

NATIONAL DISASTER RESPONSE PLAN

NATIONAL CENTRE FOR DISASTER MANAGEMENT

INDIAN INSTITUTE OF PUBLIC ADMINISTRATION

NATIONAL DISASTER RESPONSE PLAN

PREPARED BY
HIGH POWERED COMMITTEE
on
DISASTER MANAGEMENT



DEPARTMENT OF AGRICULTURE AND COOPERATION
MINISTRY OF AGRICULTURE
GOVERNMENT OF INDIA

October, 2001

© 2002
First published 2002

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, without the prior permission in writing from National Centre for Disaster Management or as expressly permitted by law, or under terms agreed with the appropriate reprographics rights organization. Enquiries concerning reproduction outside the scope of the above should be sent to the Rights Department, National Centre for Disaster Management, at the address below.

The book should not be circulated in any other binding or cover and you must impose this same condition on any acquirer.

ISBN 019 5650298

Published in India by
Anil Sinha, National Centre for Disaster Management, New Delhi

Price : Rs. 550.00
USD 40.00

Academic, Secretarial and other related support provided by

**NATIONAL CENTRE FOR DISASTER MANAGEMENT
INDIAN INSTITUTE OF PUBLIC ADMINISTRATION
INDRAPRASTHA ESTATE, RING ROAD,
NEW DELHI – 110 002**

**TEL. : 91-11-3702400
TEL/FAX : 91-11-3702442
EMAIL : ncdmiipa@bol.net.in
WEBSITE : www.ncdm-india.org**

A number of Sub Groups and Sub Committees were set up and Research Studies commissioned by the HPC, and material from these has been heavily drawn upon towards preparation of the final HPC Report & NDRP. Views expressed in these reports do not necessarily represent the considered opinion of the HPC.

Printed at **Excel Printers**, C-206, Naraina Indl. Area, Phase-I, New Delhi-110028
Ph.: 5795899, 9810082582, e-mail : info@excelprinters.biz

Contents

CHAPTER 1	4
Introduction	
Vision of the Document	
Evolution of the Document	
Approach of the HPC towards Management of Disasters	
Role of the National Government	
CHAPTER 2	7
Methodology	
Key Issues	
How to Use the document on National Disaster Response Plan	
Document of National Response Plan	
CHAPTER 3	9
Approach	
National Response Approach	
Concepts Used in the Document	
Disaster Specific Approach to Response Actions	
Emergency Information Disknet	
CHAPTER 4	23
Maps	
Vulnerability Maps	
CHAPTER 5	30
Quick Response	
Quick Response Flow chart	
Pre-disaster Warning and Alerts	
Response Planning	
Arrival Point	
National Disaster Quick Response Mechanism	

Continued Response
Deactivation and Documentation

CHAPTER 6 51

National Operations Centres

- a. National Operations Centres
 - Man power requirements of the EOC
 - Regular Staff
 - Staff on Disaster Duty
- b. Incident Command System
- c. Overall Command

CHAPTER 7 60

Emergency Support Functions

Emergency Support Functions
Primary and Secondary Agencies
Planning Assumptions

CHAPTER 8 106

Disaster Specific Modules

Earthquake Module
Model Framework for Disaster-Specific Approach-Sub Group I
Model Framework for Disaster-Specific Approach-Sub Group II
Model Framework for Disaster-Specific Approach-Sub Group III
Model Framework for Disaster-Specific Approach-Sub Group IV
Model Framework for Disaster-Specific Approach-Sub Group V

CHAPTER 9 123

Follow-up Actions

List of Checklists and Handbooks
Documents for each ESF
GIS Maps

EOC and ICS layouts and databases

Disaster-Specific Modules

References

NDRP & RELATED STUDIES

National Response Plan Chapters

1. Introduction
2. Methodology
3. Approach
4. Maps
5. Quick Response
6. National Operation Centres
7. ESF
8. Disaster Specific Modules
9. Follow up Actions

Annexures

Acronyms

Sub- Group Reports NATIONAL PLAN

1. Water and Climate
2. Geological
3. Biological
4. Accident related
5. Chemical and Nuclear

Sub- Group Reports STATE PLAN

1. Geological
2. Biological
3. Accident related

Sub – Committee Reports

1. Trigger Mechanism
2. Insurance
3. District Disaster Management Report

Technical Reports

- Knowledge Network
- Electronic Media
- Print Media
- Civil Defence
- Armed Forces

Research Reports

- Role of GIS in Disaster Management
 - National Disaster Information System
 - Early Warning
 - Capacity Building
 - Socio- Psychological Aspects
 - Minimum Standards of Relief
 - Emergency Support Functions
-

ANNEXURES*

**The Annexures as indicated here are available on a CD attached to the NDRP Document*

I. Disaster Assessment Systems

References

- ADPC
- UNDAC
- UN-OCHA

II. Site Operation System

References

- OSOCC - UNOCHA
- Incident Command System

III. Search and Rescue Systems

References

- INSARAG
- US and R Task Force – FEMA

IV. Disaster Medical Assistance

References

- Health and Medical Response System – Response Team Description Manual (USA)
- Norwegian Mobile Hospitals and Disaster Units

V. Equipment Cache

References

- Equipment Cache – Building Material and Technology Promotion Council
- USA

VI. Knowledge Network

References

- Knowledge Network – Centre for Disaster Mitigation and Management, Anna University, Chennai

VII. Inventory Management System

- Manpower
- Relief Supplies

References

- SUMA
- Donations FEMA

VIII. Minimum Standards of Relief and Response

References

- SPHERE

IX. Central Disaster Management Directory

- List of Acronyms
- List of Members of HPC
- References
- Content

Follow-up Actions

- Checklists and Handbooks
- Maps
- ESFs
- Specific Disaster Modules

ABBREVIATIONS

ACWCs	Area Cyclone Warning Centres
AIR	All India Radio
ATIs	Administrative Training Institutes
BMTPC	Building Material and Technology Promotion Council
BUCFAC	Building Code Formulators and Administrators Conference of India
CRC	Central Relief Commissioner
CMG	Crisis Management Group
CWC	Cyclone Warning Centres
EGM	Empowered Group of Ministers
EOC	Emergency Operations Centre
ESF	Emergency Support Functions
GIS	Geographic Information System
IMD	India Meteorological Department
ICS	Incident Command System
NATMO	National Atlas and Thematic Mapping Organisation
NCCM	National Centre for Calamity Management
NCDM	National Centre for Disaster Management
NCMC	National Crisis Management Committee
NRSA	National Remote Sensing Agency
PSUs	Public Sector Undertakings
RSMC	Regional Specialized Meteorological Centre
SOP	Standard Operating Procedures
SSH	Saffir-Simpson Hurricane Scale
SSTC	Saffir-Simpson Tropical Cyclone
WMO	World Meteorological Organization

LIST OF TABLES AND CHARTS

List of Maps

- III.1 National Highways of India
- III.2 Railway Network of India
- III.3 Air Network in India
- III.4 Major and Intermediate Ports in India
- III.5 India Density of Population 2001

Chapter IV

- IV.1 L0, L3 Activities
- IV.2 SUBGROUP I - Water and Climate Related Hazards
- IV.3 SUBGROUP II - Geologically Related Hazards
- IV.4 SUBGROUP III – Chemical, Industrial & Nuclear Related Disasters
- IV.5 SUBGROUP IV– Accident Related Disasters
- IV.6 SUBGROUP V – Biologically Related Disasters
- IV.7 Flow Chart – Information
- IV.8 Flow Chart – Command of Coordination Activities for an L3 Disaster

Chapter V

- V.1 Flow chart – Quick Response
- V.2 Material/Manpower Flow chart of

Central Information and Arrival Centre at airport

- V.3 Material/Manpower Flow chart of Information and Arrival Centre at Airport of Affected State

Chapter VI

- VI.1 Flow chart of Organization (EOC)
- VI.2 Flow chart of Organization (ICS)
- VI.3 Flow chart – Overall Command

Chapter VII

- VII.1 Primary and Support Agencies for ESF
- VII.2 ESF1 - Public Health and Sanitation
- VII.3 ESF2 - Communication
- VII.4 ESF3 - Power
- VII.5 ESF4 - Donation
- VII.6 ESF 5 - Transport
- VII.7 ESF 6 - Search and Rescue
- VII.8 ESF 7 - Public Works and Engineering
- VII.9 ESF 8 - Food
- VII.10 ESF 9 - Information and Planning
- VII.11 ESF 10 - Relief Supplies
- VII.12 ESF 11 - Drinking Water
- VII.13 ESF 12 - Shelter
- VII.14 ESF 13 - Media
- VII.15 ESF 14 - Helplines

Introduction

VISION OF THE DOCUMENT

The need for an effective disaster management strategy to lessen disaster impact has increasingly been felt in many quarters. Strengthening of organizational structure of disaster management and reorienting existing organisational and administrative structures have been of prime concern. To achieve these objectives, a High Powered Committee (HPC) on Disaster Management was constituted with the approval of the Prime Minister under the Chairmanship of Shri J. C. Pant, former Secretary to the Government of India.

The original mandate of the HPC was confined to preparation of plans for natural disasters only. It was felt in deliberations of HPC that man-made disasters also be included in the holistic approach for preparation of plans, which was then approved by the Prime Minister.

The following document of the National Disaster Response Plan has been the outcome of extensive consultations and deliberations with all concerned ministries, and departments at the Centre. The HPC has also initiated the process of State and

The High Powered Committee on Disaster Management has taken into account the lessons and learning from past experiences and the work of many international organizations in the preparation of the National Disaster Response Plan. In essence, the work of the HPC has been twofold – bringing and assimilating knowledge and, understanding the commonalities of response actions by learning from past experience.

District plans in order to bring about cohesiveness and uniformity in the formulation of disaster plans in all states and districts all over the country.

It has also taken into account the work and learning of many international bodies, international agencies and Disaster Management Plans of many other countries. The work of the the HPC for the preparation of the National Response Plan has been two-fold:

- ◆ Bringing together a wide range of disaster related readings and processes from all over the world and trying to understand the various systems of response that have been implemented all over the world.
- ◆ Trying to understand the common element of response in order to bring out a well thought-out and planned Response Mechanism for our country. It has also taken into account the lessons learnt from past experiences.

However, this has been the first attempt to assimilate and bring out a common plan for the Centre for at least the thirty-one disasters identified by the High Powered Committee. It has a multihazard approach and incorporates the 'Culture of Quick Response'. The extensive consultations have led to the emergence of many new concepts for the execution of the plan: Trigger mechanisms that identify the sequence of events after a disaster and the L concept that identifies four levels of response, namely L0, L1, L2, L3 are just some of them. Although the Centre plays a supportive role to State governments, it has to be prepared for L3 level of disasters and maintain close monitoring of L2 as well as L1 disasters that affect different parts of the country. It is also required to keep itself updated on various disasters that have occurred all over the world. Therefore, the approach to the plan has been to identify all common elements of response. This acts as a base plan or a

generic/modular plan for all response activities. It provides a framework around which other agencies and departments can outline their own activities for disaster response.

This plan will then be supplemented with specific disaster plans to take into account the peculiar conditions that might arise due to the specific disaster. However, these specific plans will have to be dealt with, in detail, in order to provide and account for all disasters in India.

Preparation and planning well in advance have been reflected throughout the plan. The checklists and handbooks that will make this plan operational have also been identified. Planning and preparation have been given a lot of importance as it is better to be totally prepared rather than go unprepared and add to the chaos at a disaster site.

EVOLUTION OF THE DOCUMENT

Vulnerability of the Indian sub-continent towards disasters, both natural and man-made, is widely recognized. India is vulnerable to various natural disasters like floods, droughts, cyclones, earthquakes, landslides, avalanches, forest fires 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 increasingly being felt in many quarters and also for strengthening of organizational structure for disaster management. Alongwith, regular updating of Codes/Manual/Disaster Plans of the states on the basis of experience gained and technological developments should be done. To achieve these objectives, a High Powered Committee (HPC) on Disaster Management Plans was constituted with the approval of the Prime Minister under the chairmanship of Shri J. C. Pant, former Secretary to the Government of India.

The original mandate of the HPC was confined to preparation of plans for natural disasters only. It was felt in

Strengthening of organizational structure of disaster management and reorienting existing organisational and administrative structures have been of prime concern. To achieve these objectives, a High Powered Committee (HPC) on Disaster Management was constituted with the approval of the Prime Minister under the Chairmanship of Shri J. C. Pant, former Secretary to the Government of India.

deliberations of HPC that man-made disasters might also be included for the holistic approach for preparation of plans, which was then approved by the Prime Minister.

The enhanced **Terms of Reference** of the HPC are as follows:

1. To review existing arrangements for preparedness and mitigation of natural and man-made disasters including industrial, nuclear, biological and chemical disasters,
2. Recommend measures for strengthening organizational structures, and
3. Recommend a comprehensive model plan for management of these disasters at the National, State and District levels.

There were some additional considerations by HPC like forecasting and warning systems, response mechanisms, development programmes, development of human resources, public awareness, proactive measures, information technology, networking/coordinating, periodic updating of building practices and codes, structural measures, state-of-the-art Control Rooms and other matters.

APPROACH OF THE HPC TOWARDS MANAGEMENT OF DISASTERS

The approach of the HPC is holistic, inline with the Yokohama strategy evolved during the International Decade of Natural Disaster Reduction (IDNDR), i.e. planning for prevention, reduction, mitigation and preparedness and thereafter response plan to reduce the loss of lives and property due to disasters.

Efforts of HPC are not to develop a plan de novo, but to build on what exists at different levels and streamline such bottlenecks as may be existing considering the very large number of disasters that occur in different parts of India.

It was felt that the generic categorization of disasters would help in preparing disaster management plans. This generic categorization of disasters is in no way intended to disturb the handling of specific disasters by various departments and ministries at the Centre or the State level according to existing rules of business of the government. In fact, all conceivable disasters would fall in one or the other of the five sub-group categorizations as mentioned in the course of this report.

ROLE OF THE NATIONAL GOVERNMENT

- ◆ Monitoring and Support
- ◆ Knowledge Networking
- ◆ Documentation
- ◆ Financial Matters
- ◆ Evaluation
- ◆ Building up inventories
- ◆ Initiating Community Awareness programmes
- ◆ Training of community cadres for response and relief operations through a participatory approach
- ◆ Generating awareness through media and workshops for students

This document of the National Response plan only highlights the activities of 'immediate response' for an L3 disaster.



Methodology

The entire work of the High Powered Committee has been compiled into two main documents:

- I High Powered Committee Report
- II National Disaster Response Plan

KEY ISSUES

In order to prepare a comprehensive and cohesive response plan for the Centre, other important issues such as the disaster profile, Government policies and mitigation measures also have to be taken into account. These issues have been dealt with, in detail, in the Recommendations within HPC Report.

Disaster Profile of India

The unique geo-climatic and social condition of India makes this region particularly vulnerable to disasters. Disasters occur with unfailing regularity and despite better preparedness, the economic and social costs on account of these disasters are on the increase each year. This section of the HPC Report consists of:

The National Disaster Response Plan has evolved as a document that focuses only on Response actions and provides links to other documents necessary for the effective overall management of disasters. The nature and extremity of a disaster demand that a separate plan has to be focused only on the immediate quick response activities thereby initiating a culture of Quick Response.

- i) Past records
 - Frequency
 - Dates/Years
 - Extent of damage
- ii) Vulnerable areas of the country
 - Macro-zonation according to geological setting.
 - List of vulnerable states and districts according to specific disasters.
 - Percentage of vulnerability of the country in context to each disaster.
 - Risk assessment according to the socio/economic conditions of urban and rural areas (metros, cities, towns, etc.)

Detailed checklists/forms for release of equipment and manpower and handbooks for all personnel/ministries/agencies involved in the immediate response activities recommended in the plan are integral and imperative for the complete and comprehensive view of the NDRP (National Disaster Response Plan) document.

National Policy on Disaster Management Plan

This section enumerates the policies that have been developed for the management plan in view of the lessons learnt from previous disasters. This includes policies developed for mitigation and preparedness. Apart from the National Calamity Management Act, it makes a note of the policies suggested by the Tenth and the Eleventh Finance Commission.

Mitigation/ Developmental Activities

This section forms an important part of the entire plan as the effectiveness of the response activities primarily depend upon the preparedness achieved during non-disaster times. In the past, the approach towards coping with the effects of disaster has been post-disaster management mainly involving actions like evacuation, search and rescue, rehabilitation, etc. Quite often the occurrence of natural disasters used to be relegated to history till the next one occurred. IDNDR has effectively shifted the focus from rescue and relief towards preparedness and mitigation. The damage due to disasters can be minimised by the preparation of a

Preparedness plan. The L0 stage suggested in the High Powered Committee interim reports will be utilised for all preparedness plans and activities. Section 4 of the plan deals with all national level L0 activities.

HOW TO USE THE DOCUMENT

This section of the National Response Plan contains the activities and responsibilities of only the 'Immediate or Quick Response'. The document contains the procedures and formats for activities that need to be carried out during an L3 disaster. Recommended support documents specific to each disaster will provide a modular character to the document. Detailed checklists, forms for release of equipment, manpower and handbooks for all personnel/ministries/agencies involved in the immediate response activities recommended in the plan are integral and imperative for the complete and comprehensive view of the NRP (National Response Plan) document. These support documents will have to be specialised and therefore will be developed by the respective ministries/agencies.

ABOUT THE DOCUMENT

The response plan needs to outline responsibilities, response, activities and exact sequence of events to be followed after the declaration of an L3 disaster by supporting checklists of responsibilities and actions, other handbooks and formats for the complete execution of the plan. Most of the checklists and handbooks require detailed enlisting of specific tasks that will have to be detailed out by respective agencies and ministries depending upon the technical nature of the task. In this document the response mechanisms, especially quick response mechanisms, have been outlined along with a listing of checklists, and handbooks that will be required for the detailed enumeration of each task as follow-

up actions to this plan. This document broadly contains the following L3 Response Mechanisms:

- ◆ Point wise explanation of the mechanisms and responsibilities of each concerned department (along with related handbooks of responsibilities)

- ◆ Graphical/Chart representation of the mechanism

The following document only deals with the 'Response Plan'. The sections on profile, policies and mitigation activities for disaster management have been dealt with in brief in the High Powered Committee Report.



Approach

NATIONAL RESPONSE APPROACH

Most of the disaster situations are to be managed at the State and District levels. The Centre will play a supporting role and provide assistance when the consequences of a disaster exceed District and State capacities. The Centre will mobilise support in terms of various emergency teams, support personnel, specialized equipment and operating facilities depending on the scale of the disaster and the need of the State or District.

Although active assistance to an affected State/District will be provided only after the declaration of a national level disaster (L3), the National response mechanism has to be prepared and any impending State or District disaster has to be monitored in order to provide immediate assistance whenever required. For this purpose the National response mechanism has to be pre defined in terms of process, related handbooks, and checklists that will have to be used during a disaster.

Legal Framework

There is no enactment either of the Union or of any State Government to deal with the

Although the Centre plays a crucial role in managing disasters it only plays a supportive role to the State and District authorities. The Centre has to maintain and concentrate on monitoring, warning activities and step into action when a disaster situation exceeds the capacity of the State authorities. In order to formalize and give meaning to these procedures, new concepts of Trigger Mechanism, L concept, etc. have been developed as an integral part of the National Disaster Response Plan.

The concept of Trigger Mechanism has been incorporated by the HPC as an emergency quick response mechanism, which would spontaneously set the vehicle of management into motion on the road to disaster mitigation.

management of disasters of all types in a comprehensive manner. The Environment (Protection) Act, 1986 was passed for the 'protection and improvement of environment and the prevention of hazards to human beings, other living creatures, plants and property.' The Ministry of Environment and Forests prepared and published the Rules on 'Emergency Planning, Preparedness and Response for Chemical Accidents' in 1996 only. These rules pertain to toxic and hazardous chemicals, and provide a reference mechanism for the Central, State, District and Local levels.

The Public Liability Insurance Act, 1991 casts a responsibility on the owner of a unit producing hazardous substance, as defined in the Environment (Protection) Act, 1986, to provide immediate relief where death or injury to any person or damage to any property results from any accident to the extent indicated in the Schedule to the Act. The owner has been required to make one or more insurance policies so that the liability for providing relief is covered by a policy.

In absence of an enactment, the HPC has prepared a "National Calamity Management Act"; a draft of which has been circulated to all the States as well as all the concerned ministries of the Government of India for their comments. The Act aims at ensuring efficiency and effective management of natural and other calamities, for achieving greater coordination and responsiveness with respect to prevention and mitigation of disasters as also to provide better relief and rehabilitation of victims of disasters.

The proposed National Calamity Management Act envisages the formation of a National Centre for Calamity Management for the purpose of effective management of all disasters arising out of calamities.

A Committee to prepare a Model State

Disaster Management Act was constituted by the HPC. This Committee had the mandate to prepare the draft Act within two months' time, under the chairmanship of Shri P.K. Mehrotra, Director General, Madhya Pradesh Academy of Administration, Bhopal. The Committee perused disaster-related legislation in several countries such as the Robert T. Stafford Disaster Assistance and Emergency Relief Act of USA and decided to adopt relevant aspects suitable to Indian conditions. The Committee also decided to take into account available codes and relief manuals and the relevant Acts related to Disaster Management in India in preparing the Model Act. The Committee met on two more occasions and finalised the draft of the Model State Disaster Management Act. A copy of this draft Act was also circulated to the State Chief Secretaries and Relief Commissioners of all States and DGs of all State ATIs for their comments, suggestions and further follow-up actions. It was submitted as part of Interim Report I, was accepted by the Central Government, and circulated to all Chief Ministers.

Building Codes and Bye-Laws: Proper conceptualization, risk evaluation, designing, construction and maintenance of houses and buildings 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 organisations involved in the formulation of the building codes and for the same, setting up of "Disaster Hazard Mitigation Codes Coordinating Group" is required that would look into the existing gaps and fill them. It has been suggested that 'Building Code Formulators and Administrators Conference of India' (BUCFAC) be created to discuss common problems and concerns and provide feedback on code enforcement, implementation problems and gaps.

Building codes and standards need to be made a part of the building byelaws and regulations thereby forcing developers, engineers, architects and engineers to adhere to them.

CONCEPTS USED IN THE DOCUMENT

Trigger Mechanism

Trigger mechanism is a concept that has been developed in order to ensure the smooth flow of response activities after disaster.

The concept of Trigger Mechanism has been incorporated by the HPC as an emergency quick response mechanism, which would spontaneously set the vehicle of management into motion on the road to disaster mitigation process.

The Trigger Mechanism has been envisaged as a preparedness plan whereby the receipt of a signal of an impending disaster would simultaneously energise and activate the mechanism for response and mitigation without loss of crucial time. This would entail all the participating managers to know in advance the task assigned to them and the manner of response. Identification of available resources, including manpower, material, equipment and adequate delegation of financial and administrative powers are prerequisites to successful operation of the Trigger Mechanism.

The Trigger Mechanism is in essence, the Standard Operating Procedure (SOP) in which the implementation of efforts on ground is well laid down. Activities such as evacuation, search and rescue, temporary shelter, food, drinking water, clothing, health and sanitation, communications, accessibility and public information, that are important components of disaster management, would follow on the activation of the Trigger Mechanism. These activities are common to all types of disasters and require sub-division and preparation of sub-

action plans by each specified authority. Each sub-group has been requested to work out the trigger mechanism relevant to their group of disasters.

Trigger Mechanism requires the disaster managers to:

- ◆ Evolve an effective signal/warning mechanism.
- ◆ Identify activities and their levels.
- ◆ Identify sub-activities under each activity/level of activity.
- ◆ Specify authorities for each level of activity and sub-activity.
- ◆ Determine the response time for each activity.
- ◆ Work out individual plans of each specified authority to achieve activation as per the response time.
- ◆ Have Quick Response Teams for each specified authority.
- ◆ Have alternative plans and contingency measures
- ◆ Provide appropriate administrative and financial delegation to make the response mechanism functionally viable.
- ◆ Undergo preparedness drills.

To understand the concept of Trigger Mechanism and incorporate it in the plans to be prepared by each sub-group, a committee had been set up under the Chairmanship of Shri M.K. Shukla, Director General, Civil Defence, which included all five Convenors of Sub-Groups, experts from ATIs and NCDM and Member Secretary, HPC. The sub committee has given its recommendations on which further follow-up action will be required.

L Concept

The L concept has been developed to define the different levels of disaster in order to facilitate the assistance to States, and the Centre. It has four levels, which are as follows:

L0 level denotes normal times which

will be utilized for close monitoring, documentation and preparatory activities. Training of search and rescue teams, rehearsals, evaluation and inventory updations for response activities will be carried out during this period.

L1 level is denoted when the disaster can be managed at the District level where the State and the Centre need to be on guard in case assistance is required for disaster relief operations.

L2 Level disaster situations are those that require assistance and active participation of State resources for management of the disaster.

L3 level disaster situation arises in case of large scale disasters that have a noticeable impact on a number of districts or states and when the State and District authorities have been overwhelmed with the disaster and require assistance from the Centre for reinstating the State and District machinery as well as rescue and relief operations.

Declaration of L3

In many cases the scale and intensity of the disaster as determined by the technical agency are sufficient for the declaration of L3 disaster. The designated technical agency/authority (IMD, etc.) has to pre-determine the parameters of intensity of each disaster by virtue of which it would be declared as L3, triggering off all necessary and subsequent actions without prior meetings or notifications during the response phase of a disaster situation.

