims as also the disaster managers and relief workers.

Situation Assumptions

Probability of shortage of a critical resources

Immediate assistance to the community at the time of resource shortage particularly when affected area is larger.

Nodal Agency: District Administration

Support Agencies: Department of Food and Civil Supplies, NGOs, CBOS, WDMT, Religious Organizations. Municipal Corporation, Electricity Board, KWA, Health dept, Education dept, PWD, BSNL, Animal Husbandry, Agriculture. NCC, NYKS, Blood Bank, Red Cross, NSS, Rotary Club, Lions Club, IMA, Y's Men, Corporate Bodies, Qualified Medical Practitioners Association, Nurses Association, Kerala, Vyapari Vyvasayi Ekopana Samidhi

SOPs for nodal agency

- TL will activate the ESF on receiving the information of the disaster from District EOC.

  TL would inform Nodal Officers (NOs) of support agencies about the event and ESF activation, will coordinate with all state and district level suppliers as identified with under IDRN.

  TL with coordinate with other ESFs related to transportation, debris and road clearance to ensure quality supply chain management of relief materials.

  Ensuring composite relief with availability of complimentary relief material.

SOP for Quick Response Team (QRT) on Relief

- QRTs will be responsible to management and distribute relief items to the affected victims

  QRT's will be responsible for reporting the progress on action taken by the team to the EOC.

  QRTs will provide information to their TL about the need of additional resources. Assist local authorities to set up important telecom and other service related facilities Initiate, direct and

market procurement of food available from different inventories and ensuring food supplies to the affected population.

Preparing take-home food packets for the families.

Ensuring distribution of relief material to the all the people including vulnerable groups of the target area such as women with infants, pregnant women, children, aged people and handicapped. Ensuring support to Local Administration.

ESF - 6 Medical Response and Trauma Counseling

Background

The ESF on Medical Response and Trauma Counseling will look after emergency treatment for the injured people immediate after the disaster take place.

Situation Assumptions

Emergency Medical services will be required by affected population

Likely outbreaks of epidemic diseases after the disaster.

Hospital services would be affected Nodal Agency: Department of Health (DMO)

Suggested Support Agencies: Dispensaries, Mobile Dispensaries, Hospitals, Ambulance Service, Blood Bank, NSS, Rotary Club, Lions Club, IMA. Private medical association, Medicine Stockiest. Indian Red Cross, Civil Defence, Fire Service, WDMTs, NGOs, CBOs, Indian Red Cross, Civil Defence, Fire Service, NGOs, CBOs etc.

SOPs for Nodal Agency

- IC will call the TL of Primary Agency and get the ESF activated.

  Team leader (TL) of primary agency will call nodal officers of supporting agencies.

  In coordination with the transportation ESF, it will ensure a critical number of medical professionals to be reached at the site including specialists from other states.

  If temporary housing arrangements are being made for the affected population, the ESF must ensure high standards of sanitation in settlements in order to reduce epidemic outbreak.

  Ensuring the provision and continuous supply of medical facilities (medicines, equipments, ambulances, doctors and manpower etc) required at the disaster affected site and the hospital health centres catering to disaster victims.

  In case of orthopedic care required in disasters like earthquakes the immediate response would have to be complimented by a follow up treatment schedule for a majority of the patients in/ near their place of residence.

  Trained professionals should be mobilized by psychosocial support.

  Ensuring setting up of temporary information centres at hospitals with the help of ESF through help lines and warning dissemination system.

  TL will coordinate, direct, and integrate District/state level response to provide medical and sanitation health assistances.

On the recommendations of the EOC, the TL also responsible to : Send required medicines, vaccines, drugs, plasters, syringes, etc.

Arrange for additional blood supply. Send additional medical personnel equipped with food, bedding and tents etc.

Send vehicles and any additional medical equipments.

SOP for Quick Response Team (QRT) on Medical Response and Trauma Counseling

- QRTs will provide situation and progress report s on the action taken by the team to the respective EOCs.

  QRT's will assess type of injuries, number of people affected and possible medical assistance needs.