Officially, the declaration of L3 will be the responsibility of Central Relief Commissioner for natural disasters in consultation with the concerned ministries.

In spite of the declaration of L3, the activities to be carried out by the Centre are

largely dependent on the capacity of the State authorities to manage the disaster.

The parameters for each disaster are to be set by the designated authority (IMD, etc.). It has been recommended that the concerned authority should recommend a system for the declaration of L3 that includes scientific parameters and the time for the declaration of an L3 event.

Alerts (Pre-event)

In case of any impending disaster for a specific area, the District/State and the Center need to initiate action as soon as the designated authority issues a warning. In cases where disaster warning is possible, the District/State/Center can initiate pre-disaster preparedness activities immediately after the warning is issued. In most situations the role of the Center would be to monitor preparedness activities and send information to the concerned central departments. However, the estimated scale and extent of damage is the determining factor for a District, State or Center alert.

Planning Assumptions

In disaster situations, effective utilization of resources can be ensured if the conditions of the disaster are assessed and taken into consideration during the planning phase. Disasters cause loss of property, injury and disruption of normal life and have an impact on social and physical infrastructure.

The extent of casualties and damage will reflect factors such as the time of occurrence, severity of impact, weather conditions, population density, building constructions and possible triggering of secondary events such as fires and floods. When planning a response for disasters, these assumptions can benefit in planning effective response for crisis situation.

Primary and Secondary Agencies

The designated primary agency, acting as the

Central agency will be assisted by one or more support agencies (secondary agencies) and will be responsible for managing the activities of the ESF (Emergency Support Functions) and ensuring that the mission is accomplished. The primary and secondary agencies have the authority to execute response operations to directly support the State needs.

Emergency Support Functions

During the period immediately following a major disaster or emergency requiring central response, primary agencies when directed by NCCM will take actions to identify requirements and mobilise and deploy resources to the affected area to assist the State in its response actions under fourteen ESFs (Emergency Support Functions). Each ESF is headed by a primary agency, which has been selected based on its authorities, resources and capabilities to support the functional area.

The ESF will coordinate directly with their functional counterpart State agencies to provide the assistance required by the state.

Request for assistance will be channelled from the District level through the designated State agencies for action. Based on the state identified response requirements, appropriate central response assistance will be provided by an ESF to the State or at the State's request, directly to an affected area.

Situation Reports

A situation report provides an update of relief operation at regular intervals. These reports are crucial for planning out response actions to the affected areas. Situation reports are required to be issued at the Centre through the Nodal Ministry, Ministry of Agriculture – EOC/NDM Control Room, provides these reports as well to the state

through the concerned department. These reports are an important means of communication between the concerned officials at the State and the Centre. The intervals of the reports are determined according to situation needs and at the discretion of the CRC. The situation reports provide information on the following:

- ◆ Disaster status
 - Weather condition (which determine relief operation)
 - Name and number of affected districts
 - Affected area (population, no. of villages, no. of gram panchayats, blocks, urban local bodies)
- ◆ Casualties
 - Types of casualties according to the specific disaster
 - First Aid
 - Communication and infrastructure status (each ESF according to the checklist)
 - Operational status of airport, port, railways, national highways and state roads and other nodal points
- ◆ Status of flow of relief materials
 - Food and materials
 - Through air droppings
 - Through surface transport (ship, road)
 - Through rail
 - Medical and health
- ◆ Arrivals/Departure of teams
 - Central team
 - International team
 - Defence deployment
 - Central forces

Quick Response Teams

The quick response teams at the Centre should leave for the affected site within six

hours of the event after the declaration of L3. They have to be adequately briefed by their respective department heads and Central Relief Commissioner. The teams should be self-sufficient in terms of 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
- ◆ Medical Response teams

1. National Quick Assessment Teams

Assessment and prioritisation of response activities requires pre-conditioning and skills to manage disaster situations effectively. Therefore there is a need for specialised teams that can work during crisis situations. These teams will have to be trained to handle multiple hazards and specialised equipment. The three primary groups for quick assessment are:

Quick Damage Assessment teams, Medical Response teams and Search and Rescue teams

Quick Damage Assessment teams

- ◆ Consist of four groups – Joint Secretaries, Area Officers, Technical Officers, Medical Officers
 - a. Joint Secretaries from the concerned ministries - Assessment of situation
 - b. Area Officers of the State - To assess and then, if required, to assist/ supplement local administration needs
 - c. Pool of Technical Officers
 - c.1. Disaster Assessment Team – Power
 - c.2. Disaster Assessment Team – Telecom
 - d. Disaster Medical Assessment Team

2. Quick Response Teams

Medical Response

- a. Medical first (aid) response
- b. Disaster Mortuary Assessment team

Search and Rescue and other teams

- a. Urban search and rescue
- b. Collapsed structure search and rescue
- c. Specialised sniffer dog teams

Quick Response for Rescue and Relief in Major Disasters

In situations such as the Orissa cyclone and Bhuj earthquake, the Central Government has to respond appropriately at the earliest. To meet situations like this, perhaps there may be a need to institutionalize a Standing Committee of a Group of Ministers, comprising Ministers from the Ministries of Defence, Health, Agriculture, Railways, Surface Transport, Power, etc., to be chaired by the Home Minister. This Group of Ministers would have the benefit of the presence of the Cabinet Secretary, the three Chiefs of Staff (Army, Air Force and Navy), Secretaries of concerned Departments and all DGs of Paramilitary forces.

Special Disaster Relief Unit may be located in the Home Ministry under the charge of a Secretary level officer who would be the Secretary to the Group of Ministers referred to above. The committee is of the view that all the Armed Forces should have a dedicated component of personnel and equipment at the battalion level for disaster management.

The five Army Commands may have fully equipped centres in the five command regions at appropriate locations, which may have heavy equipment necessary to carry out relief and rescue activities in the region at short notice, with trained personnel to operate them. The details of such a set-up would be worked out in due course for incorporation into the Disaster Management Plan in

consultation with the Ministry of Home Affairs and the Ministry of Defence. An appropriate organizational set-up at the state level to cope with incoming relief and rescue measures is an urgent necessity, so that in disaster situations of colossal magnitudes, no time is lost in directing incoming relief and rescue measures to the exact locations where they are required. This too would be worked out and incorporated in the Disaster Management Plan in due course.

Special Emphasis (Policies for the same to be covered in Section II)

- ◆ Building bye-laws for each disaster
- ◆ Minimum standards and layouts for EOC relief camps and SOPs for the same
- ◆ Insurance policies for disasters
- ◆ Facilities in disaster situations for women, children and physically challenged
- ◆ Provision of maps and integration of GIS in the response plan

Emergency Operations Centre

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 absence of normal circumstances, an Emergency Operation Centre becomes a nodal point for the overall coordination and control of relief work. In case of an L3 disaster EOCs at the Centre, State and District have to be activated. The primary function of these EOCs is to facilitate smooth inflow and outflow of relief and other disaster response related activities. These EOCs act as bridges between the Centre, State and District. The EOCs have to be equipped with state-of-the-art communication technology and a GIS enabled system for quick and effective decision making. The structure in which EOCs are housed should also be disaster-resistant as far as possible. 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.

Incident Command System

The Incident Command System was first established in 1970 after a wild fire outbreak in Southern California. Since then it has been widely accepted and adapted in many other states of America and now in many other parts of the world too. The Incident Command System can also be effectively adapted to the Indian system of disaster response as it is a model tool for command, coordination and use of resources at the site of the incident. It is based on the management and direction tools that experts and managers are already aware of. The Incident Command System has considerable flexibility and can grow or shrink to meet different needs. This makes it a very cost-effective and efficient management system. The system can be applied to a wide variety of disaster situations. The organization of the Incident Command System is built around five major management activities. They are:

Command

- ◆ Sets objectives and priorities
- ◆ Has overall responsibility of the incident or event

Operations

- ◆ Conducts tactical operations to carry out the plan
- ◆ Develops tactical objectives
- ◆ Organization
- ◆ Directs all resources

In the absence of normal circumstances, an Emergency Operation Centre becomes a nodal point for the overall coordination and control of relief work. In case of an L3 disaster, EOCs at the Centre, State and District have to be activated. The primary function of these EOCs is to facilitate smooth inflow and outflow of relief and other disaster response related activities.

Planning

- ◆ Develops the action plan to accomplish the objectives
- ◆ Collects and evaluates information
- ◆ Maintains resource status

Logistics

- ◆ Provides support to meet incident needs
- ◆ Provides resources and all other services needed to support the incident

Finance/Administration

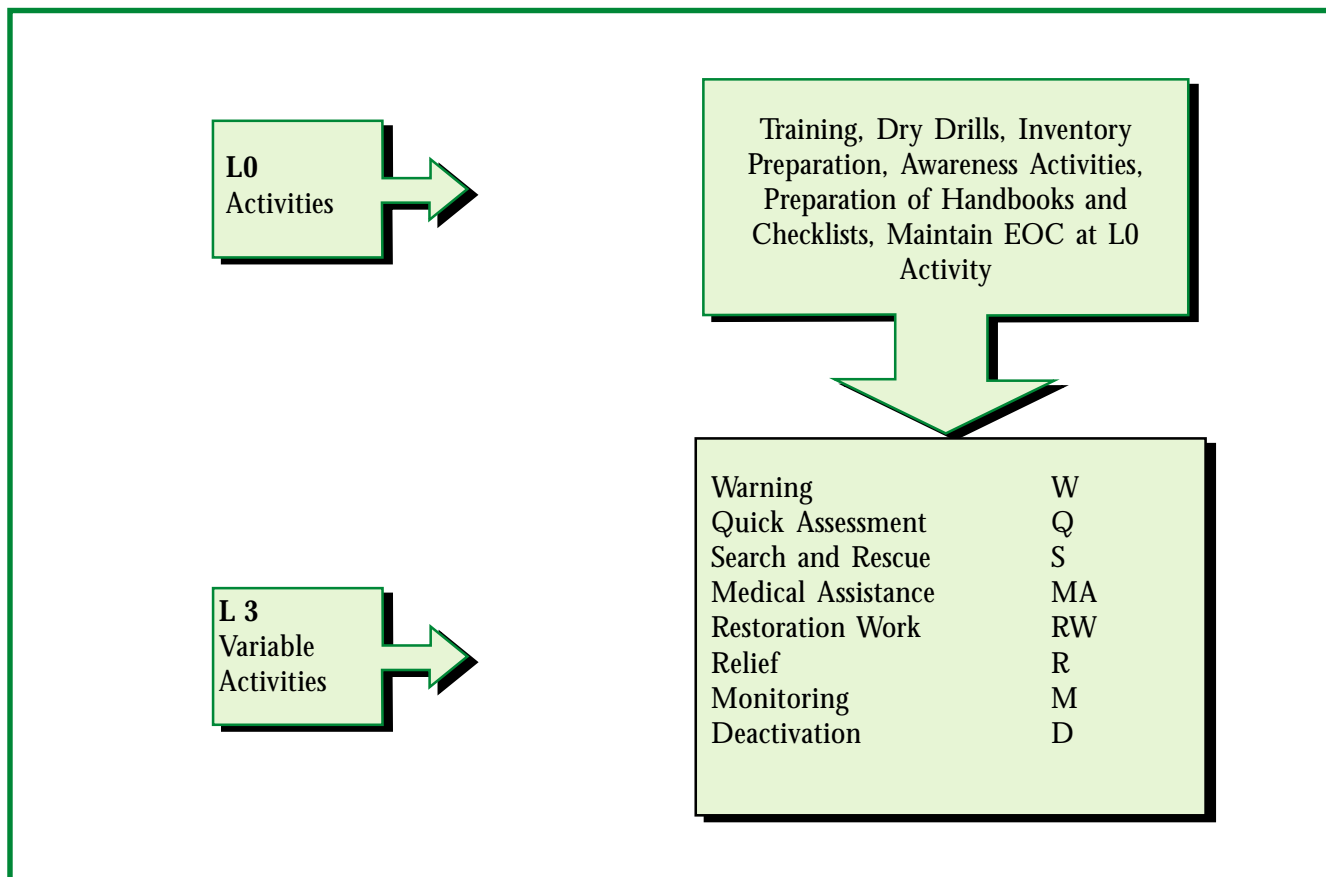
- ◆ Monitors costs related to incident

- ◆ Provides accounting
- ◆ Procurement Time
- ◆ Recording cost analyses

DISASTER SPECIFIC APPROACH TO RESPONSE ACTIONS

All activities at the level of the Ministry of Agriculture, the Crisis Management Group and other ministries under the head of Emergency Support Functions should address all aspects of the thirty one disasters identified by the HPC. The following chart broadly summarizes the activities for response actions to a disaster and the

ACTIVITIES FOR RESPONSE ACTIONS TO A DISASTER



LEGEND Activities to be Undertaken
 No activity

III. 2 SUBGROUP I - WATER AND CLIMATE RELATED HAZARDS

Disasters	L0	Concept of operation during L3							
		W	Q	S	MA	RW	R	M	D
Floods and Drainage Management	•	•	•	•	•	•	•	•	•
Cyclones Tornadoes Hurricanes	•	•	•	•	•	•	•	•	•
Hailstorm Cloud burst Snow Avalanches Heat & Cold Waves Thunder & Lightning	•	•	•	•	•	•	•	•	•
Sea Erosion	•			•	•		•	•	
Droughts	•	•	•		•	•		•	

III. 3 SUBGROUP II - GEOLOGICALLY RELATED HAZARDS

Disasters	L0	Concept of operation during L3							
		W	Q	S	MA	RW	R	M	D
Earthquakes	•		•	•	•	•	•	•	•
Landslides Mudflows	•		•	•	•	•	•	•	•
Soil Erosion	•		•				•	•	
Dam Bursts & Dam Failures	•		•	•	•	•	•	•	•
Mine Fires	•		•	•	•	•	•	•	•

III. 4 SUBGROUP III – CHEMICAL, INDUSTRIAL & NUCLEAR RELATED DISASTERS

Disasters	L0	Concept of operation during L3							
		W	Q	S	MA	RW	R	M	D
Chemical and Industrial Disasters	•		•	•	•	•	•	•	•
Nuclear Disasters	•		•	•	•	•	•	•	•

III. 5 SUBGROUP IV– ACCIDENT RELATED DISASTERS

Disasters	L0	Concept of operation during L3							
		W	Q	S	MA	RW	R	M	D
Road, Rail and other Transportation accidents including Waterways	•		•	•	•	•	•	•	•
Mine Flooding	•		•	•	•	•	•	•	•
Major Building Collapse	•		•	•	•	•	•	•	•
Serial Bomb Blasts	•		•	•	•	•	•	•	•
Festival related Disasters	•		•	•	•	•	•	•	•
Urban Fires	•		•	•	•	•	•	•	•
Mine Flooding	•		•	•	•	•	•	•	•
Oil Spill	•		•	•	•	•	•	•	•
Village Fires	•		•	•	•	•	•	•	•
Boat Capsizing	•		•	•	•	•	•	•	•
Forest Fires	•		•	•	•	•	•	•	•
Electrical Disasters & Fires	•		•	•	•	•	•	•	•

III. 6 SUBGROUP V – BIOLOGICALLY RELATED DISASTERS

Disasters	L0	Concept of operation during L3							
		W	Q	S	MA	RW	R	M	D
Biological Disasters	•	•	•		•		•	•	•
Epidemics	•	•	•		•		•	•	•
Food Poisoning	•	•	•		•		•	•	•
Cattle Epidemics/ Pest Attacks	•	•	•		•		•	•	•

subsequent charts mark out the activities for each disaster under each sub-group.

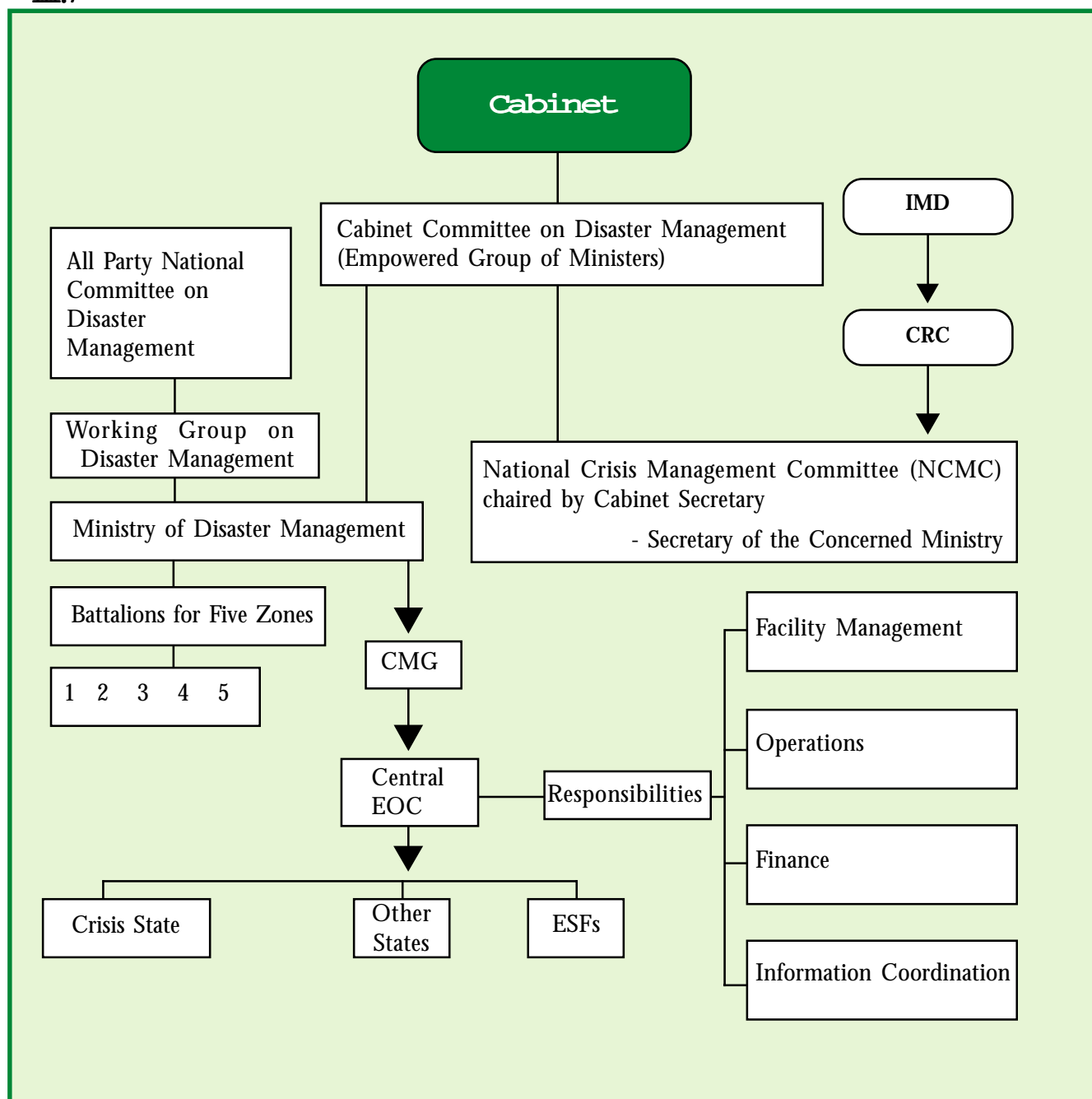
Concept of Operation for an L3 Disaster at the Centre

1. Flow Chart – Information

The effective management of an L3 disaster largely depends upon the

coordination and proper flow of information through specialised channels and networks. After the declaration of an L3 disaster, NCMC, in consultation with the technical support of IMD for natural disasters and respective nodal agencies for other disasters, becomes instrumental in mobilizing a nationwide support and network. The same has been shown in the chart below:

III.7



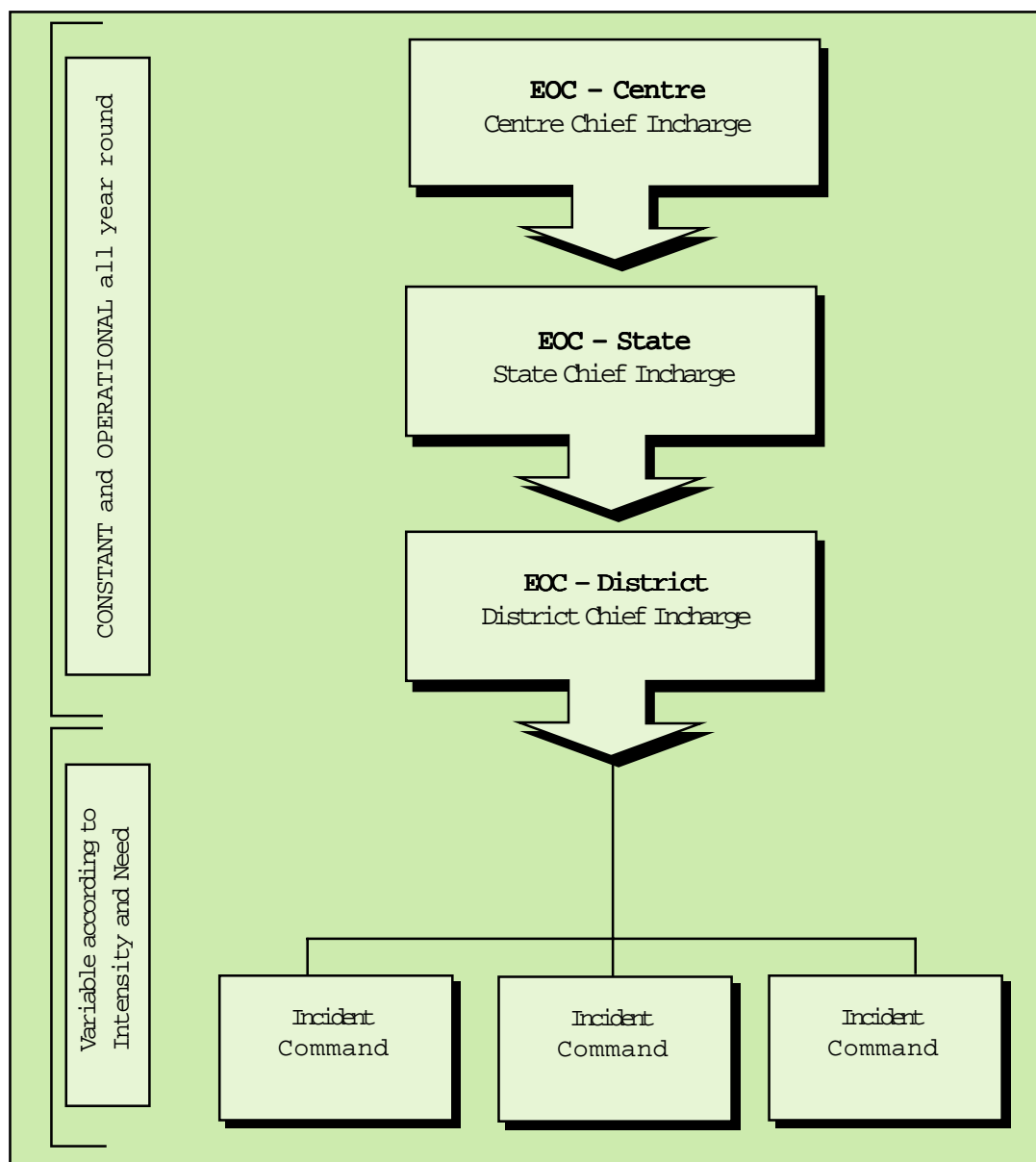
Flow Chart – Command of Coordination Activities for an L3 Disaster

The execution of response and relief activities should follow a systematic and well laid out action plan that ensures a bottom-up approach. The Incident Commanders take the most crucial and key decisions at the disaster, as they are aware of the ground realities. The District, State and subsequently the National EOC act as facilitators and overall agents of prioritising and mobilising resources from external

sources in order to meet the demands of each incident command. The incident commands are headed by officers/ personnel who are experienced and have the following broad qualifications

- ◆ Considerable experience in the field of disaster management especially in the specific disaster that has occurred.
- ◆ Have spent a few years in the field of disasters and are familiar with the physical as well as

III.8



administrative set-up of the disaster affected area.

EMERGENCY INFORMATION DISKNET

The ESF (Emergency Support Function) on Information and Planning should maintain a database of all disaster related information in the form of a GIS enabled 'Disknet' that will allow easy access and retrieval of information during a disaster. The Disknet will be the hub /storage point for activities that should be carried out for response activities and at the same time continue to update itself during the L0 phase. It would enable and speed up the transfer of digital

information and prepare a mammoth knowledge base that can be tapped for assistance during a disaster. The database at the Centre can be linked with nodal knowledge institutions for various disasters. These institutions, in turn, can be linked to the State Level and subsequently the local level information institutions in order to form a well-networked countrywide database.

During the response phase of a disaster, all EOCs and each ESF can be directly linked to the disknet in order to access and know the status of relief and other requirements throughout the country.



4

Maps

VULNERABILITY MAPS

Natural and man-made hazards continue to occur in our life and if not properly managed hazards tend to become disasters. To avoid hazards turning into disasters and contain damages caused by them, a pre-disaster proactive approach consisting of prevention, reduction and mitigation is called for. After the occurrence of the disaster, a post-disaster reactive approach for relief and rehabilitation is required to be taken up speedily for reducing misery and suffering of the affected people.