  QRTs will ensure timely response to the needs of the affected victims such as:
- Establishing health facility and treatment centers at disaster sites.
- Providing medical services as reported by the District Civil Surgeon with District Control Room and District EOCs.
- Procedures should be clarified in between Peripheral hospitals Private hospitals Blood banks General hospitals and Health services established at transit camps, relief camps and affected villages.

QRTs should maintain check posts and surveillance at each railway junction, ST depots and all entry and exit points from the affected area, especially during the threat or existence of an epidemic.

ESF - 7 Public Works Equipment support, debris and road clearance

Background

The importance of this ESF emanates from the fact that most large scale hazards such as earthquakes, cyclones, floods primarily affect the building structures.

Situation Assumptions

Access to disaster-affected area would depend upon the re-establishment of ground and water routes.

Early damage assessment may be incomplete, inaccurate and general. A rapid assessment may be required to determine response time.

Engineers and masons may be required in large scale for the inspection of present buildings

Nodal agency: PWD

Support Agencies: Municipal Corporation, Military Engineering Services, Water

Authority, KSEB, PWD, Builders Association, Army, Railway, Fire force.

SOPs for Nodal Agency:

- Team leader (TL) will activate the ESF on receiving the information of the disaster from District EOC.

  TL would inform Nodal Officers (NOs) of support agencies about the event and ESF activation.

TL will coordinate with the supporting agency to mobilize equipments from the ware houses through IDRN database

The respective supporting agencies will contact their respective personal to move the equipments to central warehouse

The equipments like JCB, concrete cutters identified as per the need will be transported to the site.

As per the information the nodal officer of Debris road clearance will make an assessment on of the damages of roads and built structures at the site and surrounding areas

The nodal officers of Supporting Agencies will immediately start debris clearance operation to enable movement to the affected site.

Review of the current situation is taken up by the nodal agency to update the support agencies and to delegate their respective personnel to take precautionary measure to plan de-routes for the transportation ESF's to be operational

All supporting agencies will inspect the road and rail network and structures within the disaster site and surrounding.

TL will also ensure proper corpse disposal and post mortem by coordinating with ESF on medical response.

SOP for Quick Response Team on Equipment support, Debris and Road Clearance

- Damage assessment including locations, number of structures damaged and severity of damage
- The QRTs will be deployed at the affected site.

Enlisting the types of equipment as compiled from IDRN resource inventory required for conducting the debris clearance

The QRTs will report the situation and the progress in response activities to the respective EOCs.

Undertake construction of temporary roads to serve as access to temporary transit and relief camps, and medical facilities for disaster victims.

Repairing of all paved and unpaved road surfaces including edge metalling, pothole patching and any failure of surface, foundations in the affected areas by maintenance engineer's staff and keep monitoring their conditions.

ESF - 8 Shelter (Relief)

Back Ground

The purpose of ESF on Shelter is to meet the physical needs of individuals, families and communities for safe secure and comfortable living space. The ESF should also be able to meet primary social needs of incorporating self management in the process.

Situation Assumptions

Most of the existing structures will be severely damaged.

The offices of local authorities may also be affected adversely. A large number of people may be rendered homeless.

Nodal Agency: Revenue Divisional Office / District Administration

Support Agency: Municipality, KWA, Local Civil Suppliers, PWD, Developmental Authorities, HUDCO, Nirmithikendra, Cost Ford, WDMT, NGO representatives.

SOPs for Nodal agency

- TL will activate the ESF on receiving the information of the disaster from District EOC.

  TL would inform Nodal Officers (NOs) of support agencies about the event and ESF activation.

  TL will coordinate with all city and district level suppliers as identified with under IDRN.

  TL coordinate with other ESFs related to transportation, debris and road clearance to ensure quality supply chain management of relief materials.

  Ensuring composite relief with availability of complimentary relief material.

SOP for Quick Response Team (QRT) on Shelter

- QRTs will report to site of the relief camps.

  QRTs will be responsible to management and distribute relief items to the victims. QRT's will be responsible for reporting the progress on action taken by the team to the EOC.

  QRTs will provide information to their TL about the need of additional resources.
  Clearing of the areas to establish relief camps.

  QRTs will carry a quick assessment of damaged areas and areas that can be used for relief camps for displaced population.

  Setting up relief camps and tents using innovative methods that can save time.