Maps play a crucial role in identifying vulnerable and high-risk areas in the country. Specialised maps that can assist in the identification and planning of response activities have to be further developed. These maps, when integrated with a knowledge network with GIS (Geographic Information System) will become an important decision-making tool in the hands of disaster managers.

The planning and implementation of these works – prevention, reduction, mitigation, relief and rehabilitation require the following:

1. Precision Maps with
 - a. Spatial Data and
 - b. Non-Spatial Data
2. Identification of activities, agencies, resources and funds for carrying out the works
3. Implementation and Monitoring at all stages
(I0, I1, I2, I3)

The requirement of Topographical and Thematic Maps, Database – Spatial and Non-Spatial for various types of identified disasters have been described.

The following maps will be helpful during the response stage:

- ◆ Road maps of India along with metalled and unmetalled roads (Survey of India-Toposheets, respective ministry of each State, Ministry of Surface Transport)
- ◆ Railway map (Ministry of Railways) for location of Rescue and Relief trains
- ◆ Important Airports and Aerodromes in India (Ministry of Civil Aviation, Airport Authority of India, Ministry of Defence)
- ◆ Location of Public Sector Units (PSUs) (Ministry of Heavy Industries and Public Enterprises)
- ◆ Location of major hospitals and primary health centres
- ◆ Location of civil defence installations
- ◆ Location of the relief material storage site and the state EOC
- ◆ Advanced Information Technology installations

- ◆ Government sites that can be used as shelter points, relief camps and donation management activities

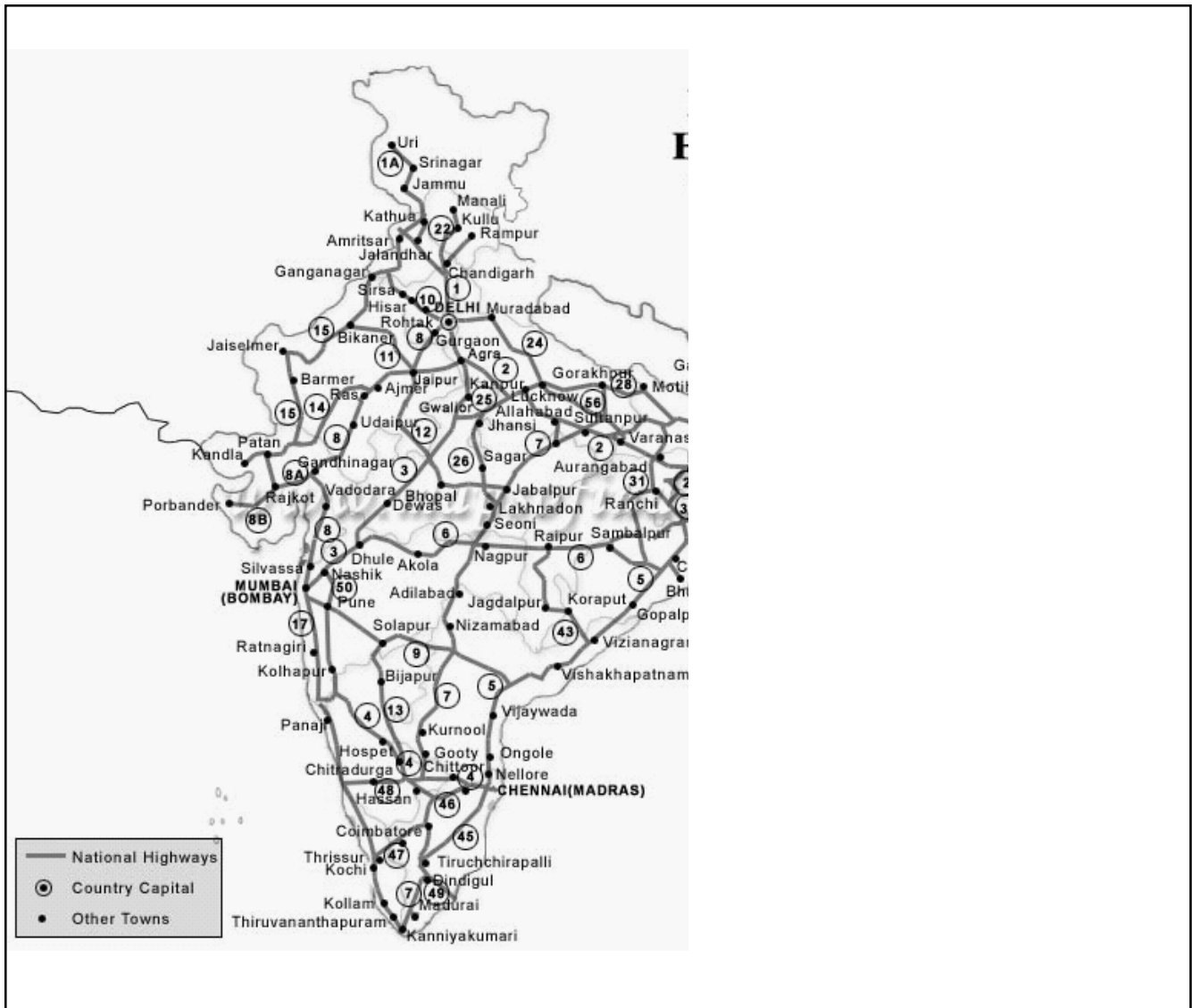
Apart from these maps, the vulnerability maps prepared by BMTPC and NATMO can provide basic maps identifying national highways and air and rail routes. These are essential to identifying key areas related to damage and the available facility for rescue and relief and accessibility during a disaster.

Currently, guidelines exist for the preparation and use of maps. All the existing maps and the new ones as recommended must be digitised so as to permit the use of GIS for planning, prevention, reduction, mitigation, relief and rehabilitation works, in addition to constant monitoring of all activities at various stages. The following maps given below can be primary base maps for disaster response. These maps can be further enriched with various theme-based layers, which can be dynamically viewed in a GIS environment.

- ◆ National Highways of India
- ◆ Railway Network of India
- ◆ Air Network of India
- ◆ Major and intermediate Ports in India
- ◆ Population Density Map of India

Base Map No.1. IV.1

This map contains country capital, other towns and national highways. This map could be added with the following theme-based layers:

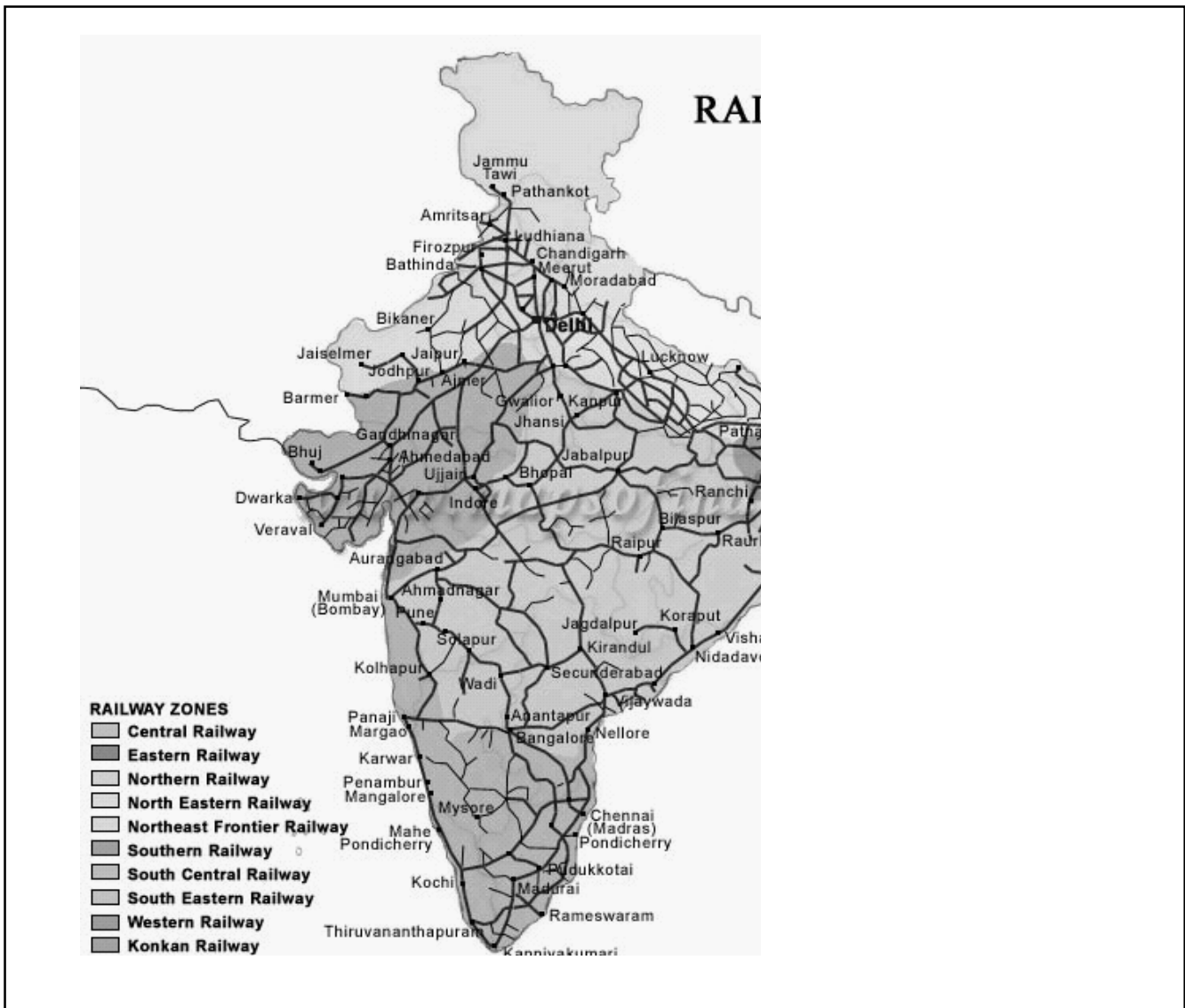


- ◆ Public sector units
- ◆ Large scale chemical factories (Ministry of Environment and Forests)
- ◆ National monuments
- ◆ Defence installations
- ◆ Locations of State bus terminals
- ◆ Inter-State road entry points
- ◆ Topologies/Hill roads
- ◆ State EOC location

* Some of the maps have been taken from the site www.mapsofindia.com. We thank them for their co-operation.

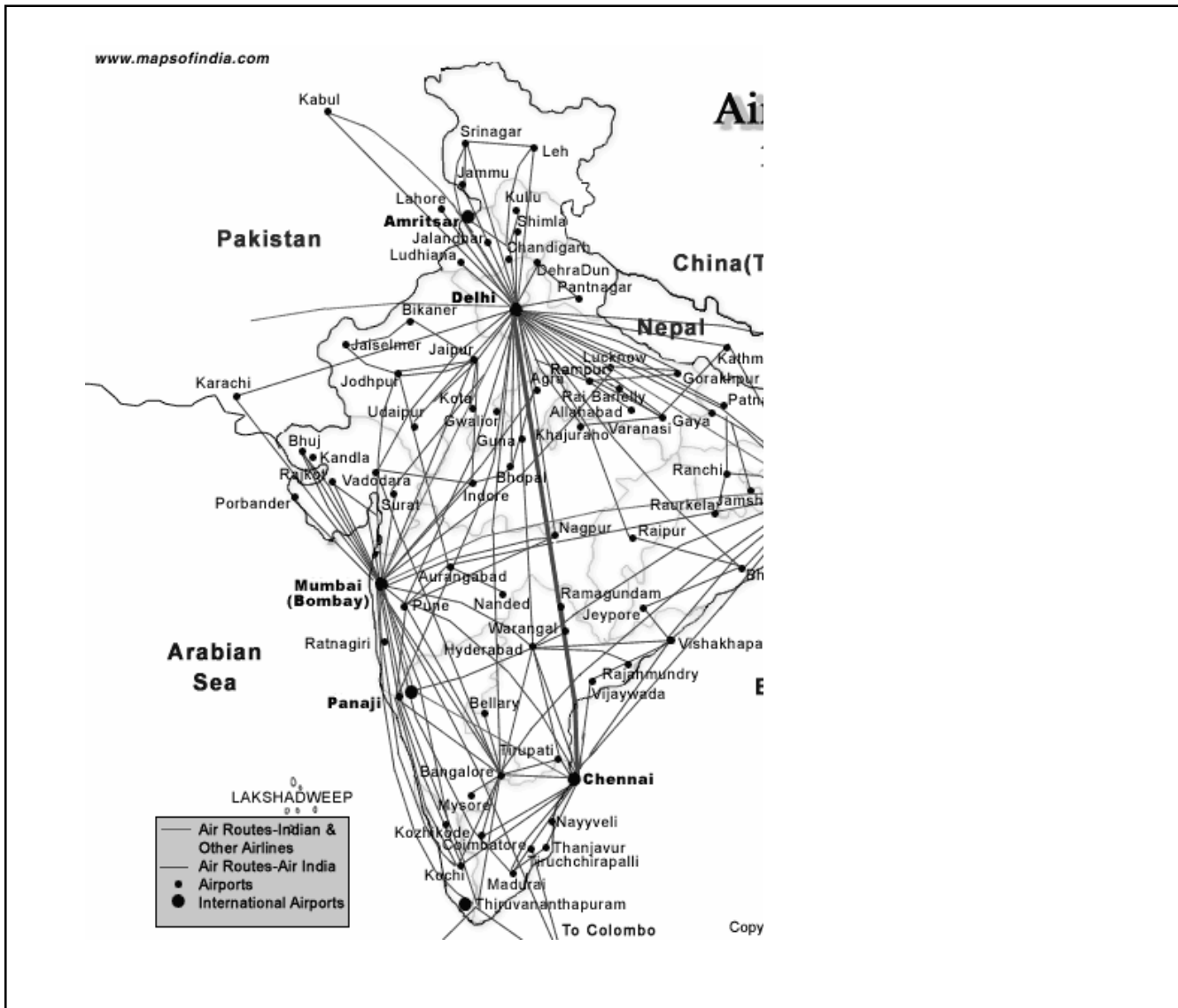
Base Map No. 2 IV.2

This map identifies all the zonal railway routes of India, the important railway stations and terminals. It can also identify the following:



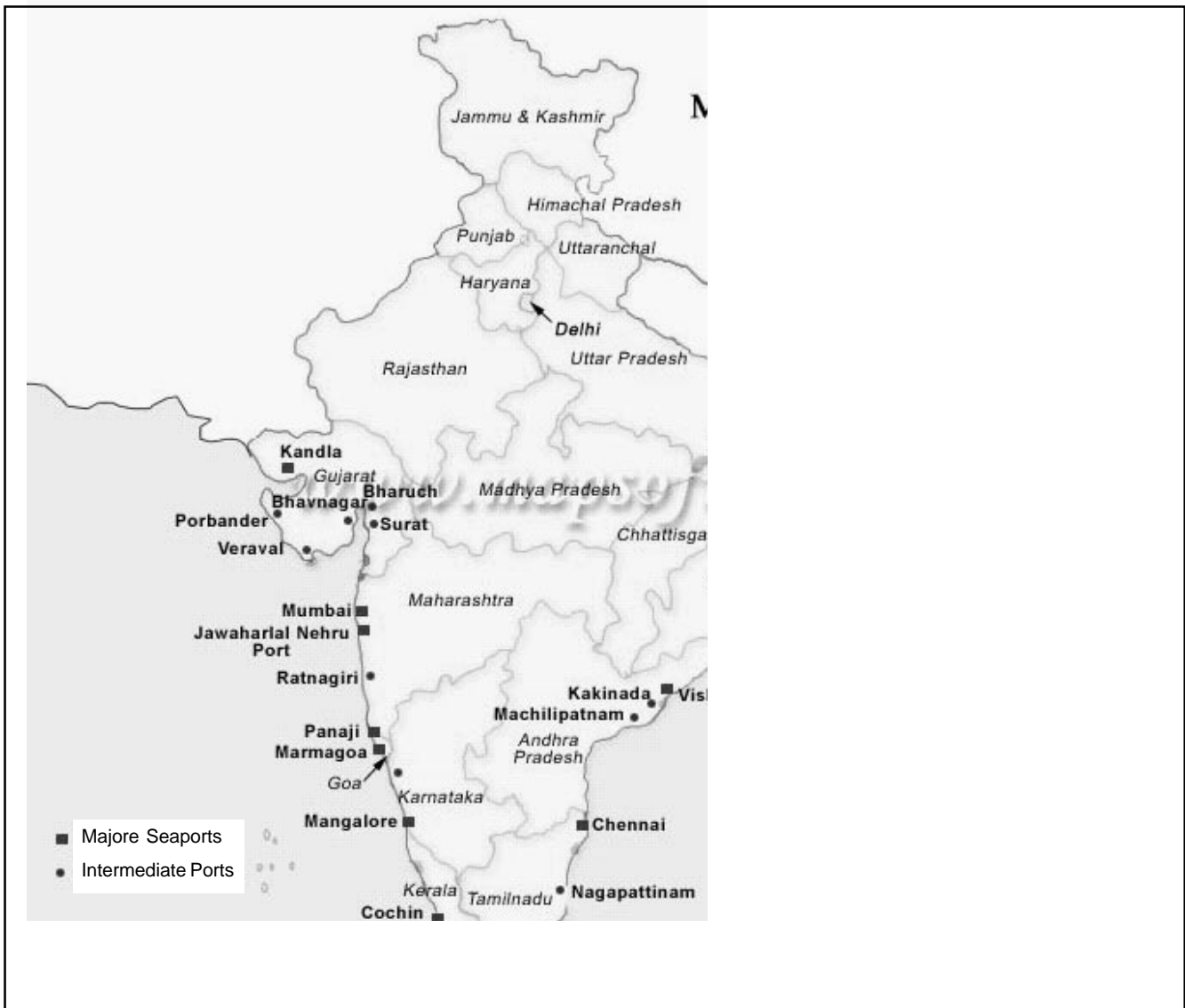
- ◆ Location of relief trains
- ◆ Railway bridges and tunnels
- ◆ Location of Heavy Industries
- ◆ Train schedules and frequencies
- ◆ Major terminals
- ◆ Location of broad gauge and meter gauge tracks
- ◆ State EOC location

This map identifies air routes, airports and international airports in the country. It can also identify:



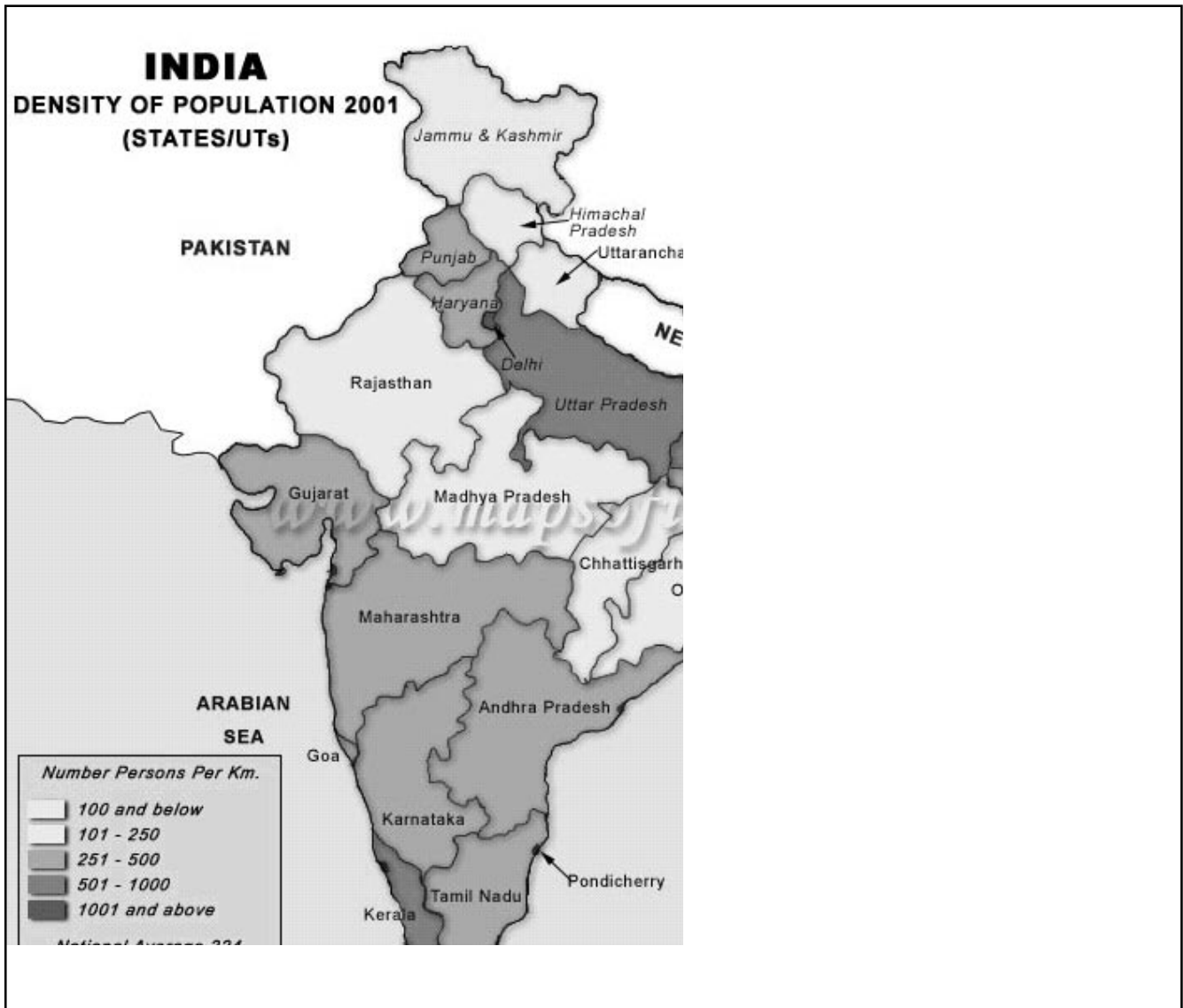
- ◆ Air force stations
- ◆ Helipads
- ◆ Defence installations
- ◆ Communication facilities (Air Traffic control rooms, etc.)
- ◆ Aircraft strengths and types
- ◆ Air control radius of each station/airport
- ◆ State EOC location

This map identifies the major seaports. It can also be used to show:



- ◆ Warehouses/Storage yards
- ◆ Dockyards and dock capacities
- ◆ Forecasting facilities
- ◆ Coastguard stations and navigation routes
- ◆ Tides
- ◆ Location of heavy industries in the vicinity of a coast
- ◆ Interlinking inland waterways
- ◆ State EOC location

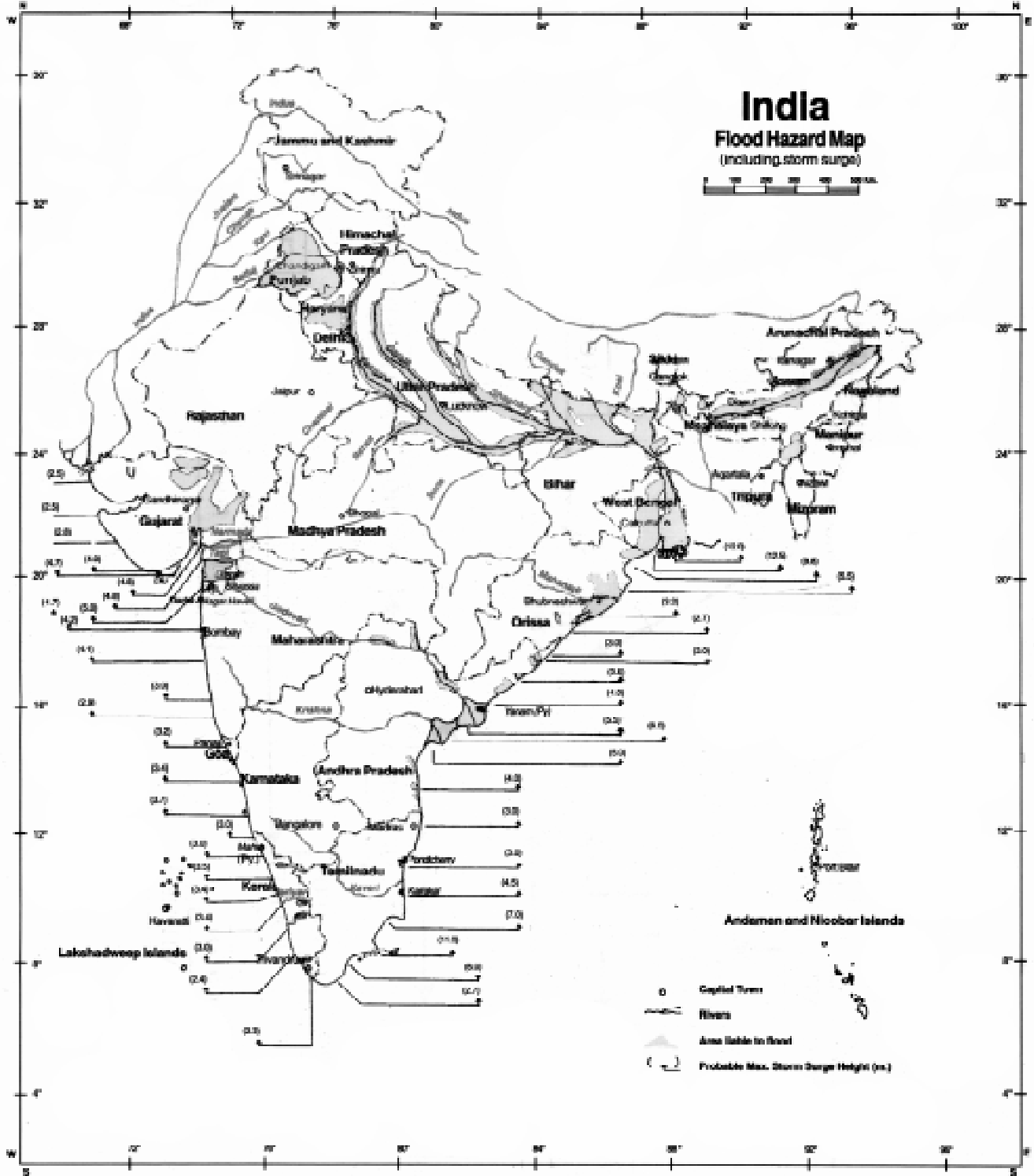
This map identifies population densities according to the 2001 census. It can also show:



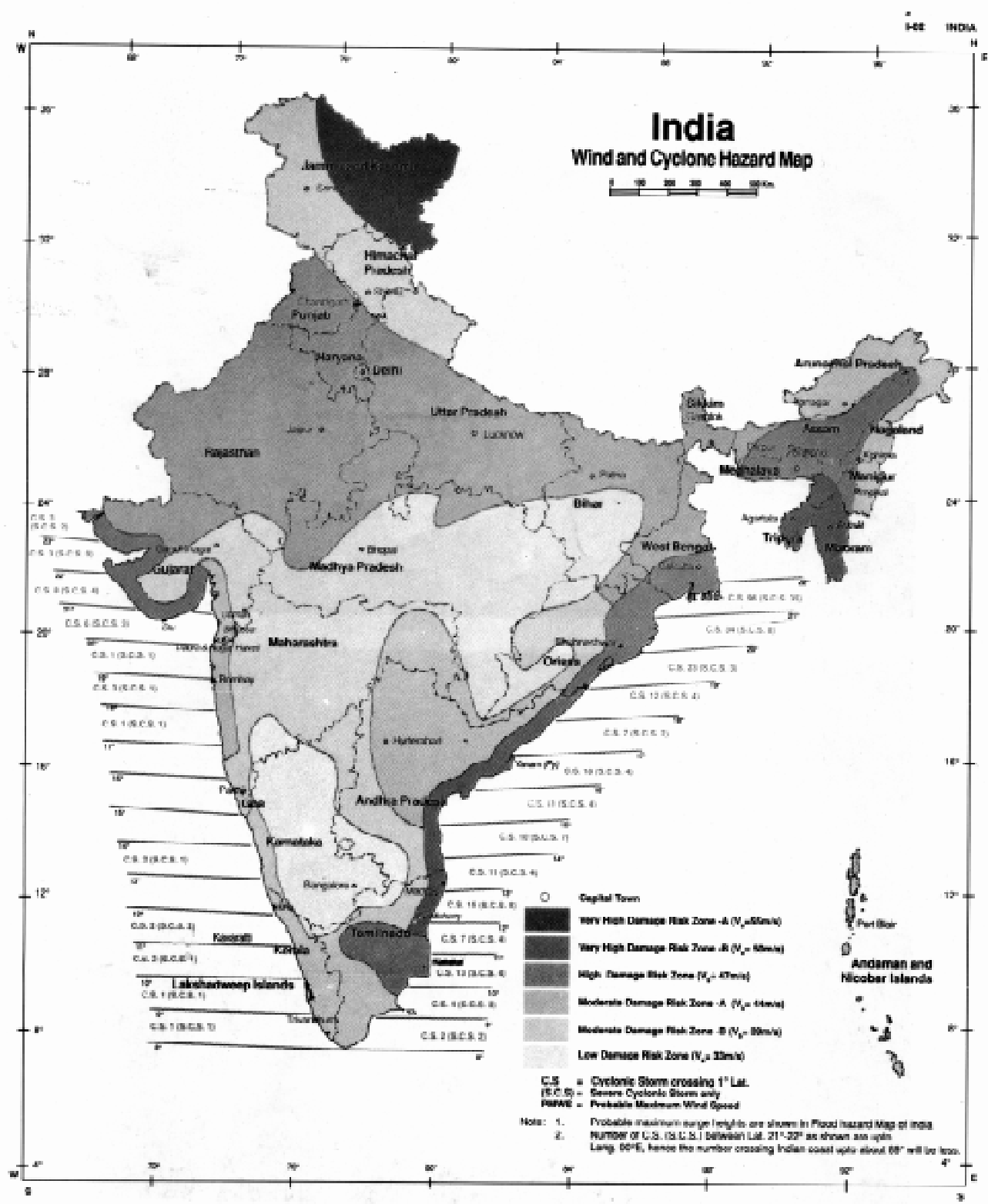
- ◆ Various languages
- ◆ Age-sex composition
- ◆ Socio-economic characteristics
- ◆ Rural-urban distribution
- ◆ State EOC location
- ◆ Education
- ◆ Percentage decadal growth
- ◆ Health Index

In the conventional method, maps are very precise and accurate but the time required for their preparation is more compared to the available modern methods mentioned later. While the baseline maps must be done by conventional methods, their updating and revision can be planned with the other one. This combination will

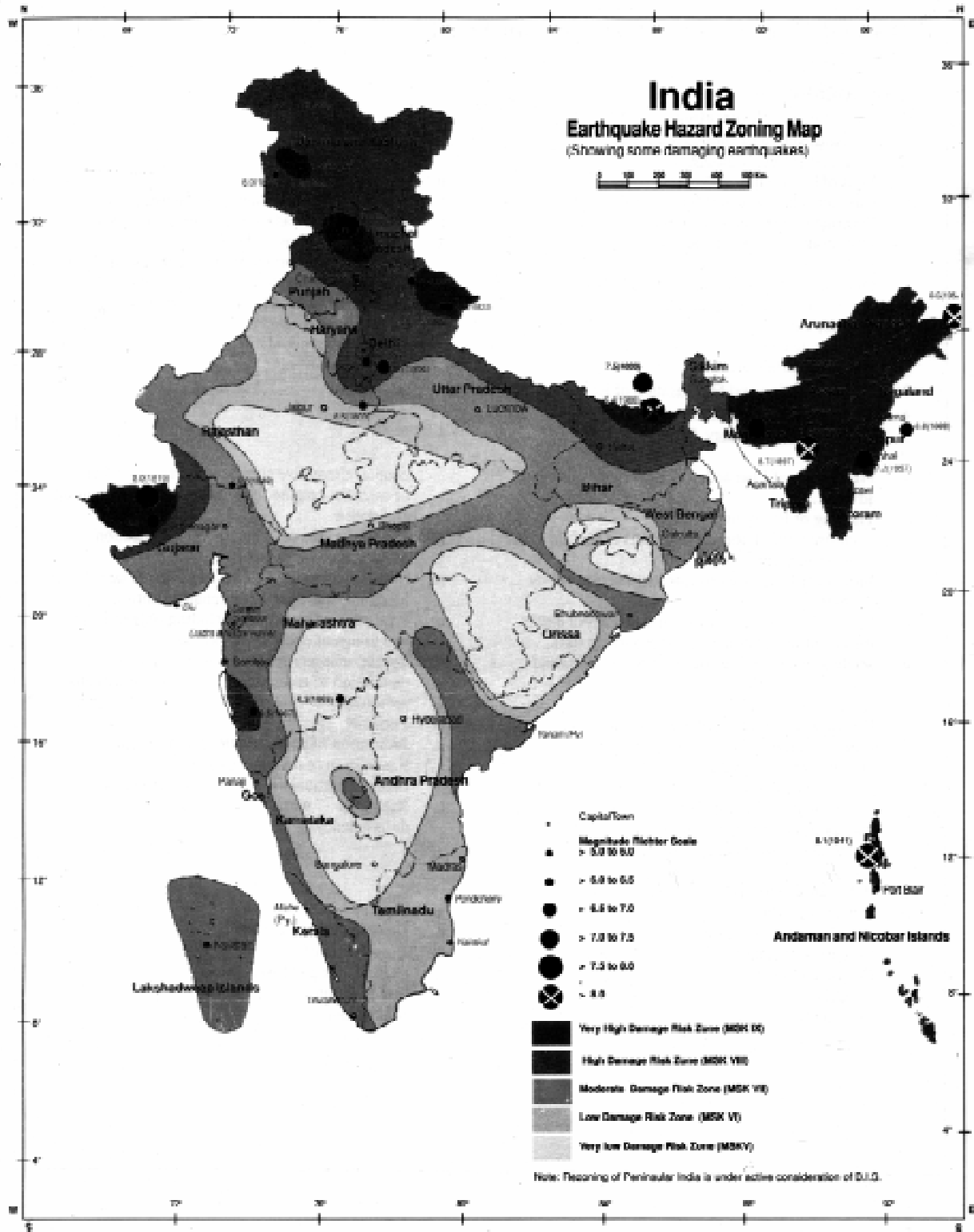
give quick results and also be cost-effective. The method to be adopted will depend upon the actual area to be surveyed and the purpose of survey, whether new map or revised map, the time required for completion and quality of the product in relation to the purpose and the availability of funds.



SIITPC: Vulnerability Asses. Consultant: Dr. Arund S. Arya. Map is based on: Flood Atlas, 1997, C.W.C., G.O.I. Cyclope and PMP 1983, 1997-1998, I.M.U. G.O.I.



BMTPC: Vulnerability Atlas Consultant: Dr. Anand S. Arya Map is based on: Hazard Wind Speed Map, IS: 8753-1987 Cyclone Data, 1891-1994, IMD, G.O.I.



BHTPC : Vulnerability Atlas

Consultant : Dr. Anand S. Arya

Map is based on : Seismic Zoning Map, I.S.:1893-1984

Earthquake Catalogue (M25), I.M.D., G.O.I.

Quick Response

QUICK RESPONSE FLOW CHART

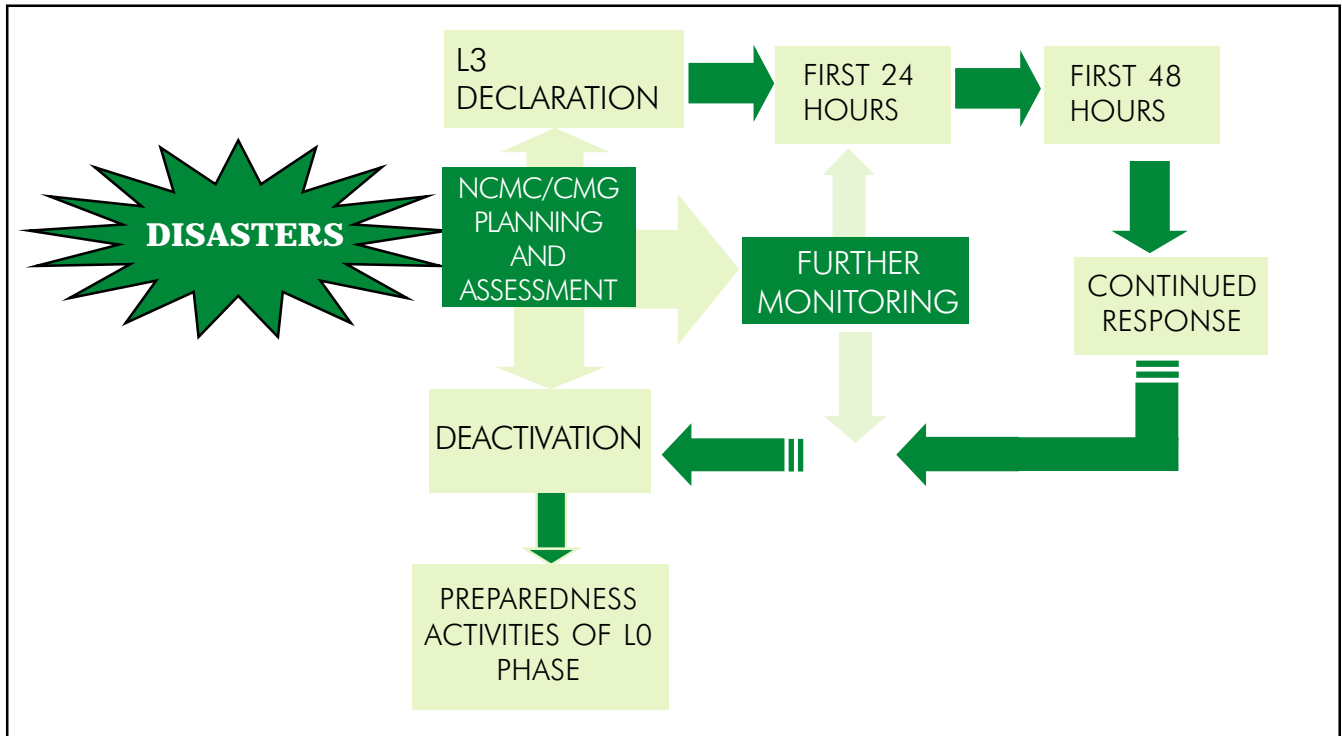
All activities that are important to be a part of the quick response mechanism must adhere to the following sequence of events:

In case of any disaster the CMG Meeting and assessment of the situation either after the disaster or after the alert stage is the next step. However, after the meeting and after the assessment there could be three possible scenarios according to the disaster, which will lead to further action of an L3 declaration, further monitoring or if the disaster is well within the control of the State departments, can lead to deactivation. The chart (V.1) below summarizes the activities of quick response.

The quick response mechanism is greatly or largely dependent on the preparation that has been done during the L0 phase and how well equipped and prepared the disaster team is. Therefore, in order to provide maximum response during the initial phase of a disaster, it is imperative to maintain a calendar of dry drills and constant equipment checks throughout the year.

The quick response mechanism begins

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, Checklists and Handbooks. The mechanism also lays down crucial parameters, requirements and organizational composition of Emergency Operations Centres and Incident Command Systems.



with a pre-disaster warning during the alert stage. This may not be feasible in cases where a reasonable warning may not be possible such as earthquakes and flash floods or accident related disasters.

PRE-DISASTER WARNING AND ALERTS

Case I - Warning

Onset of disaster is indicated through forecasting, and the information should be communicated to the community likely to be affected through a warning system.

[Indiscriminate warning may result in

non-responsiveness of the people. It is therefore necessary that with respect to every disaster, a responsible officer is designated to issue the warning].

Disasters for which adequate warning is possible include floods, droughts, cyclones, heat and cold waves, pest attacks, epidemics, industrial and chemical disasters, fires, and landslides.

Agencies authorised to issue warning

At the National Level, the designated authority is solely responsible to issue the warning.

Disasters	Agencies
Earthquakes	Indian Meteorological Department
Floods	Indian Meteorological Department
Adverse climatic conditions & Cyclones	Indian Meteorological Department
Epidemics	Public Health Department
Road accidents	Police
Industrial and chemical disaster	Industry, Police, (Designated Agency)
Landslides	Indian Meteorological Department
Fires	Fire Brigade, Police

As soon as the warning has been issued the District/State level machinery should get into the act of response through detailed preparation of the following:

Important Elements of Warning

The following aspects may be considered for dissemination of warning:

- ◆ Dissemination of warning to common people. This system may range from alarms (fires), sirens (industrial disaster), to public announcement systems like radio, television, loud speakers, hoisting of flags (cyclones, floods, and landslides).
- ◆ Once the warning is issued, it should be followed up with subsequent warnings in order to keep the people informed of the latest situation.
- ◆ Evacuation.
- ◆ Stand-by material resources.
- ◆ Stand-by human resources.
- ◆ Updated inventories.
- ◆ Updated communication system.
- ◆ Designation of an Incident Commander.

Planning assumptions

- ◆ Amount of time needed for evacuation will depend on the nature and intensity of the disaster.
- ◆ If the event can be monitored, such as a cyclone, the authorities would have a day or two to get ready.

Factors

- ◆ Shelter sites should be within one hour walk and within 5 km of dwellings.
- ◆ Alternate routes are to be planned in case of flood.
- ◆ All evacuations should be reported to the District Collector and the Superintendent of Police prior to the evacuation.

- ◆ For appropriate security and law and order, evacuation should be carried out with assistance from community leaders and NGOs.

- Care should be taken such that the evacuation routes are not blocked.
- Always evacuate the entire family together as a unit.
- In view of inadequate transport or limited time, encourage community emergency evacuation in the following order:
 1. Seriously injured and sick
 2. Children, women and physically challenged
 3. Old

Emergency evacuations

- ◆ Checklists should be issued for evacuation for each family in vulnerable areas.

Evacuation of marooned persons

- ◆ Evacuation must be carried out within the shortest possible time.
- ◆ The marooned persons must be transferred to the transit camps.
- ◆ Emergency transport for the seriously injured by appropriate means such as speed boats etc should be ensured.
- ◆ A senior medical officer should accompany the rescue team.
- ◆ Water and food supply should be according to the “Standards of Food” on the lines recommended by “SPHERE”

Standards to be developed for evacuation during alerts

- ◆ Manual for evacuation
- ◆ Factors to be considered for evacuation
- ◆ Standards for Food

DISASTER SPECIFIC WARNINGS

Tropical Cyclones

Severe tropical cyclones are responsible for large casualties and considerable damage to property and agricultural crop. The destruction is confined to coastal districts, and the maximum destruction being within 100 km from the centre of the cyclones and on the right side of the storm track. Principal dangers from a cyclone are:

- I. Very strong winds
- II. Torrential rains
- III. High storm tides

The following section exemplifies the warning systems in India for tropical cyclones.

Cyclone Warning System In India

The Indian Meteorological Department (IMD) is responsible for providing tropical cyclone warnings in India. The tropical cyclone warning service is one of the most important functions of the IMD and it was the first service undertaken by the Department, which is now 125 years old. In fact, the cyclone warning system started in India (which included at that time other countries of the sub-continent) in a nominal way in as early as 1865 but was not supported by adequate meteorological observation and analysis capabilities at that time. With time, the cyclone warning services of IMD have continuously been updated and today, **it is one among the modern cyclone warning services in the world.** Details of cyclone warning system in India are available in the Cyclone Manual (IMD, 1979, updated time to time) and also WMO TCP report No. 21, 26 and 28 (Mandal, 1991).

Organization

The Indian Meteorological Department has a well established organizational set-up for observing, detecting, tracking and

forecasting cyclones and issuing cyclone warnings whenever a cyclone develops in the Bay of Bengal or the Arabian Sea. Cyclone warnings are provided through three Area Cyclone Warning Centres (ACWCs), located at Kolkatta, Mumbai and Chennai and three Cyclone Warning Centres (CWCs) at Bhubaneshwar, Vishakapatnam, and Ahmedabad. These centres have distinct responsibilities area wise covering both the east and west coasts of India and the oceanic areas of the Bay of Bengal and the Arabian Sea, including Andaman and Nicobar Islands and Lakshadweep. The cyclone warning bulletins are issued to All India Radio and Doordarshan for broadcast/telecast in different languages. On an All India basis such warnings are issued to All India Radio and Doordarshan, New Delhi from the Cyclone Warning Division at HQ office where RSMC-Tropical Cyclones, New Delhi is co-located. IMD, through its HQ office at New Delhi provides cyclone information to the Control Room and Crisis Management Group set up in the Ministry of Agriculture, Government of India which is finally responsible for co-ordinating actions of various other Central Government Agencies for taking effective disaster mitigation measures. Cyclone Warning Division at New Delhi also caters to the need of international requirements such as issue of Tropical Weather Outlook and Cyclone Advisories to its neighbouring countries which are members of the WMO/ESCAP Panel on Tropical Cyclones. Considering the cyclone warning capabilities of IMD, New Delhi has been designated as Regional Specialized Meteorological Centre (RSMC) by WMO which is one among six such centres in the world trusted with cyclone warning services for their area of responsibility. The entire cyclone warning work is coordinated by the Deputy Director General of Meteorology (Weather Forecasting) at Pune and Deputy Director General of Meteorology (Cyclone Warning) at New Delhi.

Forecasts

Cyclone warnings are not issued before twenty four hours anywhere in the world. Sudden changes in track or intensity often go undetected. Anomalous cyclones, like looping cyclone, though a least probable event, are difficult to predict. Therefore, disaster planning and management strategy has to take into account such limitations. Means must be kept ready to evacuate a large number of people at short notice, even in inclement weather.

Tropical cyclone warnings

The bulletins and warnings issued in connection with tropical cyclone in India may be divided into the following broad categories:

- (i) Warning bulletins for shipping on the high seas,
- (ii) Warning bulletins for ships plying in the coastal waters,
- (iii) Port warnings,
- (iv) Fisheries warnings,
- (v) Warnings for the State and Central Government officials (two stage warnings),
- (vi) Warnings for recipients who are registered with the department (Album page warnees),
- (vii) Aviation,
- (viii) Warnings for the general public,
- (ix) Farmer's Weather Bulletin.

Cyclone Advisories

Information concerning tropical cyclones and warnings is included in the cyclone advisory/cyclone warning bulletins. Normally during the alert stage, one advisory every six hours may be sufficient. However, in the case of a sudden change in intensity and path, special bulletins are issued at any time. When the cyclone is close to the coast, the advisories are issued at more frequent

intervals. Normally, the following items are included in a cyclone advisory:

- ◆ Advisory heading (date, time, name or identification of the cyclone, name of the forecasting office and type of the message).
- ◆ Location (bearing and distance of the centre of the cyclone from some important city in the area where it is expected to make landfall), present direction, movement and speed.
- ◆ Indication of the cyclone's current intensity in terms of wind speed and central pressure
- ◆ Forecast movement of the centre
- ◆ Landfall point and landfall time (if close to the coast, from warning stage onwards).
- ◆ Forecast weather- that is, maximum wind speed, heavy rainfall areas, height of the storm surge and areas likely to be affected.
- ◆ Advisory for evacuation (Optional).
- ◆ Cautionary advices to the ports and small craft.
- ◆ Advice to fishermen.
- ◆ Time and source of next advisory bulletin.

In India and in many countries, in addition to the information regarding wind speed, its effect on coastal area is also mentioned in the cyclone advisory bulletins. For this the Saffir-Simpson Hurricane Scale (SSH), modified to suit local conditions, is employed. The language of the advisory may differ for different groups being warned to the extent that the advice pertinent to each group may be different although general information regarding the cyclone position, intensity, expected direction of movement and speed, etc., remains the same. For example, advice contained in warning issued to ports or near and offshore

activities may not be pertinent to inland activities.

Example of Cyclone Warning Bulletins

TTT Cyclone warning Bay of Bengal 040300 utc. Ships observations absent. But believe cyclonic storm with estimated central pressure 992 hpa west central bay centred within half degree latitude fifteen degree north longitude eight and half degrees east moving north-west at eight knots. Affecting an area extending two hundred nautical miles wind force 37 knots, occasionally increasing to 47 knots in central bay to a distance of 100 nautical miles from centre.

meteorological centres in the maritime States include suitable warnings for fishermen. These general bulletins are broadcast at a fixed time at midday by the AIR stations and are intended to meet the requirements of the public in general and the needs of various categories of officials in particular.

In addition, special AIR bulletins containing cyclone alert messages issued 48 hours prior to the commencement of the adverse weather and tropical cyclone warning messages issued 24 hours prior to the commencement of the adverse weather in the coastal areas due to an approaching tropical cyclone are broadcast. These broadcasts are

Expected wind speed	Expected damage
6-90 km/h	Tree branches broken off; so damage to Kutcha houses
90-120 km/h	Trees uprooted, Pucca houses damages, communications disrupted
Above 120 km/h	Big trees uprooted; widespread damage to houses and installations. Total disruption of communications

May intensify and recurve northwards during next 24 hours.

Tropical Cyclone Bulletins to All India Radio (AIR) for Broadcast.

In general, weather bulletins are issued by the meteorological offices to the AIR stations for broadcast in the midday transmissions. Areas covered by the bulletins are the areas served by the respective AIR stations. These bulletins include (i) a summary of the past weather, (ii) special weather warnings for public services such as the Public Works Department, Irrigation, P & T, Railways, etc., and (iii) a general forecast including warnings. (ii) and (iii) are valid until the morning of the second day. The summary of weather includes information about tropical cyclone and depressions affecting the area. The centre of the system is included with reference to the nearest well-known place, latitude and longitude. Warnings in bulletins once included are repeated in the subsequent daily bulletins also as long as adverse weather is anticipated. In addition,

meant to alert the agencies entrusted with the responsibility of carrying out cyclone preparedness works and also the general public.

The coastal districts likely to be affected by the storm are mentioned in the first sentence of the bulletins and the same is repeated again at the end of the bulletin. The type of damage likely to be caused by strong winds of various magnitudes along with the expected wind speed is included. For the purpose of indicating the type of damage, the help of the table given above is taken. These bulletins are serially numbered.

Note: The above stages are being revised to include more steps above 120 km/h in a similar line as is being used in USA. USA uses Saffir-Simpson Hurricane Scale (SSH scale), which consists of five stages (categories), to indicate expected damage. According to SSH scale, the category I storm is the weakest hurricane (64-82 knots) and category 5 is the strongest (with 135 knots or more). Recently Charles Guard and Mark Lander have suggested modification to the

scale named as Saffir-Simpson Tropical Cyclone Scale (STCS).

The height of the storm surge is included in the bulletin in meters and it represents height above the normal tide level.

Example

Very severe cyclonic storm (vscs) situated at 18 1200 utc about 250 km south east of Ongole likely to strike coast between Ongole and Machilipatnam in the next 12 to 24 hours.