  Assist local authorities to set up important telecom and other service related facilities. Initiate, direct and market procurement of food available from different inventories and ensuring food supplies to the affected population.

  Ensuring support to Local Administration.

  Locating adequate relief camps based on damage survey

  Develop alternative arrangements for population living in structures that might be affected even after the disaster

ESF - 9 Water Supply

Background

The ESF on drinking water and water supply will ensure provision of basic quantity of clean drinking water and water for other purposes in a manner that does not allow the spread of diseases through the contamination of water.

Situation Assumptions:

Existing water storage bodies will be damaged and unusable.

There would be an urgent need of water to assist victims in rescue operation. Break down of sanitation system.

Contamination of water due to outflow from sewers or due to breakage of water pipelines.

Nodal agency: Kerala Water Authority

Support Agency: Municipal Corporations, DC Office, Transport Department, Corporation, Fire Force Dept, Police, WDMTs, NGOs

SOPs for Nodal Agency

- Team leader (TL) of ESF on Water Supply will activate the ESF on receiving the intimation of the disaster from District EOC.

  TL would inform Nodal Officers (NOs) of support agencies about the event and ESF activation.

  TL will ensure special care for women with infants and pregnant women. Provide for sending additional support along with food, bedding, tents Send vehicles and any additional tools and equipments needed.

SOP for Quick Response Team (QRT) on Water Supply

- QRTs will ensure that supply of drinking water is made available at the affected site and relief camps

  QRT's will ensure the temporary sewerage lines and drainage lines are kept separate. QRTs will report the situation and the progress on action taken by the team to the EOC. QRTs will intimate their TL of the additional resources needed.

- Carry out emergency repairs of all damages to water supply systems.

  Assist health authorities to identify appropriate sources of potable water.

  Identify unacceptable water sources and take necessary precautions to ensure that no water is accessed from such sources, either by sealing such arrangements or by posting the department guards.

- Arrange for alternate water supply and storage in all transit camps, feeding centres, relief camps, cattle camps, and also the affected areas, till normal water supply is restored.

- Ensure that potable water supply is restored as per the standards and procedures laid down in "Standards for Potable Water".

- Plan for emergency accommodations for staff from outside the area. QRTs will ensure timely response to the needs of the affected victims. QRTs will set up temporary sanitation facilities at the relief camps.

ESF - 10 Electricity

Background

The ESF on electricity will facilitate restoration of electricity distribution systems after a disaster. In the event of a disaster there would be major electricity failure and many power stations damaged.

Situation assumptions

Prolonged electricity failure.

The affected victims may be panicked

Halt of all activities specially jamming communication networking systems in the affected site.

Nodal agency: KSEB

Support Agencies: DC Office, Transport Department, Corporation, PWD, National

Highway, Fire Force Dept, Police services, WDMTs, NGOs

SOPs for Nodal Agency:

- IC will call the TL of Primary Agency and get the ESF activated.

  TL of primary agency will call nodal officers of supporting agencies. TL would activate the State Quick response Team.

  The QRTs will be deployed at the affected site.

  TL will dispatch emergency repair teams equipped with tools, tents and food.

SOP for Quick Response Team on Electricity

- Assisting hospitals in establishing an emergency supply by assembling generators and other emergency equipments, if necessary.

  The members of QRTs will establish temporary electricity supplies for other key public and private water systems.

  The members of QRTs will establish temporary electricity supplies for transit camps, feeding centres, relief camps and SOC, District Control Room and on access roads to the same.

  The members of QRTs will establish temporary electricity supplies for relief material godowns.

  Compile an itemised assessment of damage, from reports made by various electrical receiving centres and sub-centres.

  Report about all the activities to the head office

ESF -11 Transport

Background

The ESF on Transport should ensure smooth transportation links at state and district level. Within the disaster context, quick and safe movement of material and humans are a priority. It should coordinate the use of transportation resources to support the needs of emergency

support forces requiring transport capacity to perform their emergency response, recovery and assistance missions.

Situation assumptions

The District civil transportation infrastructure will sustain damage, limiting access to the disaster area.

Access will improve as routes are cleared and repaired.

The movement of relief supplies will create congestion in the transportation services.