Cyclone bulletin no ——— issued by cyclone warning centre —— at —— hrs IST of —— (date) for repeated broadcast aaa cyclone warning for Nellore, Prakasam, Guntur, Krishna, west and east Godavari and Visakhapatnam districts aaa very severe cyclonic storm (vscs) located about 250 km south east of ongole near lat —— n, long —— e this evening aaa expected strike coast between Ongole and Machilipatnam by midday saturday nineteenth aaa strong winds reaching 150 kmph uprooting big trees and causing widespread damage to houses and installations and total disruption of communications likely Prakasam, Guntur, Krishna and west Godavari districts from saturday early morning aaa tidal waves five meters above normal tide likely inundate coastal areas these districts midday saturday at the time of cyclone crossing coast aaa very heavy rain likely cause floods in these and Nelore, east Godavari and Visakhapatnam districts aaa “state of sea likely to be phenomenal” aaa fishermen are not to go out in the sea aaa. Information

about storm warning signals is also included aaa above warning is for Nellore, Prakasam, Guntur, Krishna, west and east Godavari and Visakhapatnam districts.

These bulletins are generally issued at the time of each sea area bulletin. The frequency of the bulletin can be raised when the tropical storm is tracked with the help of radar and previous warnings issued need modification.

A third set of bulletins issued to AIR is the coastal weather bulletins. Whenever a cyclonic storm is likely to affect the Indian coastal areas, Coastal weather bulletins issued by the Indian Meteorological Department are broadcast in the All India News Cycles of All India Radio from New Delhi in English and in the regional language of the area affected. These bulletins are issued three times a day.

Depending on the scale and extent of predicted disasters, in some cases the Central Government will have to actively participate in the pre-disaster preparedness stage and subsequently if the disaster is declared L3. These disasters are as follows:

- ◆ Floods
- ◆ Droughts

The active participation of the Central Government will include the following:

- ◆ Deploy adequate defence services
- ◆ Do aerial surveys as part of preparedness
- ◆ Identify key access routes

1. Kolkata	Coastal districts of West Bengal and Andaman and Nicobar Islands
2. Bhubaneshwar	Coastal districts of Orissa
3. Visakhapatnam	Coastal districts of Andhra Pradesh
4. Chennai	Coastal districts of Tamil Nadu, Pondicherry, Kerala, Karnataka and Lakshadweep
5. Mumbai	Coastal districts of Maharashtra and Goa.
6. Ahmedabad	Coastal districts of Gujarat states

- ◆ Structural protection for railway stations/airports
- ◆ Deploy and send relief materials to affected areas
- ◆ Ensure deployment of special air and rail transport

(These activities, however, will be in support of the State initiatives and their requirements of assistance.)

Case II - No Warning

In case of no warning the activities and inventories maintained during the L0 stage have to become operational.

Disasters for which warning is not possible include earthquakes, landslides, mud flows, tornado, flash floods, hurricanes, dam bursts, snow avalanches, thunder and lightning, mine fires, chemical and industrial disasters, nuclear disasters, all accident related disasters and food poisoning.

De-Warning

In case the disaster does not occur as predicted, the Indian Meteorological Department issues a de-warning that is in turn to be issued by the likely affected Districts and State. This will initiate the process of retrieval of extra resources (man/material) that have been kept as part of preparedness after the warning was issued.

The de-warning by IMD will initiate the following:

- ◆ Dissemination of De-warnings by respective districts and states
- ◆ EOC will start functioning for L0 activities again
- ◆ The defence/search and rescue/medical teams will also return to L0 activities
- ◆ Material resources will be returned/stored back

RESPONSE PLANNING

Planning of the operations has to be done quickly and at regular intervals. To mobilise resources at a national level the National

Crisis Management Committee under the Cabinet Secretary plays a crucial role. All planning aspects are taken care of by NCMC and the execution of these is undertaken by the CMC (Crisis Management Committee).

Once the alert stage has been activated, within the first **two hours** of the disaster event the Central Relief Commissioner's office or the Emergency Operation Centre is responsible for holding a meeting of the empowered group of ministers and the Central Coordinating Officer of each ESF. They will meet as and when needed at the request of the CRC. This group under the leadership of the CRC is responsible for the following during the course of this meeting:

- ◆ Review situation reports received from the affected state.
- ◆ Review and document the resources (manpower and material) support that has already been dispatched from the Centre.
- ◆ Address response issues and problems that require national level decisions or policy direction.
- ◆ Take decisions on more resources and relief material that will be required.

Location of the meeting

The meeting will be held at the CRC office in the NCCM or NDM-Control room under the Nodal Ministry (Ministry of Agriculture).

The first meeting should be held within two/three hours of the event parallel to the other activities that have been initiated at the declaration of L3. The activities that get initiated parallel to the CRC meeting are as follows:

- ◆ Briefing of personnel at the central ministries for the first assessment.
- ◆ Departure of first assessment team.

- ◆ Departure of first search and rescue team with MFR and CSSR personnel, if required.
- ◆ Aerial survey of damage.

ARRIVAL POINT

Material/Manpower Flow chart of Central Information and Arrival Centre at Airport

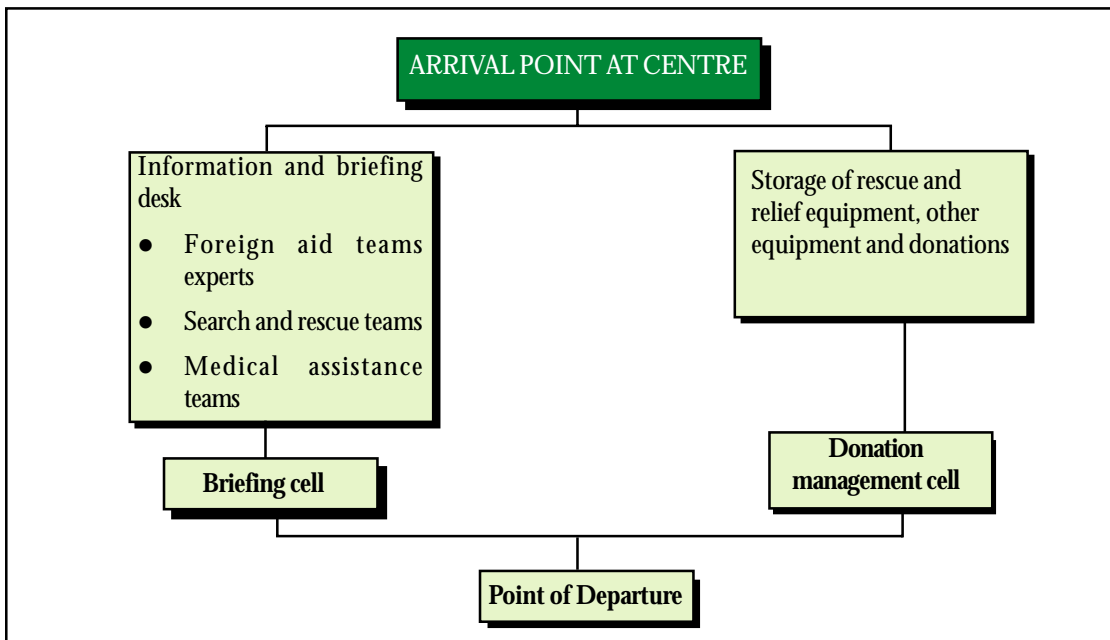
The response activities require active and effective coordination of ground operations. The traffic junctions such as airports, railway stations and bus terminals require to establish 'Information and Arrival Centres' that are the key points for arrival and dispatch of relief materials and rescue workers. The incoming assets from within and outside the country have to be clearly allotted and assigned to disaster sites with the help of various information centres. This information centre will function at a national level and therefore will have to account for all international aid and related formalities.

- ◆ **Arrival point:** The transport junctions where relief materials as well as manpower can be collected for response

activities. It could be the international/national airports or railway stations.

- ◆ **Information and briefing desk:** The manpower will be briefed on the status of disaster, the most affected areas and the key agencies and personnel at the affected state. It will also assist international agencies, arrival of relief material as a priority task.
- ◆ **Storage:** Storage facility at the arrival point where material is categorised and if needed, packed for dispatch.
- ◆ **Briefing cell:** This cell will give specific briefing for different types of field workers.
- ◆ **Donation management cell:** The donations from other states and international agencies are packed and accounted for further distribution.
- ◆ **Point of departure:** Material and manpower are dispatched according to the requirements issued by the EOC at the centre.

V.2



Material/Manpower Flow chart - Information and Arrival Centre at Airport - Affected State

This Emergency Operations Centre (EOC) is activated at the discretion of the CRC based on the resource and coordination scale of the particular disaster. A similar information centre is also required at the state level where all the relief and other facilities can be directed to the affected areas directly according to the needs of the incident commanders and the state EOC.

NATIONAL DISASTER QUICK RESPONSE MECHANISM

Declaration of L3
The declaration of the L3 is done after

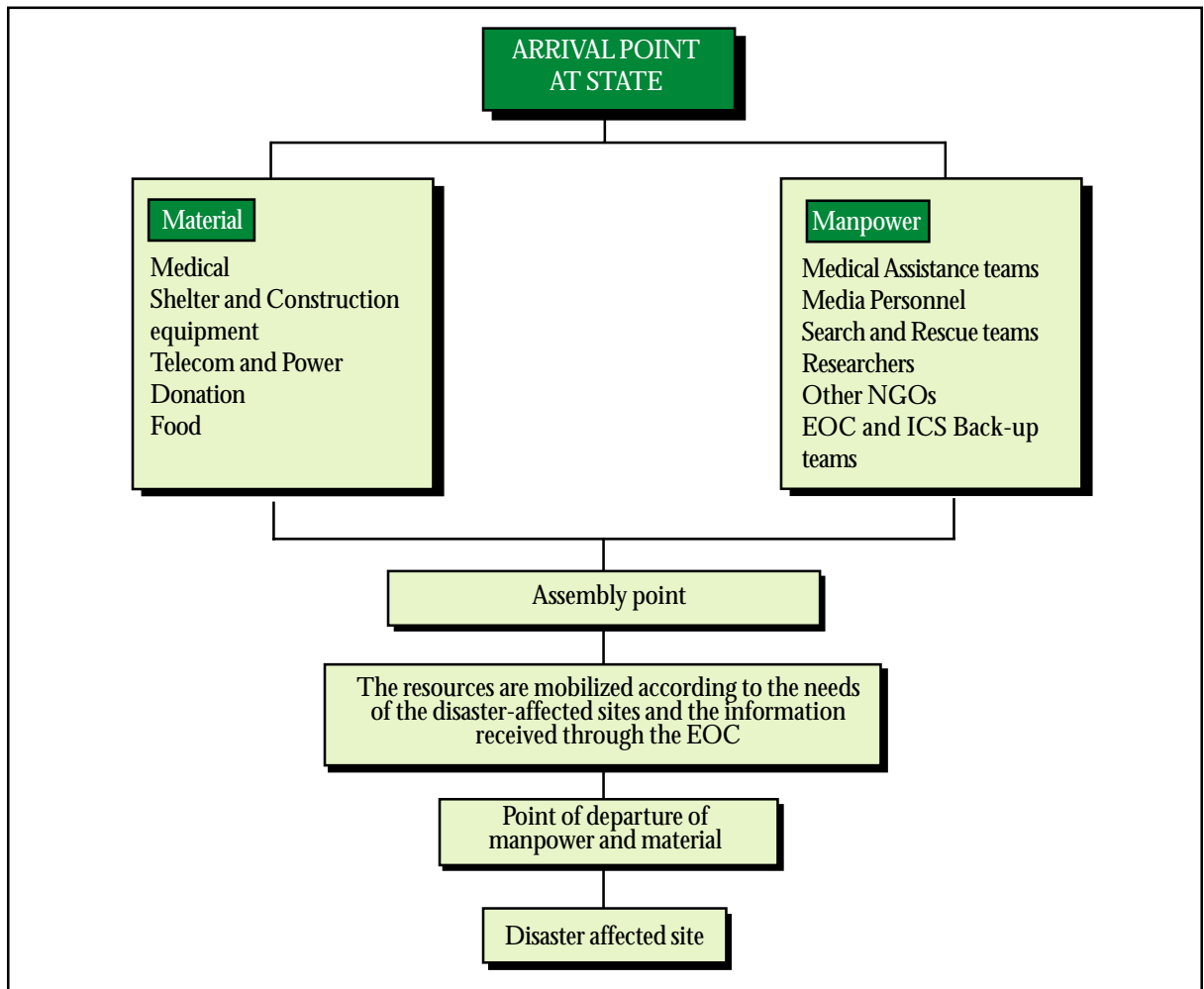
the event has occurred by the Central Relief Commissioner in consultation with the NCMC and the Empowered Group of Ministers

Factors taken into considerations for the declaration of L3

- Parametres set by designated technical authority
- Capacity of State and District to manage the disaster independently

The first assessment team is also headed by the Nodal Officer (Joint Secretary/Secretary) of the Ministry of Agriculture/Home. The CRC's primary responsibility is to coordinate response activities at the Centre and not go to the disaster site. The CRC should be informed by the nodal officer (Ministry of Agriculture)

V.3



before the first assessment team has left.

FORMATS REQUIRED:

Format of declaration of L3

Format of deployment of first assessment team

Handbook for CRC for first 24 hours

Proposed responsibilities of the CRC for the First Meeting

- ◆ Official declaration of L3
- ◆ Information on meetings of the CMG and Crisis Management Group.
- ◆ Arranging for all required inventories from the concerned ministries
- ◆ Official appointment (according to inventories) of all nodal officers for each ESF
- ◆ Once the CRC has been informed about the first assessment team, it is left to the CRC's discretion to nominate any other concerned ministry to be part of the first assessment team
- ◆ Activation of EOC at Centre
- ◆ Information of situation to all cabinet ministries
- ◆ Identify the nodal transport points for the affected state

After the declaration of L3, the first CMG meeting as well as the first assessment team are parallel functions that should be completed within 2 hours of the event.

Quick Response Teams

The Centre requires quick and well-trained teams for responding to a disaster. The magnitude might be so large that medical and other response teams might be required even before any initial assessment. However, a quick assessment for further planning is also required. Therefore, the response teams can be divided into two sections:

- ◆ Assessment Teams – Medical, Power, Telecom, Infrastructure take prime importance

- ◆ Response Teams - Medical, Power and Telecommunication take prime importance.

First 24 hours

First assessment team

The first assessment team will mainly comprise of senior (joint secretary level) officers that are required to make a first/preliminary assessment of damage.

Composition of the designated officers and resources for assessment

Ministry of

- ◆ **Home, Agriculture, Health, Communication, Power, Defence, Aviation**

Apart from these seven ministries, any further addition is left to the discretion of the CMG

- ◆ **Science and Technology, Railway, (for example)**

Checklist(1) of Survival kit

Checklist(1) of Assessment equipment

Formats for National First Assessment

National Media Release

National Assessment Report which should contain

- a) geographic estimate of damage area;
- b) injury and fatality report;
- c) lists of damaged facilities;
- d) resources needed for response operations and;
- e) Prioritisation of the above or immediate priorities.

Materials required for Assessment Team

Survival kit, assessment equipment, SAT-phones and HAM radios

Task at hand:

Assessment according to given formats

First Reports of assessment according to given format

Media releases according to given format

In case of extreme disasters such as high magnitude earthquakes, bomb blasts, terrorist attacks and chemical explosions, the EOC, all emergency phones and other alternate communication lines should be established within the first 24 hours.

Base Report after First Assessment

After the first assessment team has prepared the preliminary report, the CMG and the NCMC re-assess the situation at the site for taking further action. The first assessment team report should include the following:

Extent of Damage in terms of:

- Geographical area
- Expected affected population
- Districts/Areas worst affected
- Damage to infrastructure according to each ESF
- Report by the SRC of the affected State
- Operational access points
- Areas still under high risk (after shocks, fires and other related disasters)
- Condition of the State and District Government buildings and communication infrastructure

Overall need for central assistance in terms of:

- Search and Rescue teams
- Medical first response teams
- Communication equipments
- Labour or volunteers
- Donations
- Specialised technicians for each ESF

In case the EOC has already begun to function, then the reports must also contain summary reports from each ESF and their immediate requirements.

Activation Steps of the EOC in case of a disaster:

Step 1: The activation of the EOC should be followed once the nodal technical agency has issued a warning.

Step 2: The EOC is activated at orders by Centre and EOC Incharge is designated.

Step 3: Orders are sent out by fax from NCMC to related ministries for additional resources for ESFs for the disaster situation and they are asked to prepare and send the first assessment report to the EOC within 4-8 hours of activation.

According to this report the decisions that will be taken by the CRC can be categorised into two possibilities:

Prepare for next 48 hours

- ◆ To reinforce rescue operations through dispatch of relief material and manpower assistance
- ◆ To strengthen communication and coordination with the affected area EOC
- ◆ To accept relief and assistance from international agencies
- ◆ To strengthen the donation management desk at the centre and sort and organise donations for easy distribution at site
- ◆ To call situation-update meetings at regular intervals for close coordination and immediate relief response (Every 2 hours tapering down to thrice a day and so on)
- ◆ To send out additional Search and Rescue and Medical First Response teams

Deactivate response and relief operation at Centre and resume L0 activities

- ◆ If the situation is under control of the State, then to withdraw and deactivate response mechanism at the Centre, step by step, in coordination with the State.
- ◆ Send out deactivation notification to all Cabinet ministries.
- ◆ Send out NCCM team for taking stock and documentation of resources used and other preparedness activities during the alert and initial quick response phase of the disaster after the State has completed its response activities.

First 24-48 hours – Operations

Concept of operations at the EOC

- ◆ The nucleus of the EOC along with a core staff remains operational throughout the year at L0 level of maintenance in order to take care of the following activities:
 - Updation/Maintenance and addition of inventories
 - Keeping updated with other disasters around the world
 - Dry exercises and preparedness/training exercises
- ◆ The Central Relief Commissioner – or his/her designee – will initiate the activation of the emergency services of the EOC as established.
- ◆ The individual who declares the L3 Emergency shall announce the location of the EOC in case it is not the PMO.
- ◆ The CRC – or designee – will determine what staff he/she deems necessary to effectively operate the EOC apart from the prescribed staff.
- ◆ The designated officers of the Home Guards at the EOC will provide

security to the EOC entrance points. Only individuals authorized by the Home Guards will be authorized to enter the EOC.

In case of extreme disasters such as chemical disasters, bomb blasts and terrorist attacks, national security and control takes precedence. The Ministry of Home has to establish special measures to ensure the security of the nation by sealing and evacuating strategic government and national institutions well within 3-4 hours of the occurrence. National borders, air and sea space also have to be protected and if need be, sealed off.

Individuals staffing the EOC are responsible for establishing communications (radio, telephone) with their respective departments.

For effective communication at the Centre and the State, five Nodal Points have been determined. They are as follows:

1. EOC at Centre
2. EOC at State
3. EOC at neighbouring States
4. Information and arrival points at the functional transport junction at State/ neighbouring State
5. Information and arrival point at the international airport

Essential Communication Links at the National EOC

The EOC at National level must have communication links with the following:

- ◆ Crisis State EOC
- ◆ Crisis State SRC
- ◆ Other State EOCs
- ◆ All concerned Ministries
- ◆ Information and arrival point at the Centre

- ◆ Information and arrival point at the affected State

Task at hand

- ◆ Establish EOC at State and Centre airport with:
 - Point of arrival
 - Point of departure
 - Assembly point
- ◆ Set up General Information Desk at airport EOC
- ◆ Establish and activate emergency phone lines and helplines immediately within few hours of the disaster
- ◆ Set up separate desks for each ESF and international aid /NGO
- ◆ Set up desks for donations (cash and material)
- ◆ Establish contact with the affected State EOC
- ◆ Set up EOC at neighbouring States
- ◆ Establish contact with NRSA/ISRO/Defence for aerial and satellite imageries of the affected area
- ◆ Provide information and standard operating procedures for civilian population such as media, researchers, volunteers, field workers, etc. through:
 - Handbook for Operations
 - Handbooks for
 - International NGO
 - N G O
 - Media Personnel
 - Researchers/Students
 - Field/Relief workers
 - Government functionaries
- ◆ Organise/coordinate aerial surveys for rescue operations
- ◆ Establish contact with the disaster site which will have Incident Command Systems placed at the disaster site based on the scale of the disaster
- ◆ Deploy Incident Commanders in consultation with the Centre at strategic incident commands

Within the next 48 hours the EOC at the State as well as the Centre will be jointly involved in the following:

- ◆ Set up information desks at critical locations
- ◆ Identify and channelise different categories of workers under the following at the information desks and provide identification tags for the following:
 - Media
 - Researchers
 - NGO/International Agency
 - Field workers/Volunteers
 - Government officials
- ◆ Place situation reports at bulletin boards outside information desks and EOC
- ◆ Direct Central and international agencies to priority areas (worst affected areas)
- ◆ Identify locations for international and other NGO agencies to set up their site offices for the uniform distribution of aid in all parts of the affected area.
- ◆ Communicate with the District Magistrate and the SRC for local information through:
 - Information flow chart of Information and Arrival Centre at airport
 - Material/Manpower flow chart of Information and Arrival Centre at airport
 - Information flow chart of EOC at Centre
 - Information flow chart of desk for ESF
 - Information flow chart of NGOs
 - Information flow chart of media
 - Information flow chart of researchers
 - Material/Manpower flow chart of

Information and Arrival centre at airport at centre

These charts will be part of the handbooks as well.

The EOC Incharge at the EOC will be responsible for the dissemination of information to the following as given in priority:

- ◆ Standing committee of group of ministers – Home Minister
- ◆ National Steering Committee – Agriculture minister
- ◆ Cabinet Secretary
- ◆ N C C M

Structural set-up of EOC at the centre

1. EOC Incharge
2. Operation sections
3. Emergency Support Functions

Tasks for internal functions at EOC

- ◆ Determine policies during disaster and post-disaster periods
- ◆ Adjudicate conflicting claims and/or requests for emergency personnel, equipment, and other resources
- ◆ Designate responsibilities and duties, as necessary to maintain the optimal use of national resources
- ◆ A Mobile Command Vehicle will be requested to respond to the National EOC.
- ◆ Provide operating units with requested resources for sustained operations
- ◆ Operate staging areas for incoming equipment and personnel
- ◆ Provide for medical care, feeding, and housing of emergency workers
- ◆ Maintain documentation of resource allocation and availability

Checklists for EOC set-up:

- ◆ Minimum standards handbook of layout and dimensions, equipments, etc for EOC

The hotlines, V-SAT and wireless communications should be established at the EOC with the following:

- ◆ State Relief Commissioner
- ◆ Cabinet Secretary
- ◆ IMD
- ◆ Related Ministries (Primary agencies)

Manpower requirements of the EOC

- ◆ Regular staff
 - Deputy Relief Commissioner
 - EDP Manager
- ◆ Staff on call
 - 2 Deputy Secretaries
- ◆ Staff on Disaster Duty
 - Incident Commander
 - Sector/ESF expert
 - ESF Commanders

Checklist for each ESF desk

- ◆ Matrix of primary and secondary functions of each ESF
- ◆ Do's and don't's to be followed during disaster times in EOC
- ◆ Schedule for regular staff
- ◆ Schedule for staff on call
- ◆ Schedule for staff on disaster duty

Brief Material Requirements

- ◆ Data bank of maps and plans at district, state and national level
- ◆ Hardware
- ◆ GIS software
- ◆ State-of-the-art communication equipment
- ◆ Inventories related to all ESFs and relief materials

Transport with wireless equipments (Mobile Command Vehicle)

CONTINUED RESPONSE

The response and rescue operations continue till the local administration is able to take full charge of the situation. Each ESF will

continue their work in a planned manner unless the concerned department is ready to take over the charge. Some of the ESFs may have to continue their assistance for a longer period depending on the extent of damage.

Similarly, some of the ESFs may be required later for rehabilitation and restoration activities. ESFs such as Shelter and Drinking Water may also have to cater to the needs of the relief workers after the first 48 hours.

DEACTIVATION AND DOCUMENTATION

Each agency will discontinue emergency

response operations when advised that their assistance is no longer required in support of the State and Local authorities, or when their statutory responsibilities have been fulfilled.

Upon determination that applicable law enforcement goals and objectives have been met, that no further immediate threat exists, and that Central disaster response actions are no longer required, the Cabinet Secretary, in consultation with the concerned ministry, shall order deactivation. The Central EOC will deactivate and discontinue emergency response operations and undertake detailed documentation of activities and other LO activities.



6

National Emergency Operations Centres

For the effective management of resources, disaster supplies and other response activities, nodal points or centres will have to be established. These points will have to be well networked starting from the Centre to the State and finally leading to the disaster site. Emergency Operations Centres at the Centre and the State and Incident Command Systems at the disaster site are the designated nodal points that will coordinate overall activities and the flow of relief supplies from the Centre. The Emergency Operations Centre stays operational through-out the year in order to take care of the extended L0 activities of data management and training, essential for the smooth functioning of the EOC during crisis situations, whereas the Incident Command System is activated only during the disaster to take care of site-specific activities.

In order to ensure the integrity of the administration of national resources and assets, an Emergency Operations Centre (EOC) will be maintained and run throughout the year which will expand to undertake and coordinate activities during a disaster. Once the prescribed authority has issued warnings/alerts, the EOC will become fully operational.

Back-up EOC

It is recommended that an 'alternate EOC' must also be established. This EOC will be a mirror image of the National EOC and will be a back-up to handle any eventuality at the National EOC. It is proposed that the EOC be established at the NCDM/NCCM so that it can also function as a hub for all L0 activities.

Aim of the Emergency Operations Centre

The aim of EOC at the National level shall be to provide centralized direction and

control of any or all of the following functions:

- ◆ Emergency operations
- ◆ Communications and warning
- ◆ Requesting additional resources during the disaster phase from neighbouring States of the affected area
- ◆ Coordinating overseas support and aid
- ◆ Issuing emergency information and instructions specific to Central ministries; consolidation, analysis, and dissemination of Damage Assessment data
- ◆ Forwarding of consolidated reports to NCCM, Cabinet Secretary and Ministry of Agriculture.

Location of EOC

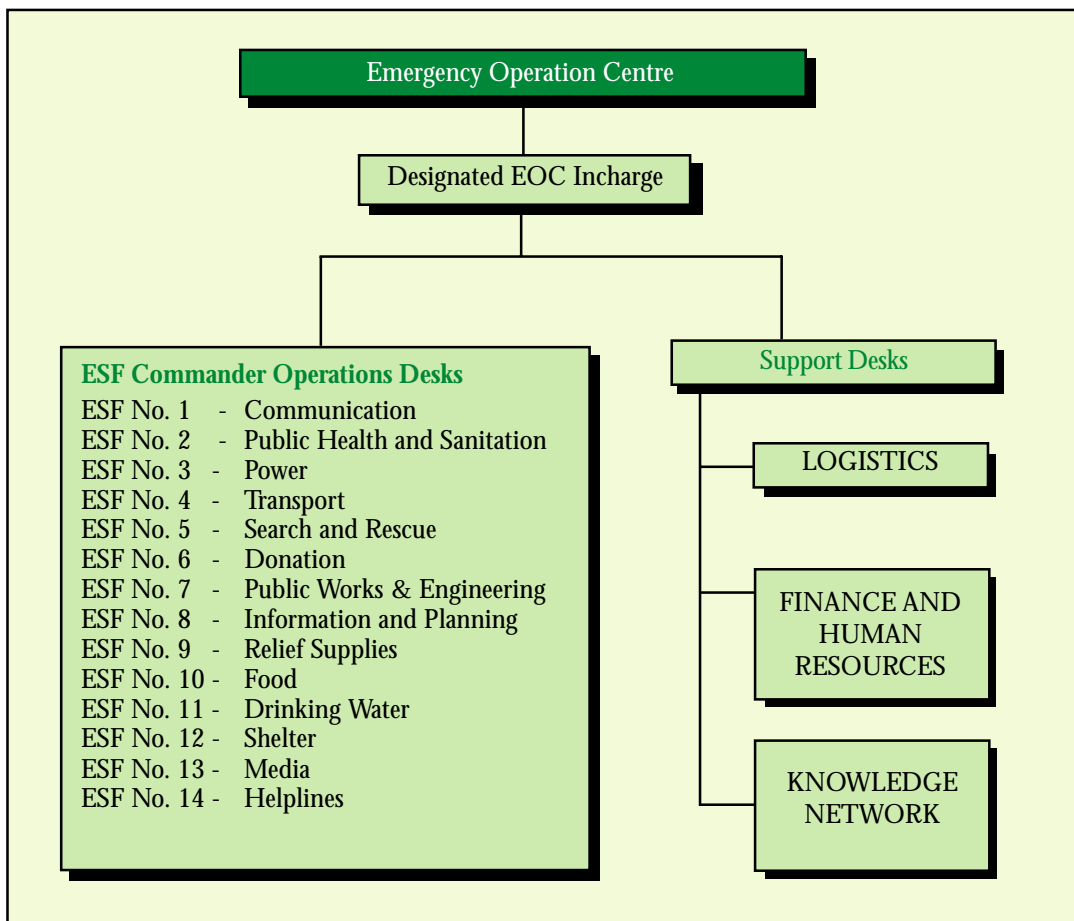
The EOC will be set up at a suitable location

with all infrastructure as per the given layout.

Concept of Operations at the EOC

- ◆ The Central Relief Commissioner or his/her designee will initiate the activation of emergency services of the EOC as established.
- ◆ Activation of the EOC should immediately follow the declaration of a National Level Emergency.
- ◆ The individual who declares the L3 Emergency shall announce the location of the EOC in case of any eventuality to the National EOC.
- ◆ Individuals staffing the EOC are responsible for establishing communications such as radio and telephone with their respective departments.

VI.1



- ◆ The CRC – or designee — will determine what staff he/she deems necessary to effectively operate the EOC apart from the prescribed staff.
- ◆ The designated officers of the Home Guards at the EOC will provide security to the EOC entrance points. Only individuals allowed by the Home Guards will be authorized to enter the EOC.

The 'EOC Incharge' will be responsible for the dissemination of information to the following as given in priority:

- ◆ Standing committee of group of ministers - Home Minister
- ◆ National Steering Committee - Agriculture Minister
- ◆ Cabinet Secretary
- ◆ NCCM

Activation steps of the EOC in case of a disaster

Step 1: The EOC is activated on orders from NCMC (National Crisis Management Committee)

Step 2: The activation of the EOC should be followed after the declaration of L3 disaster

Step 3: Orders are sent out by fax from the NCMC for setting up ESFs for the disaster situation and are asked to prepare and send the First Assessment Report to the EOC within the time period laid out by NCMC

Organizational set-up of EOC at the Centre

1. EOC Incharge
2. Operation Sections
3. Emergency Support Functions

EOC Incharge: He/She is the primary role player in the EOC with considerable years of experience in the area of disaster response. He/She is responsible for the

overall coordination and decision making at the EOC.

Operation Sections: For the smooth and planned functioning of the EOC, organisational sections of the EOC have to be maintained throughout the year. These sections are as follows:

(i) Executive Section

- ◆ Determines policies during disaster and post-disaster periods
- ◆ Adjudicates conflicting claims and/or requests for emergency personnel, equipment, and other resources
- ◆ Designates responsibilities and duties, as necessary, to maintain the optimal use of national resources.

A Mobile Command Vehicle will be requested to respond to the National EOC.

(ii) Logistics Section

- ◆ Provides operating units with requested resources for sustained operations
- ◆ Operates staging areas for incoming equipment and personnel
- ◆ Provides for medical care, feeding, and housing of emergency workers
- ◆ Maintains documentation of resource allocation and availability

(iii) Finance and Human Resource Section

Emergency Support Functions

- ◆ Communication
- ◆ Power
- ◆ Transport
- ◆ Health and Medical Care (Mobile hospitals)
- ◆ Food
- ◆ Information and Planning
- ◆ Search and Rescue
- ◆ Public Works and Engineering

- ◆ Relief Supplies
- ◆ Donation Coordination
- ◆ Drinking Water (Water tankers/ Water treatment plant)
- ◆ Shelter
- ◆ Media
- ◆ Helplines

The hotlines, V-SAT and wireless communications should be established at the EOC with the following:

- ◆ State Relief Commissioner
- ◆ Cabinet Secretary
- ◆ IMD
- ◆ Related Ministries (Primary agencies)

Manpower requirements of the EOC

- ◆ Regular Staff
 - Deputy Relief Commissioner
 - EDP Manager
- ◆ Staff on call
 - 2 Deputy Secretaries
- ◆ Staff on disaster duty
 - Incident Commander
 - Sector/ESF Expert
 - ESF Commanders

(These are mainly indicative, the details of which can be drawn up by the CRC)

Equipment Requirements

- ◆ Data bank of maps and plans at District, State, and National level within a GIS set-up.
- ◆ Hardware
- ◆ GIS software
- ◆ State-of-the-art communication equipment
- ◆ Inventories related to all ESFs and relief materials

- ◆ Transport with wireless equipments (Mobile Command Vehicle)
- ◆ Checklist for each ESF desk
- ◆ Matrix of primary and secondary functions of each ESF

A Disaster Supplies Kit should include:

- ◆ a 3-day supply of water (one gallon per person per day) and non-perishable food
- ◆ one change of clothing and footwear per person
- ◆ one blanket or sleeping bag per person
- ◆ a first aid kit, including prescription medicines
- ◆ emergency tools, including a battery-powered Weather Radio and a portable radio, flashlight, and plenty of extra batteries
- ◆ special items for infant, elderly, or disabled family members

INCIDENT COMMAND SYSTEM

ICS is an effective model for centralized management. It can clearly define staff roles and responsibilities and lines of communications. In the ICS model the base of operations for response to a disaster (incident) is the Command Centre.

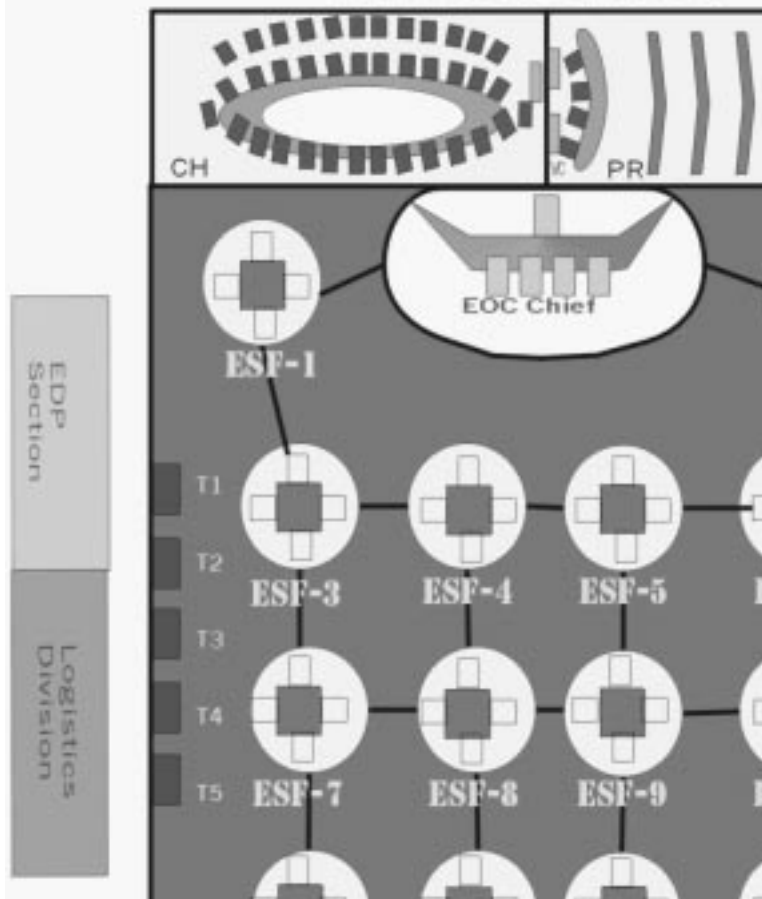
Incident Commander—Upon activation of the plan, the Incident Commander will establish the Command Centre and initiate ICS.

Staffing Positions

Positions include:

- ◆ Incident Commander
- ◆ Information Officer
- ◆ Safety Officer
- ◆ Inter-agency Coordinator
- ◆ Operations Officer
- ◆ Planning Officer
- ◆ Logistics Officer
- ◆ Finance Officer

EMERGENCY OPERATIONS PROPOSED LAYOUT

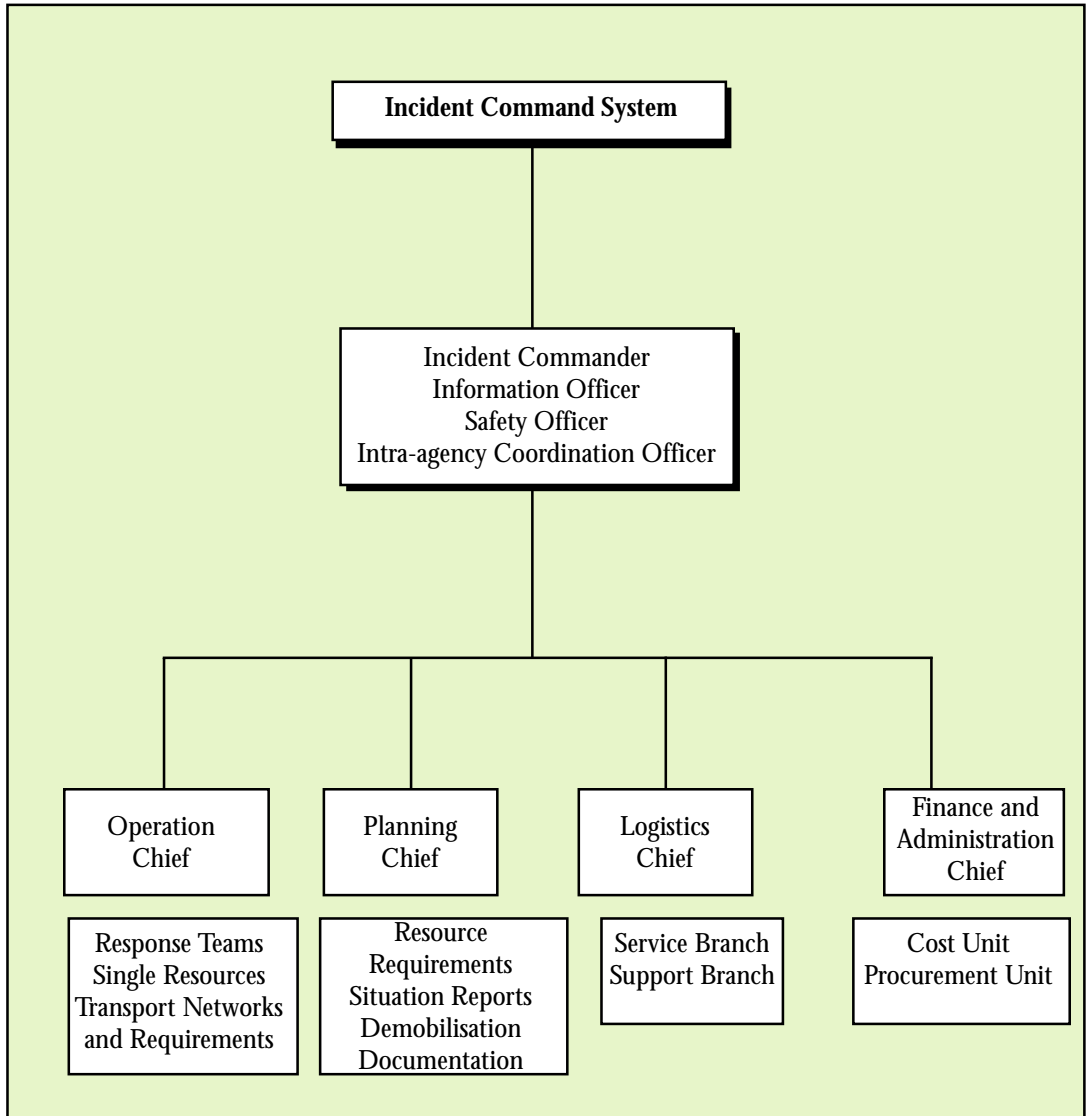


All EOC facilities should be disaster resistant.

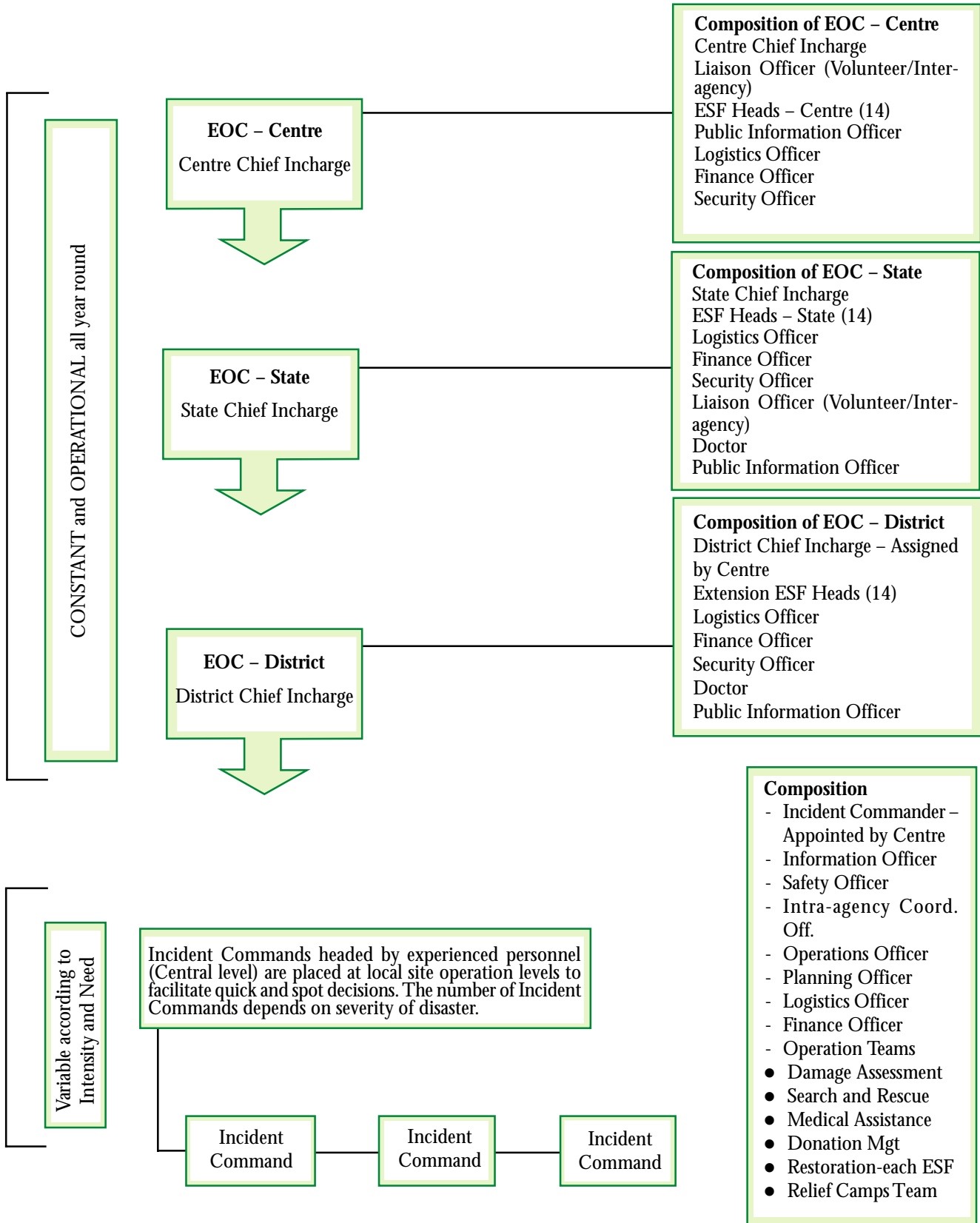
The following chart provides a brief explanation of the command structure of Incident Command System which will have

to be further detailed out by each of the States.

VI.2



Flow Chart (EOC and ICS)





Emergency Support Functions

The interdependence of facilities and their management creates a difficult situation for disaster managers during a disaster. Therefore, a crisis situation demands the attention and assistance of experts from different fields and sectors in order to ensure a quick and effective recovery. However, if the assistance provided is not predefined and coordinated it can lead to slow progress and relief work gets adversely affected. Keeping this aspect of disaster management in view, fourteen Emergency Support Functions have been conceptualised to take care of various response and infrastructure facilities, imperative for immediate as well as long-term response to disasters.

Emergency Support Functions are the essentials of Emergency Management comprising of various coordinating agencies, which manage and coordinate specific kinds of assistance common to all disasters types. Each ESF is headed by a lead organisation/ ministry responsible for coordinating the delivery of goods and services to the disaster area, and is supported by numerous other organisations. These ESFs form an integral part of the Emergency Operation Centres and each ESF should coordinate its activities from the allocated EOC. Extension teams and workers of each ESF will be required to coordinate response procedures at the affected site.

In the National Response Plan, the proposed Emergency Support Functions have been conceptualised as an integral part to carry out response activities. In the period immediately after a major disaster or emergency requiring Central response, primary agencies, when directed by NCCM, will take actions to identify requirements and mobilise and deploy resources to the affected area to assist the State in its response actions under fourteen ESFs (Emergency Support

Functions). Each ESF is headed by a primary agency, which has been selected based on its authority, resources and capabilities to support the functional area.

The ESF will coordinate directly with their functional counterpart, State agencies, to provide the assistance required by the State. Request for assistance will be channelled from District level through the designated State agencies for action. Based on the State-identified response requirements, appropriate Central response assistance will be provided by an ESF to the State or at the State's request, directly to an affected area.

PRIMARY AND SECONDARY AGENCIES

The designated primary agency, acting as the Central agency will be assisted by one or more support agencies (secondary agencies) and will be responsible for managing the activities of the ESF (Emergency Support Functions) and assisting the State in the rescue and relief activities and ensuring that the mission is accomplished. The primary and secondary agencies have the authority to execute response operations to directly support the State needs.

PLANNING ASSUMPTIONS

In disaster situations, effective utilisation of resources can be ensured if conditions of the disaster are assessed and taken into consideration during the planning phase. Disasters cause loss of property, injury and disruption of normal life and have an impact on social and physical infrastructures.

The extent of casualties and damage will be based on factors such as the time of occurrence, severity of impact, weather conditions, population density, type of constructions and possible triggering of secondary events such as fires and floods. When planning for a response for disasters, these assumptions can benefit planning of effective response for the crisis situation.

This chapter also attempts to conceptualise the activities and handbooks that will have to be developed by the concerned ministries for efficient execution of the plan. These ESFs are proposed in the National Response Plan and they are perceived as an effective tool for the management of disasters. The ESFs are in the conceptual stage and continuous updation of the same should be carried out with the changing scenario so as to make them more effective during a disaster.