Nodal agency: KSRTC

Support Agencies: KSRTC, Railway, PWD, Kerala Police, Municipality, Civil Defence, Civil

Aviation, Private Bus Owners, Private Air liaison, Scout, NCC etc.

SOPs for Nodal Agency:

- TL of Transportation ESF will activate the ESF on receiving the intimation of the disaster from District EOC.
- TL would inform Nodal Officers (NOs) of support agencies about the event and ESF activation.

  TL establishes contact with the district EOC for FIR

  TL requests for reports from local Transportation ESF contact person

  TL communicates situation to support agencies and requests for detailed information on the status of transportation infrastructure in the affected area(s).

SOP for Quick Response Team on Transport.

- The QRT members will reach to the nodal office as soon as they will get instructions to do so from the TL.

  As quick response teams will receive instructions from the nodal officer they would reach to the site immediately.

  QRTs would report the situation and the progress on action taken by the team to the respective EOCs
- QRT will send a requirement schedule for the different modes of transportation eg. trucks, boats, helicopters to be put on stand-by.

  QRTs will ensure timely re-establishment of the critical transportation links.

  The members of QRTs will establish temporary electricity supplies for relief material godowns.

  Compile an itemised assessment of damage, from reports made by various electrical receiving centers and sub-centers.

  Reporting about all activities to the head office.

ESF - 12 Help Lines, Warning Dissemination

Background

The ESF on help lines and warning dissemination should process and circulate information about the welfare of citizens of affected area and managing the tremendous flow of information. The help lines will be responsible for providing, directing and coordinating logistical operations.

Situation Assumptions

There may be a flood of information and confusion about the injured population.

The communication with affected area may be partially impaired. State nodal agency: Public Relations Department

Support Agencies: Dooradarsan, UNI, Press Trust of India, Cable net works NGOs, Media (print/ audio-visual), NSS, NYK, Scouts & Guides, Education Dept., Department of Information and Publicity, BSNL, AIR etc

SOPs for Nodal Agency:

- IC will call the TL of Primary Agency and get the ESF activated.

  TL of primary agency will call nodal officers of supporting agencies. TL would activate the State Quick response Team.

  The QRTs will be deployed at the affected site.

  QRTs will report the situation and the progress in response activities to the respective EOCs.

  Sending flash news of latest updates/donation requirements for disaster area all over the state, Assisting the EOC in providing updated information to national as well as at the state level.

  Setting up of toll free numbers for emergency information assistance.

SOP for Quick Response Team on Help Lines, Warning Dissemination

- The QRT members will reach to the nodal office as soon as they will get instructions.

  QRT teams would reach to the site immediately after receiving instructions from the nodal officer

  On the site QRT members will take stock of the situation from the IC at the site and their counter parts.

  The QRTs will coordinate, collect, process, report and display essential elements of information and facilitate support for planning efforts in response operations.

FUNDING MECHANISMS

The policy and the funding mechanism for provision of relief assistance to those affected by natural calamities is clearly laid down. These are reviewed by the Finance Commission appointed by the Government of India every five years. The Finance Commission makes recommendation regarding the division of tax and non-tax revenues between the Central and the State Governments and also regarding policy for provision of relief assistance and their share of expenditure thereon.

A Calamity Relief Fund (CRF) has been set up in each State as per the recommendations of the Eleventh Finance Commission. The size of the Calamity Relief Fund has been fixed by the Finance Commission after taking into account the expenditure on relief and rehabilitation over the past 10 years. The Government of India contributes 75% of the corpus of the Calamity Relief Fund in each State. 25% is contributed to by the State. Relief assistance to those affected by natural calamities is granted from the CRF. Overall norms for relief assistance are laid down by a national committee with representatives of States as members. Different States can have State-specific norms to be recommended by State level committee under the Chief Secretary. Where the calamity is of such proportion that the funds available in the CRF will not be sufficient for provision of relief, the State seeks assistance from the National Calamity Contingency Fund (NCCF) - a fund created at the Central Government level. When such requests are received, the requirements are assessed by a team from the Central Government and thereafter the assessed requirements are cleared by a High Level Committee chaired by the Deputy Prime Minister. In brief, the institutional arrangements for response and relief are well established and have proved to be robust and effective.

Disaster Governance in India

SERIES 3

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