In the National Response Plan, the following ESFs have been conceptualised as an integral part in carrying out response activities. The following ministries can be considered as the primary agencies for each ESF

- ESF No. 1 - Communication
- ESF No. 2 - Public Health and Sanitation
- ESF No. 3 - Power
- ESF No. 4 - Transport
- ESF No. 5 - Search and Rescue
- ESF No. 6 - Donation
- ESF No. 7 - Public Works and Engineering
- ESF No. 8 - Information and Planning
- ESF No. 9 - Relief Supplies
- ESF No. 10 - Food
- ESF No. 11 - Drinking Water
- ESF No. 12 - Shelter
- ESF No. 13 - Media
- ESF No. 14 - Helplines

Primary Agency for Each ESF

- ESF No. 1 - Communication - Ministry of Communication
- ESF No. 2 - Public Health and Sanitation - Ministry of Health and Family Welfare

- ESF No. 3 - Power – Ministry of Power
- ESF No. 4 - Transport – Ministry of Transport
- ESF No. 5 - Search and Rescue – Ministry of Defence/ Ministry of Home Affairs
- ESF No. 6 - Donation – Ministry of Agriculture
- ESF No. 7 - Public Works and Engineering – Ministry of Urban Affairs and Poverty Alleviation
- ESF No. 8 - Information and Planning – Ministry of Information Technology
- ESF No. 9 - Relief Supplies – Ministry of Planning and Programme Implementation
- ESF No. 10 - Food - Ministry of Food and Civil Supplies
- ESF No. 11 - Drinking Water – Ministry of Water Resources
- ESF No. 12 - Shelter - Ministry of Urban Affairs and Poverty Alleviation
- ESF No. 13 - Media – Ministry of Information and Broadcasting
- ESF No. 14 - Helplines - Ministry of Disaster Management (Proposed)

LIST OF MINISTRIES

Ministry of Agriculture	- MoA
Ministry of Defence	- MoD
Ministry of Surface Transport	- MoST
Ministry of Power	- MoP
Ministry of Health and Family Welfare	- MoH&FW
Ministry of Water resources	- MoWR

Department of Animal Husbandry	- DoAH
Ministry of Urban Development and Poverty Alleviation	- MoUDPA
Ministry of Planning and Programme Implementation	- MoPPI
Ministry of Home Affairs	- MHA
Ministry of Rural Development	- MoRD
Ministry of Information Technology	- MoIT
Ministry of Information and Broadcasting	- MoI&B
Ministry of Communication	- MoC
Ministry of Heavy Industries	- MoHI
Ministry of Social Justice and Empowerment	- MoSJ&E
Ministry of Civil Aviation	- MoCA
Ministry of Non-Conventional Energy Sources	- MoNES
Ministry of Petroleum and Natural Gas	- MoP&NG
Ministry of Finance	- MoF
Ministry of External Affairs	- MEA
Ministry of Commerce and Industry	- MoC&I
Ministry of Science and Technology	- MoSc&T
Ministry of Labour	- MoL
Ministry of Consumer Affairs and Public Distribution	- MoCA&PD
Voluntary Agencies	- VA
Department of Drinking Water	- DDW
Department of Food and Public Distribution	- DFPD
Ministry of Disaster Management	- MoDM
Ministry of Railways	- MoR
Ministry of Food and Civil Supplies	- MoFCS

- ◆ Initially the main focus of the State and the Local governments will be on the coordination of lifesaving activities concurrent with re-establishing control of the disaster affected area

Activities on the Receipt of Warning or Activation of EOC

- ◆ Establish radio communication with the State EOC and Local Incident Commander
- ◆ Appoint a Nodal Officer-Communication at the national level
- ◆ Renew and update precautionary measures and review with the staff the precautions to be taken to protect equipment
- ◆ Establish an emergency tool kit including cable cutters, cutting pliers, spanners, ropes, cross cut saws, pulley blocks with ropes and hand gloves

Initial Actions

- ◆ Identify operational telecommunication facilities within the affected area
- ◆ Identify telecommunication facilities that need to be transported to the affected site to establish emergency operational services
- ◆ Identify the actual and planned action of private telecommunication companies towards reconstruction of their facilities
- ◆ Establish a temporary communication facility through mobile exchanges, on priority, for use by State EOC on priority basis, as well as district officials, members of the State government

machinery, officials of transit and relief camps, and NGOs

- ◆ Establish a temporary communication facility for public use
- ◆ Carry out an assessment of overall damage to the following:
 - ◆ Overhead route damage
 - ◆ Cable damage
 - ◆ Specific equipment damage

Responsibilities

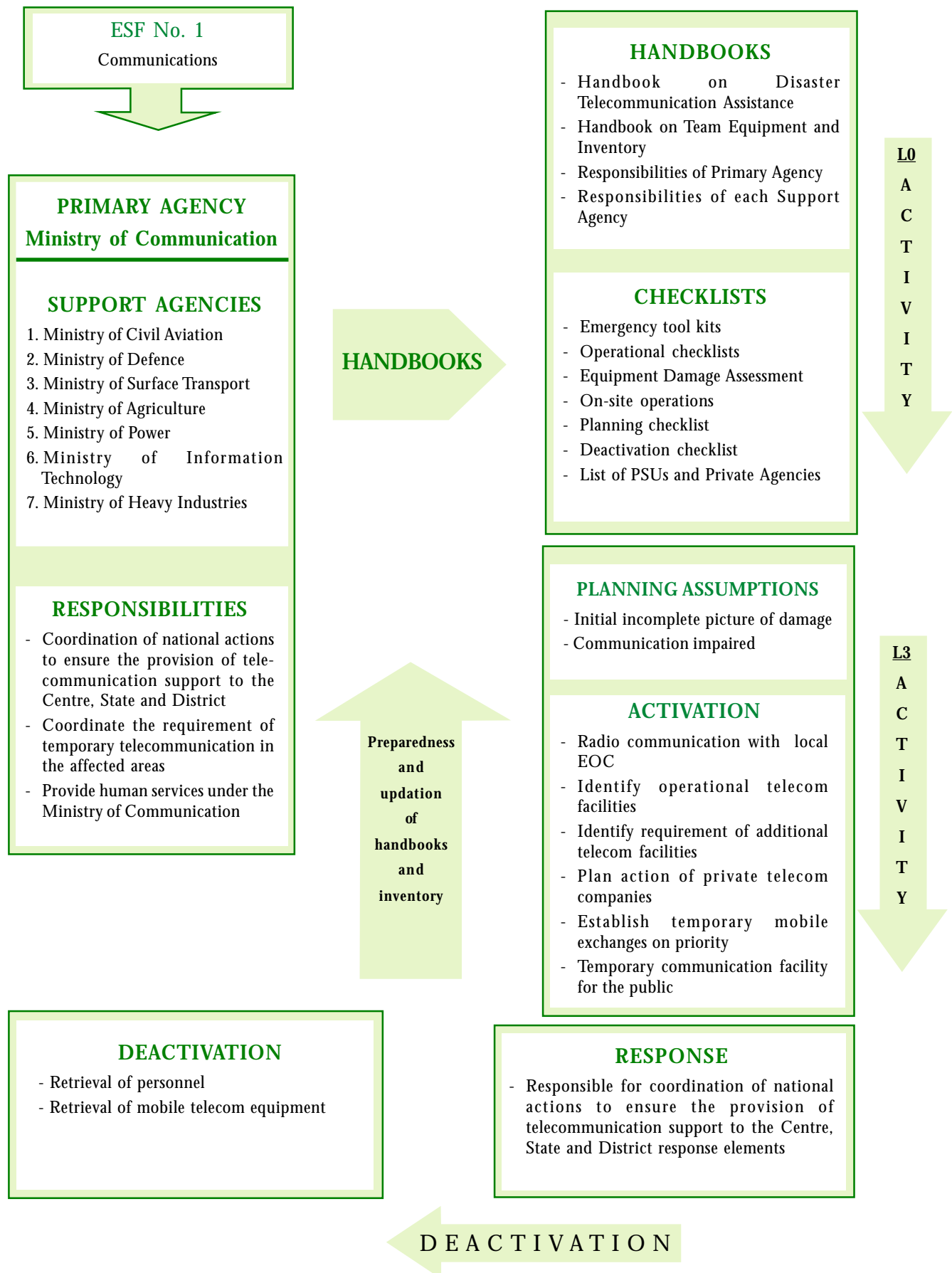
The ESF is responsible for the coordination of national actions to ensure the provision of telecommunication support to the Centre, State and District response elements.

It will coordinate the requirement of temporary telecommunication in the affected areas.

It will extend support that includes government furnished communication and private communication.

Minimum Standards Required

- ◆ Checklist of tool kits
- ◆ Handbook on Disaster Telecommunication Assistance
- ◆ Handbook on Team Equipment and Inventory
- ◆ Responsibilities of Primary Agency
- ◆ Responsibility of each Support Agencies
- ◆ Emergency toolkits
- ◆ Operational checklists
- ◆ Equipment Damage Assessment
- ◆ On-site operations
- ◆ Planning check list
- ◆ Deactivation checklist
- ◆ List of PSUs and Private Agencies



EMERGENCY SUPPORT FUNCTION 2

Public Health and Sanitation

Primary Agency

- ◆ Ministry of Health and Family Welfare

Secondary Agencies

- ◆ Ministry of Transport
- ◆ Ministry of Power
- ◆ Ministry of Defence
- ◆ Ministry of Animal Husbandry and Dairying
- ◆ Ministry of Agriculture
- ◆ Ministry of Communication
- ◆ Ministry of Home
- ◆ Ministry of Urban Development and Poverty Alleviation
- ◆ Ministry of Water Resources
- ◆ Voluntary Agencies and PSUs

Purpose

The purpose of ESF2 is to provide Government of India coordinated assistance to supplement State and Local resources in response to public health and medical care needs following a significant natural or man-made disaster. Under ESF 2 Ministry of Health and Family Welfare directs sanitation and medical assistance to the affected State. Resources will be furnished when the State and District resources are overwhelmed and medical and/or public health assistance is requested from the Central government.

Planning Assumptions

- ◆ Sudden outbreak of epidemic or medical emergency as an aftermath of disaster such as earthquake, flood, landslide, fire, etc.
- ◆ Contamination of water and food

- ◆ Unhygienic and unclean surroundings in the disaster affected site
- ◆ Disruption of communication and transport facilities as a result of other disasters
- ◆ Disruption of laboratory and hospital facilities
- ◆ The damage and destruction by any natural disaster will produce urgent need for counselling for disaster victims and response personnel
- ◆ Disruption of sanitation services and facilities, loss of power and massing of people in shelters may increase the possibility of disease and injury

Activities on Receipt of Warning or Activation of National EOC

- ◆ ESF2 should become operational within 2 hours of notification
- ◆ Appoint one personnel as Nodal Health Officer for the affected area
- ◆ Ensure that personnel working within the State come under the direction and control of State Nodal Health Officer
- ◆ The National level personnel once deployed will directly come under the control of the Nodal Health Officer at the State
- ◆ Determine types of injuries, illnesses expected, drugs and other medical items required, and accordingly ensure that extra supply of medical items can be obtained quickly
- ◆ Provide information to the entire hospital staff about the disaster, likely damage and effects, and information about ways to protect equipment and property
- ◆ Prepare an area of the hospital for receiving large number of casualties

Responsibilities of Primary Agencies

- ◆ To coordinate, direct and integrate national level response to provide medical and sanitation health assistance to the affected area.
- ◆ Till the State ESF2 becomes operational, collection, analysis and dissemination of requests for medical and public health assistance will be the responsibility of National ESF2 with the assistance of Department of Health. Once State ESF2 is operational the responsibility will be transferred to it and it will act as support to the State for providing medical assistance.
- ◆ Direct the activation of health/medical personnel, supplies and equipment in response to the request for national assistance.
- ◆ Coordinate evacuation of patients from the disaster area when it is considered important by the State authorities according to the nature of injury and the priority of evacuation. Patients whose injuries do not pose any threat to their health are discharged after first aid.
- ◆ Provide human services assistance under the Department of Health.
- ◆ To prepare and keep ready Mobile Hospitals and stock them with emergency equipment that may be required after the disaster.
- ◆ Check stocks of equipment and drugs which are likely to be required after the disaster. These can be categorised as:
 - ◆ Treatment of cuts and fractures such as tetanus, toxoid, analgesics and antibiotics.
 - ◆ Drugs used for the treatment of water-borne diseases including oral rehydration supplies.
 - ◆ Burns and fire infections
 - ◆ Detoxification including breathing equipment.

- ◆ Fissure material
- ◆ Surgical dressing
- ◆ Plaster rolls
- ◆ Disposable needles and syringes
- ◆ Local antiseptics
- ◆ There should be a specialised team of doctors for a particular kind of injury.

Minimum Standards Required

- ◆ Detailed checklist of symptoms of common diseases along with medicine dosages
- ◆ Checklist of doctor's tool kit for specialised doctors
- ◆ Checklist for maintaining hygienic conditions
- ◆ Disaster Health Assistance and the emergency services
- ◆ Team Equipment and Inventory
- ◆ Responsibilities- Primary/Support agencies
- ◆ Minimum standards of health facilities
- ◆ Location of health facilities in the disaster area (map)
- ◆ Information manual for biological disaster
- ◆ Doctors manual for emergency relief
- ◆ Emergency toolkits
- ◆ Operational checklists
- ◆ Equipment Damage Assessment
- ◆ On-site operations
- ◆ Planning check list
- ◆ Qualification of health personnel
- ◆ Checklist of doctor's tool kit
- ◆ Symptoms of common ailments
- ◆ Deactivation checklist
- ◆ Dosages checklist for common epidemics and ailments during a disaster.

ESF No. 2
Public Health and Sanitation

PRIMARY AGENCY
Ministry of Health & Family Welfare

SUPPORT AGENCIES

1. Ministry of Power
2. Ministry of Transport
3. Ministry of Defence
4. Ministry of Animal Husbandry and Dairying
5. Ministry of Agriculture
6. Ministry of Communication
7. Ministry of Home Affairs
8. Ministry of Urban Dev. and Poverty Alleviation
9. Ministry of Water Resources

RESPONSIBILITIES

- To coordinate, direct and integrate national level response
- Direct activation of medical personnel, supplies and equipment
- Coordinate the evacuation of patients
- Provide human services under the dept of health.
- To prepare and keep ready Mobile Hospitals and stock
- Check stocks of equipment and drugs

DEACTIVATION

- Retrieval to L0 activities of health personnel
- Retrieval of health and sanitation equipment
- Accountability and return of equipment by all personnel to logistic sections
- Ensure all patient records are complete and submitted to the EOC

HANDBOOKS

Preparedness and updation of handbooks and inventory

HANDBOOKS

- Disaster Health Assistance
- Team Equipment and Inventory
- Responsibilities- Primary/Support Agencies
- Minimum standards of health facilities
- Location of health facilities in disaster area
- Information manual for Biological Disaster Management
- Doctors Manual for Emergencies

CHECKLISTS

- Emergency tool kits
- Operational checklists
- Equipment Damage Assessment
- On-site operations
- Planning checklist
- Qualification of health personnel
- Checklist of doctor's tool kit
- Symptoms of common ailments
- Deactivation checklist
- Dosages checklist for common epidemics and ailments during disasters

PLANNING ASSUMPTIONS

- Outbreak of epidemic or medical emergency as secondary disaster
- Contamination of water and food
- Unclean disaster affected site
- Disruption of communication and transport facilities
- Disruption of labs and hospital
- Urgent need for mental health crisis counsel for disaster victims
- Disruption of sanitation facilities, loss of power and massing of people in shelters may increase disease and injury

ACTIVATION

- ESF to be operational on 2 hrs. of notification
- Determine type of injuries, illnesses and medicines needed
- Provide information to all the hospitals on likely damage and expected injuries

RESPONSE

- Provide systematic approach to patient care
- Perform medical evaluation and treatment as needed
- Maintain patient tracking system to keep record of all patients treated

DEACTIVATION

L0
A
C
T
I
V
I
T
Y

L3
A
C
T
I
V
I
T
Y

EMERGENCY SUPPORT FUNCTION 3

Power

Primary Agency

- ◆ Ministry of Power

Secondary Agencies

- ◆ Ministry of Agriculture
- ◆ Ministry of Defence
- ◆ Ministry of Transport
- ◆ Ministry of Heavy Industries and Public Enterprises
- ◆ Ministry of Non-Conventional Energy Sources
- ◆ Ministry of Petroleum and Natural Gas

Purpose

To facilitate restoration of energy systems after a natural disaster.

Planning Assumptions

- ◆ There will be wide spread prolonged electricity failure
- ◆ There will be panic hoarding of fuel in some parts of the affected area
- ◆ Accessibility to the affected area is difficult

Activities on the Receipt of Warning or Activation of EOC

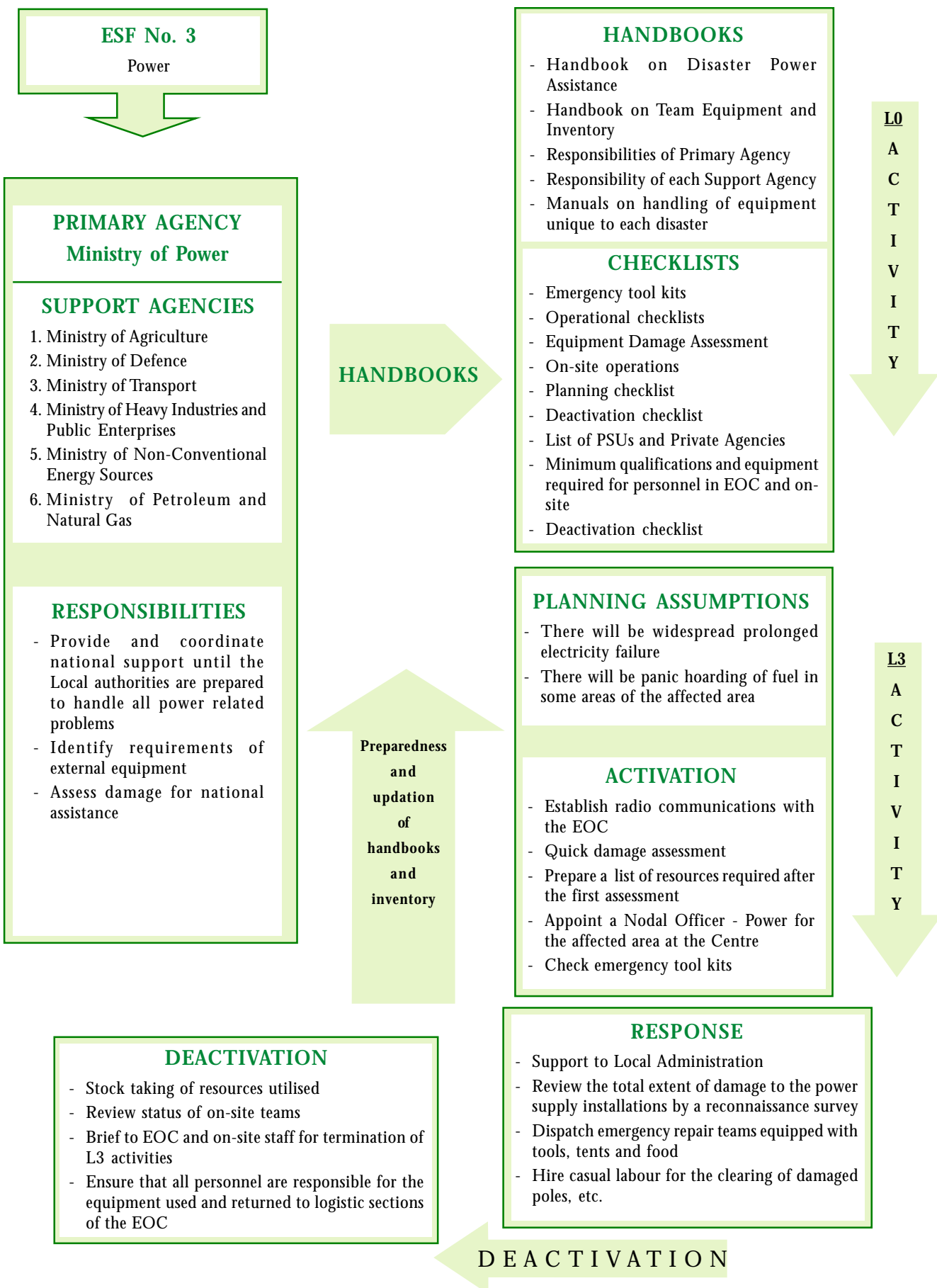
- ◆ Establish radio communications with the EOC
- ◆ Do a quick damage assessment which should include the following:
 - ◆ High tension lines
 - ◆ Substations
 - ◆ Transformers
 - ◆ Insulators
 - ◆ Poles
 - ◆ Other equipment

- ◆ Prepare a First Assessment Report in conjunction with other ESFs for the CRC to take further decisions
- ◆ Prepare a list of resources required after the first assessment
- ◆ Appoint a Nodal Officer – Power for the affected area at the Centre
- ◆ Check emergency tool kits
- ◆ Assist authorities to reinstate generators for public facilities such as
 - ◆ Hospitals
 - ◆ Water supply and drainage board
 - ◆ Police stations
 - ◆ Telecommunication buildings
 - ◆ Meteorological stations
- ◆ Review the total extent of damage to power supply installations by a reconnaissance survey
- ◆ Dispatch emergency repair teams equipped with tools, tents and food
- ◆ Hire casual labour and brief them about the situation for clearing of damaged poles, etc.
- ◆ Prepare a detail report of the damage
- ◆ Establish temporary electricity supplies for relief material warehouses

Minimum Standards Required

- ◆ Handbook on Disaster Power Assistance
- ◆ Handbook on Team Equipment and Inventory
- ◆ Responsibilities of Primary Agency
- ◆ Responsibility of each Support Agency
- ◆ Manuals on handling of equipment which is unique to a particular disaster
- ◆ Emergency tool kits
- ◆ Operational checklists

- ◆ Equipment Damage Assessment
 - ◆ On-site operations
 - ◆ Planning checklist
 - ◆ Deactivation checklist
- ◆ List of PSUs and Private Agencies
 - ◆ Minimum qualifications and equipment required for personnel in EOC and on-site
 - ◆ Deactivation checklist



EMERGENCY SUPPORT FUNCTION 4

Transport

Primary Agency

Ministry of Surface Transport/Ministry of Railways

Secondary Agencies

Ministry of Agriculture

Ministry of Defence

Ministry of Home Affairs

Ministry of Civil Aviation

Ministry of Communications

Ministry of Power

Ministry of Urban Development and Poverty Alleviation

Purpose

The purpose of ESF4 is to provide for the coordination of Central transport support to the State and the Local government. ESF 4 coordinates the use of transportation resources to support the needs of emergency support forces requiring transportation capacity to perform their emergency response, recovery and assistance missions. It also works with outside agencies for transportation coordination and prepares resource requests for assistance when needed.

Planning Assumptions

- ◆ The State civil transportation infrastructure will sustain damage, limiting access to the disaster area.
- ◆ Access will improve as routes are cleared and repaired or as detours are built.
- ◆ The requirements of the transportation capacity will exceed the capacity of the State control or accessible assets, demanding assistance from the National Government.

- ◆ The movement of relief supplies will create congestion in the transportation services and hamper restoration of the system.

Activities on Receipt of Warning or Activation of EOC

- ◆ Arrange for transport to the affected area
 - ◆ Tractor shovel
 - ◆ Tipper
 - ◆ Auxiliary jeeps
- ◆ All new construction and repair activities should be halted and secured with sandbags, tarpaulins, etc.
- ◆ Polythene for the protection of freight and equipment should be arranged for
- ◆ All perishable and breakable items should be loaded in lorries and padlocked
- ◆ Reserve stocks for fuel should be checked
- ◆ Inspection of all bridges by a bridge engineer including an under water survey of foundations, piers and abutments should be done. A full check on all concrete and steel works should be included and repairs carried out
- ◆ Continuous regular weeding and cleaning of ditches should be carried out by the maintenance engineer staff

Responsibilities

- ◆ Overall coordination of the Centre and the civil transportation capacity in support of Central, State and Local government entities
- ◆ Restoration of roads and the emergency supply routes should be carried out first
- ◆ Coordination and implementation of

emergency related response and recovery functions performed under the Ministry of Surface Transport including the prioritisation and/or allocation of civil transport, air and marine traffic control, search and rescue and damage assessment.

Minimum Standards Required

- ◆ Inventories of available transport facilities
- ◆ Responsibilities of Primary Agency
- ◆ Responsibility of each Support Agency
- ◆ Handbook on transport assistance

- ◆ Handbook on Team Equipment and Inventory
- ◆ Emergency toolkits
- ◆ Operational check slists
- ◆ Equipment Damage Assessment
- ◆ On-site operations
- ◆ Formats for check of bridges and other steel works
- ◆ Planning checklist
- ◆ Deactivation checklist
- ◆ List of PSUs and Private Agencies

ESF No. 4
Transportation

PRIMARY AGENCY

Ministry of Surface Transport/Ministry of Railways

SUPPORT AGENCIES

- Ministry of Agriculture
- Ministry of Defence
- Ministry of Home Affairs
- Ministry of Civil Aviation
- Ministry of Communications
- Ministry of Power
- Ministry of Urban Development and Poverty Alleviation
- Ministry of Railways

RESPONSIBILITIES

- Overall coordination of the Centre and the civil transportation capacity in support of Central, State and Local government entities
- Restoration of roads
- Coordination of and implement emergency related response and recovery functions, search and rescue and damage assessment

HANDBOOKS

Preparedness and updation of handbooks and inventories

HANDBOOKS

- Responsibilities of Primary Agency
- Responsibility of each support agency
- Handbook on transport assistance
- Handbook on team Equipment and Inventory

CHECKLISTS

- Emergency toolkits
- Operational checklists
- Equipment Damage Assessment
- On-site operations
- Formats for check of bridges and other steel works
- Planning checklist
- Deactivation checklist
- List of PSUs and Private Agencies

PLANNING ASSUMPTIONS

- Infrastructure damage limiting access
- Routes will be cleared, detours built
- Requirement of the transportation capacity will exceed the State capacity
- Relief activities will create congestion to the transport routes and hamper the repair activity

ACTIVATION

- Arrange for transport for the affected area
- All ongoing construction should be halted with appropriate measures
- Inspection of all the bridges
- All goods should be appropriately packed

RESPONSE

- Reserve stocks for fuel should be checked
- Polythene for the protection of freight and equipment

L0
A
C
T
I
V
I
T
Y

L3
A
C
T
I
V
I
T
Y

DEACTIVATION

- Take stock of all national assets available during disaster and other logistic support
- Support to the State machinery and gradual retrieval of the additional support
- Inform all the additional support teams for the deactivation stage

DEACTIVATION

EMERGENCY SUPPORT FUNCTION 5

Search and Rescue

Primary Agency

- ◆ Ministry of Defence

Secondary Agencies

- ◆ Ministry of Agriculture
- ◆ Ministry of Science and Technology
- ◆ Ministry of Health and Family Welfare
- ◆ Ministry of Heavy Industries and Public Enterprises
- ◆ Ministry of Home Affairs
- ◆ Ministry of Surface Transport
- ◆ Ministry of Civil Aviation
- ◆ Voluntary Agencies and PSUs

Purpose

The purpose of ESF 5 is to provide specialised life saving assistance to state and Local authorities in the event of a major disaster or emergency. Its operational activities include locating, extricating and providing on-site medical treatment to victims trapped in collapsed structures

Planning Assumptions

- ◆ State and Local machinery will be overwhelmed and unable to respond to all requirements.
- ◆ Local residents, workers or volunteers may initiate some search and rescue but will lack specialised techniques. Spontaneous volunteers will require coordination.
- ◆ Access to damage area will be limited. Some sites may be accessible only through air or water.

Activities on the Receipt of Warning or Activation of EOC

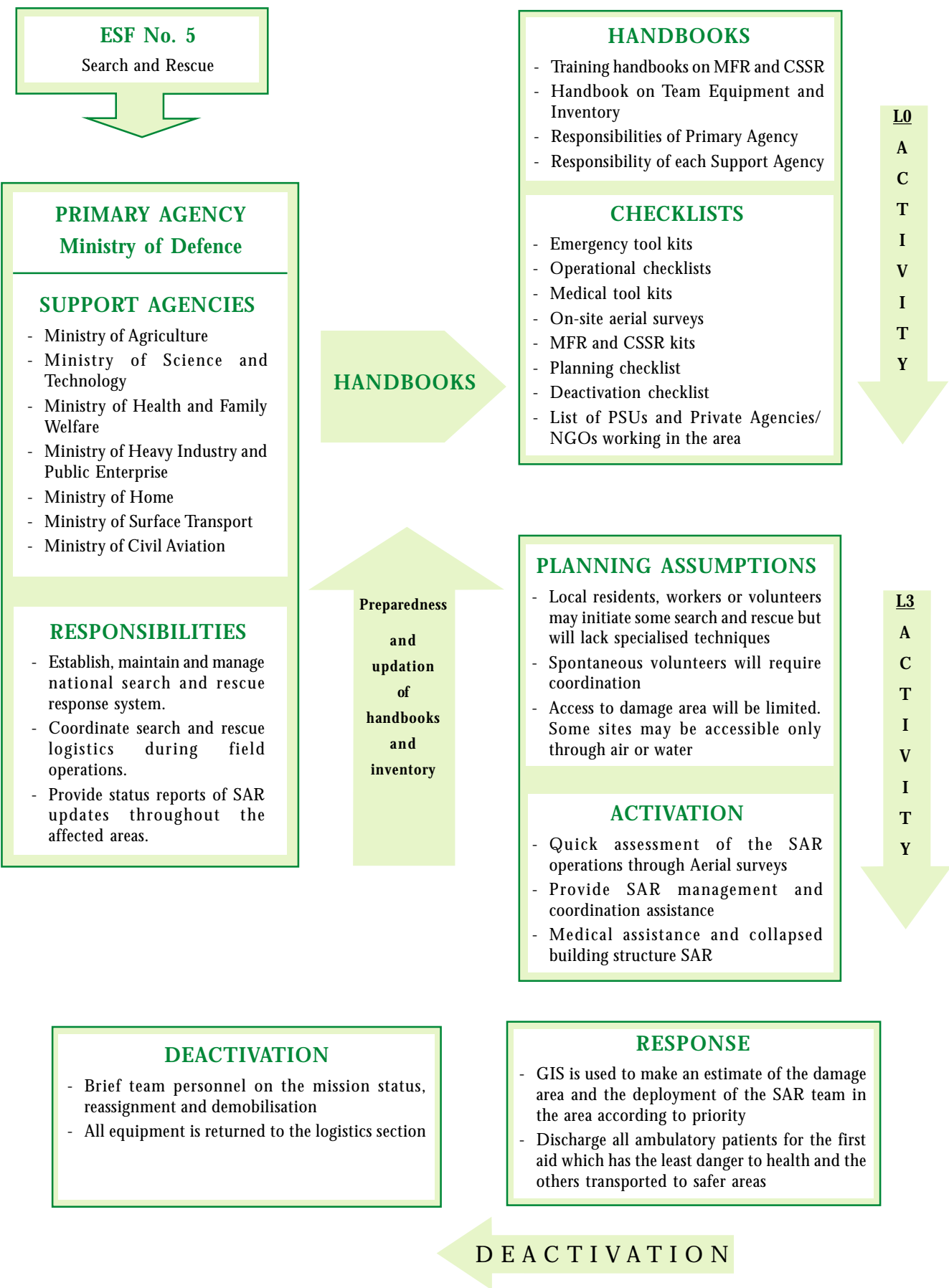
- ◆ Conduct a quick and comprehensive SAR which needs assessment
- ◆ Provide SAR management and coordination assistance to the affected State EOC team
- ◆ SAR should include teams specialised in:
 - ◆ Medical first response
 - ◆ Collapse structure search and rescue
- ◆ Discharge all ambulatory patients whose release does not pose health risk to them. If possible they should be transported home
- ◆ Non-ambulatory patients such as should be relocated to safer areas following:
 - ◆ Seriously injured and sick
 - ◆ Children, women and handicapped
 - ◆ Old
 - ◆ Able-bodied

Responsibilities

- ◆ Establish, maintain and manage national search and rescue response system. These responsibilities include equipment purchase and evaluation of operation readiness.
- ◆ Provide on the site quick lessons to the volunteers so as to have a coordinated SAR of the victims.
- ◆ Coordinate search and rescue logistics during field operations.
- ◆ Provide status reports of SAR updates throughout the affected areas.

Standards to be Developed

- ◆ Training handbooks on MFR and CSSR
- ◆ Inventory of volunteers who have already completed the course successfully and can be utilised in the search and rescue operations
- ◆ Handbook on Team Equipment and Inventory
- ◆ Responsibilities of Primary Agency
- ◆ Responsibility of each support agency
- ◆ Emergency tool kits
- ◆ Operational checklists
- ◆ Medical tool kits
- ◆ On-site aerial surveys
- ◆ MFR and CSSR kits
- ◆ Deactivation checklist
- ◆ List of PSUs and Private Agencies/ NGOs working in the area



EMERGENCY SUPPORT FUNCTION 6

Donation Management

Primary Agency

- ◆ Ministry of Disaster Management

Secondary Agencies

- ◆ Ministry of Finance
- ◆ Ministry of Defence
- ◆ Ministry of External Affairs
- ◆ Ministry of Transport
- ◆ Ministry of Civil Aviation
- ◆ Ministry of Commerce and Industry

Purpose

Donation management is necessary to control the flow of goods and services into a disaster area. If trucks, trains, ships and planes are allowed into the disaster area to drop their donations, they can easily interfere with other ongoing disaster response operations. Uncontrolled shipments of donations can also put undue burden on disaster response operations as they require the scarce response resources. Above all, it is necessary to manage the flow of donated goods to be sure that the needs of disaster victims are being met as effectively as possible.

The purpose of this function is to expedite the delivery of voluntary goods and services to support relief effort in a coordinated manner.

Concept of Operations

A team of voluntary agency representative (VASUDEVA) and Ministry of Social Justice and Empowerment are the best to manage donations. The Director, Rehabilitation Council of India can act as the Central Coordinating Officer for Donation Coordinating Centre. The Donation Coordination Team will be operating at the

State level with State Donation Coordinator. The key is to give the public the opportunity as early as possible after a disaster or in case of imminent disasters (cyclone) to interact with the Central Coordinating Officer and the voluntary agency representative to find out what is really needed by the disaster victims, whom to send the goods to and how to send the goods.

Planning Assumptions

- ◆ Donation Management response activities are necessary before the declaration of a disaster as L3 and hence require rapid coordination to mitigate potential donations problems in the response phase of disaster operations.
- ◆ In the event of a disaster causing large-scale loss of life and destruction of property, donors both national and international will offer assistance of virtually any kind, including cash (PM Relief Fund), goods, equipment and loan of equipment and services of an individual.
- ◆ Offers of assistance will be made available directly to all levels of government-Centre, State and local, as well as voluntary organisations.
- ◆ In less than L3 level of disaster or high visibility disasters, donation management will be handled by voluntary organisations with or without Centre and State involvement.

Donation Sectors

- ◆ Donations come from a variety of sources:
 - ◆ General public (Citizens)
 - ◆ Public and Private sector organisations
 - ◆ Civic Associations (Clubs etc.)
 - ◆ International Community

Types of Donations

- ◆ Food and water
- ◆ Clothes
- ◆ Medicines
- ◆ Tools, generators, vehicles
- ◆ Cleaning supplies
- ◆ Building supplies
- ◆ Monetary help
- ◆ Baby items

The Need

Experienced voluntary agencies and local community leaders best determine the needs in the disaster area. Moreover, the voluntary agencies know their capacity to accept offers.

The entire donation should reach the Collection Point from the Point of Departure. The Donation Coordinating Team (DCT)

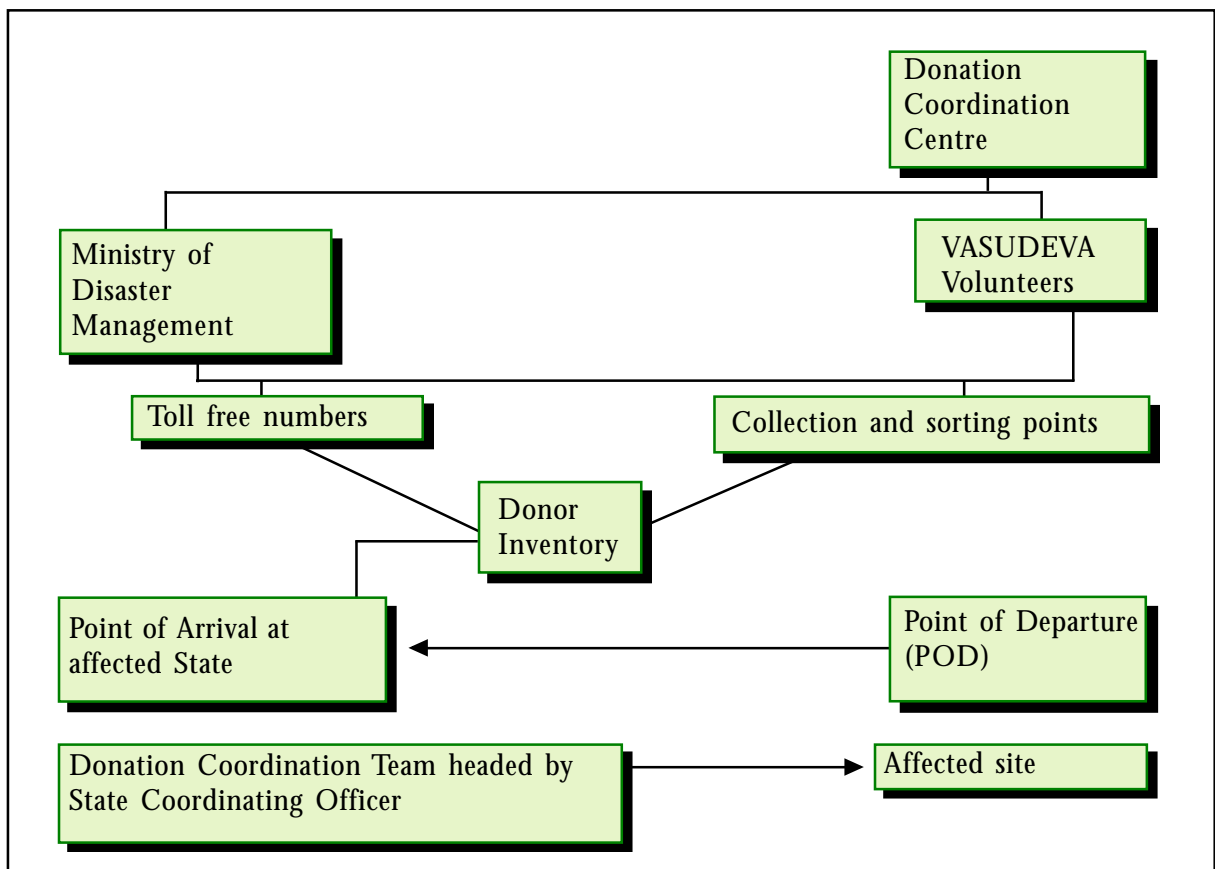
based at the State will coordinate with the Donation Coordinating Centre to distribute the donations as per the need of the victims.

In each State there should be the provision for *toll free* numbers and people can use these numbers and request for their needs and what donation they would like to make. Such information will be put into the database and transmitted immediately to the DCT at the State. The team of donation specialists in the field will call back the donor to inform of the special needs and arrange the shipping, receiving and distribution of goods by the Donation Coordinating Centre.

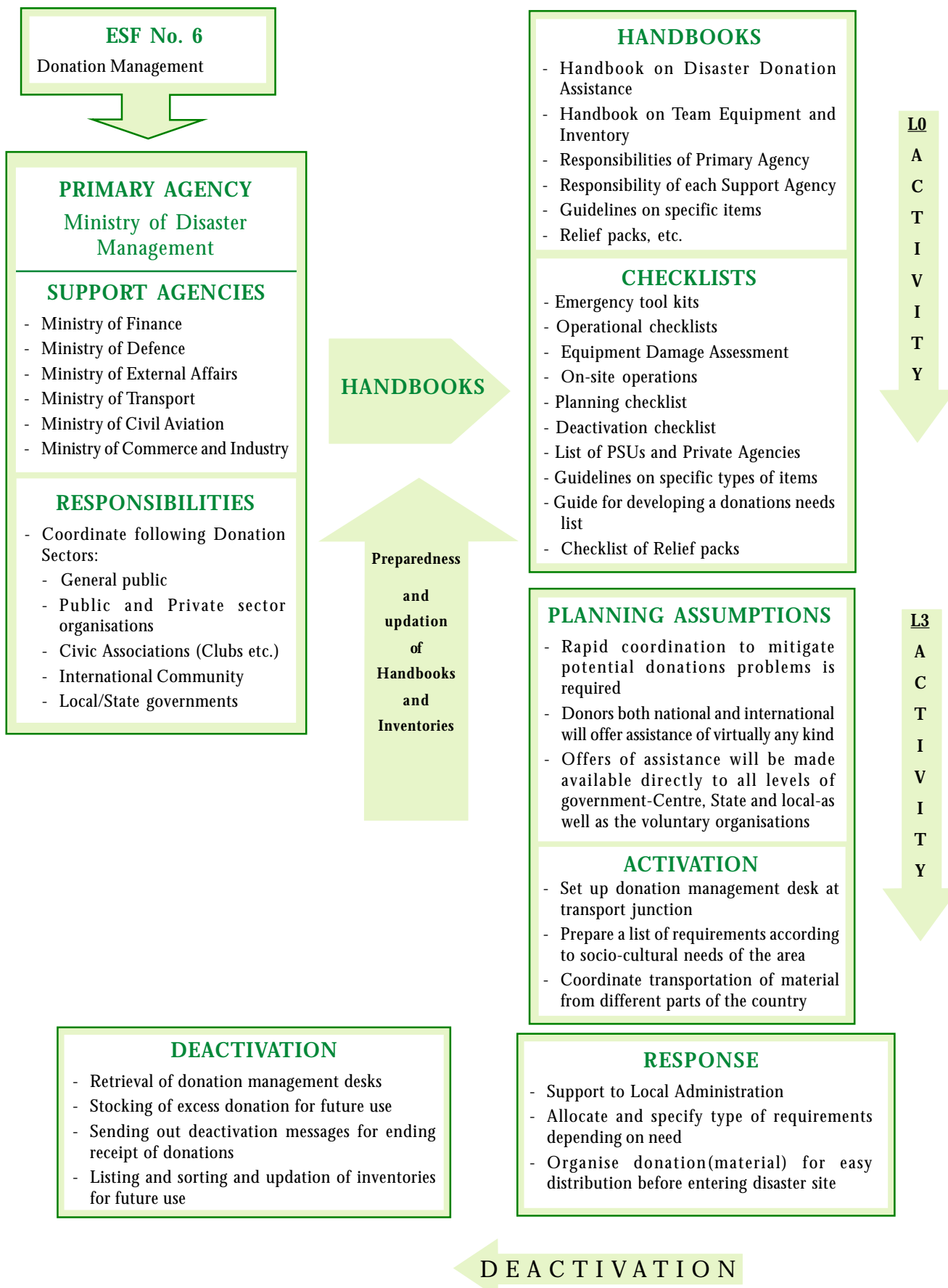
Minimum Standards Required

- ◆ Guidelines on specific types of items
- ◆ Guide for developing a donation needs list to be prepared by the Voluntary

VI.1 Manpower/Material Flow Chart of Donations



- ◆ Agencies (family pack or mass relief pack, colour coding)
- ◆ Emergency toolkits (first aid items)
- ◆ Equipment Damage Assessment
- ◆ On-site operations check list and the coordinating field station map
- ◆ Planning checklist
- ◆ Deactivation checklist
- ◆ List of PSUs and Private Agencies
- ◆ Guidelines on specific types of items
- ◆ Guide for developing donations needs list
- ◆ Handbook on Disaster Donation Assistance
- ◆ Handbook on team Equipment and Inventory
- ◆ Responsibilities of Primary Agency
- ◆ Responsibilities of each support agency
- ◆ Guidelines on specific items and continued response for donation and relief management



ESF No. 6
Donation Management

PRIMARY AGENCY
Ministry of Disaster Management

SUPPORT AGENCIES

- Ministry of Finance
- Ministry of Defence
- Ministry of External Affairs
- Ministry of Transport
- Ministry of Civil Aviation
- Ministry of Commerce and Industry

RESPONSIBILITIES

- Coordinate following Donation Sectors:
 - General public
 - Public and Private sector organisations
 - Civic Associations (Clubs etc.)
 - International Community
 - Local/State governments

HANDBOOKS

Preparedness
and
updation
of
Handbooks
and
Inventories

HANDBOOKS

- Handbook on Disaster Donation Assistance
- Handbook on Team Equipment and Inventory
- Responsibilities of Primary Agency
- Responsibility of each Support Agency
- Guidelines on specific items
- Relief packs, etc.

CHECKLISTS

- Emergency tool kits
- Operational checklists
- Equipment Damage Assessment
- On-site operations
- Planning checklist
- Deactivation checklist
- List of PSUs and Private Agencies
- Guidelines on specific types of items
- Guide for developing a donations needs list
- Checklist of Relief packs

PLANNING ASSUMPTIONS

- Rapid coordination to mitigate potential donations problems is required
- Donors both national and international will offer assistance of virtually any kind
- Offers of assistance will be made available directly to all levels of government-Centre, State and local-as well as the voluntary organisations

ACTIVATION

- Set up donation management desk at transport junction
- Prepare a list of requirements according to socio-cultural needs of the area
- Coordinate transportation of material from different parts of the country

DEACTIVATION

- Retrieval of donation management desks
- Stocking of excess donation for future use
- Sending out deactivation messages for ending receipt of donations
- Listing and sorting and updation of inventories for future use

RESPONSE

- Support to Local Administration
- Allocate and specify type of requirements depending on need
- Organise donation(material) for easy distribution before entering disaster site

DEACTIVATION

L0
ACTIVITY

L3
ACTIVITY

EMERGENCY SUPPORT FUNCTION 7

Public Works and Engineering

Primary Agency

- ◆ Ministry of Surface Transport

Secondary Agencies

- ◆ Ministry of Defence
- ◆ Ministry of Power
- ◆ Ministry of Home Affairs
- ◆ Ministry of Labour
- ◆ Ministry of Communications
- ◆ Ministry of Water Resources
- ◆ Ministry of Urban Development and Poverty Alleviation

Purpose

Provides technical advice and evaluation, engineering services, contracting for construction management and inspection, contracting for emergency repair of water and waste water treatment facilities, potable water, emergency power, real estate support to assist the States in meeting goals related to life sustaining actions, damage mitigation and recovery activities following a major disaster. Provide public works and engineering support to assist needs related to life saving or life protecting support prior to, during and immediately following an event. Perform immediate damage assessment of the infrastructure.

Planning assumptions

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

- ◆ Significant number of persons having engineering skills will be required from outside the disaster area
- ◆ Previously inspected structures will require re-evaluation if aftershocks occur following an earthquake

Activities on the Receipt of Warning or Activation of EOC

- ◆ All technical officers should be notified and should meet the staff to review emergency procedure
- ◆ Review and update precautionary measures and procedures that should be taken to protect equipment and the post disaster procedures to be followed
- ◆ Inspect all roads, bridges including under water inspection of foundations and piers. A full check should be made on all concrete and steel works
- ◆ Inspect all buildings and structures of the State government by a senior engineer and identify structures which are endangered by the impending disaster
- ◆ Emergency tool kit should be assembled for each block of the affected area
- ◆ Establish a priority list of roads which will be opened first which should include roads to hospitals and main trunk roads
- ◆ Identify locations for setting up transit and relief camps, feeding centres and inform the state EOC
- ◆ All work teams should be issued two-way communication link
- ◆ Provide a work team carrying emergency tool kits, depending on the nature of disaster and essential equipment such as

- ◆ Towing vehicles
- ◆ Earth moving equipment
- ◆ Cranes
- ◆ Each unit should mobilise a farm tractor with chain, cables and a buffer stock of fuel
- ◆ Adequate road signs should be installed to guide and assist relief work
- ◆ Begin clearing roads. Assemble casual labour to work with experienced staff, mobilise community assistance by contacting community organisation and burning or removal of debris and repair all paved and unpaved road surfaces
- ◆ Construct temporary roads to serve as access to temporary transit, relief camps and medical facilities

Responsibilities

- ◆ Pre-positioning assessment teams headed by the State coordinating officer and deployment of other advance elements
- ◆ Emergency clearing of debris to enable reconnaissance of the damaged areas and passage of emergency personnel and equipment for life saving, property protection and health and safety
- ◆ Removal and disposal management of debris from public property
- ◆ Emergency restoration of critical public facilities

- ◆ Inspection of all the buildings in the affected area so as to check the safety of the building for the aftershock and to reduce further damage

Standards to be developed

- ◆ By-laws for all disasters
- ◆ Check list of tool kit
- ◆ Inventory of engineering equipment
- ◆ Disaster specific and area specific
 - Handbook on Disaster Engineering Assistance
 - Handbook on Team Equipment and Inventory
 - Responsibilities of Primary Agency and each Support Agency
 - Guidelines on specific types of items/situations for specific disasters
 - Inventory of equipment/agencies/personnel
 - Emergency tool kits
 - Operational checklists for team heads and team members
 - Equipment Damage Assessment
 - Handling of heavy equipments
 - Deactivation checklist
 - Guidelines on specific types of items for each disaster
 - Guide for by-laws to be followed
 - Qualification of labour /other site assistants

ESF No. 7

Public Works and Engineering

PRIMARY AGENCY

Ministry of Urban Affairs & Poverty Alleviation

SUPPORT AGENCIES

Ministry of Power
Ministry of Home Affairs
Ministry of Labour
Ministry of Surface Transport
Ministry of Communications
Ministry of Water Resources
Ministry of Urban Development and Poverty Alleviation

RESPONSIBILITIES

- Pre-positioning assessment teams headed by the state coordinating officer
- Emergency clearing of debris to enable reconnaissance
- Coordinate road clearing activities to assist local relief work
- Begin clearing roads. Assemble casual labour
- Provide a work team carrying emergency tool kits, depending on the nature of disaster, and essential equipment such as
 - Towing vehicles
 - Earth moving equipments
 - Cranes
- Construct temporary roads
- Keep national and other main highways clear from disaster effects such as debris etc.

DEACTIVATION

- Retrieval of heavy equipment
- Stocking of equipment for repair etc
- Sending out deactivation messages to concerned officials on-site
- Termination orders for labour and site assistants from L3 activities
- Listing, sorting and updation of inventories for future use

HANDBOOKS

Preparedness
and
updation
of
handbooks
and
inventory

HANDBOOKS

- Handbook on Disaster Engineering Assistance
- Handbook on Team Equipment and Inventory
- Responsibilities of Primary Agency and each Support Agency
- Guidelines on specific types of items/situations for specific disasters
- Inventory of equipment / agencies/ personnel

CHECKLISTS

- Emergency tool kits
- Operational checklists
- Equipment Damage Assessment
- Handling of heavy equipments
- Planning checklist
- Deactivation checklist
- Guidelines on specific types of items for each disaster
- Guide for by-laws to be followed
- Qualification of labour /other site assistants

PLANNING ASSUMPTIONS

- Access to disaster area will depend on reestablishment of ground/water routes
- Early damage assessment may be inaccurate and rapid assessment may be required to know response time
- Significant number of persons having engineering skills will be required
- Previously inspected structures will require re-evaluation if aftershocks occur following an earthquake

ACTIVATION

- All technical officers should be notified
- Review and update precautionary measures and procedures
- Inspect all roads, bridges
- Inspect all buildings and structures of the State government

RESPONSE

- Establish a priority list of roads which will be opened first
- Identify locations for transit /relief camps
- Adequate road signs should be installed to guide and assist in relief work

DEACTIVATION

L0
A
C
T
I
V
I
T
Y

L3
A
C
T
I
V
I
T
Y

EMERGENCY SUPPORT FUNCTION 8

Information and Planning

Primary Agency

- ◆ Ministry of Information Technology

Support Agencies

- ◆ Ministry of Information and Broadcasting
- ◆ Ministry of Urban Affairs and Poverty Alleviation
- ◆ Ministry of Power
- ◆ Ministry of Science and Technology

Purpose

To collect, process and disseminate information about an actual or potential disaster situation to facilitate the overall activities of all responders in providing assistance to an affected area.

The ESF on Information and Planning should maintain a database of all disaster related information in the form of a GIS enabled 'Disk net' that will allow easy access and retrieval of information during a disaster. The Disk net will be the hub /storage point for activities that should be carried out for response activities and at the same time continue to update itself during the L0 phase. It would enable and speed up the transfer of digital information and prepare a mammoth knowledge base that can be tapped for assistance during a disaster. The database at the Centre can be linked with nodal knowledge institutions for various disasters. These institutions in turn can be linked to State level and subsequently local level information institutions in order to form a well networked country wide database.

During the response phase of a disaster all EOCs and each ESF can be directly linked to the Disk net in order to access and know

about the status of relief and other requirements through out the country.

Planning Assumptions

- ◆ There will be an immediate need for information by all officials, NGO's and the country at large
- ◆ There will be need for a central collection point where information can be compiled and further planning of response operations can be carried out
- ◆ Initial information centre may require at least 24 hours to be fully operational

Activities on the Receipt of Warning or Activation of EOC

- ◆ ESF 9 should immediately commence operation at the receipt of a warning before the disaster
- ◆ It should establish contact with the concerned local authorities, active NGO's and the Centre at the earliest
- ◆ Extra staff should be deployed at the disaster site with communication equipment to enable recovery planning
- ◆ Documentation of all response/relief and recovery measures should be done
- ◆ Situation reports should be prepared and adequately completed every 3-4 hours during the initial response phase of a disaster
- ◆ Disk net should be updated and allowed access to information by key government agencies

Responsibilities

- ◆ Enable local authorities to establish contact with the state authorities
- ◆ Coordinate planning procedures between District, State and the Centre
- ◆ Document all procedures
- ◆ Provide ready formats for all reporting procedures

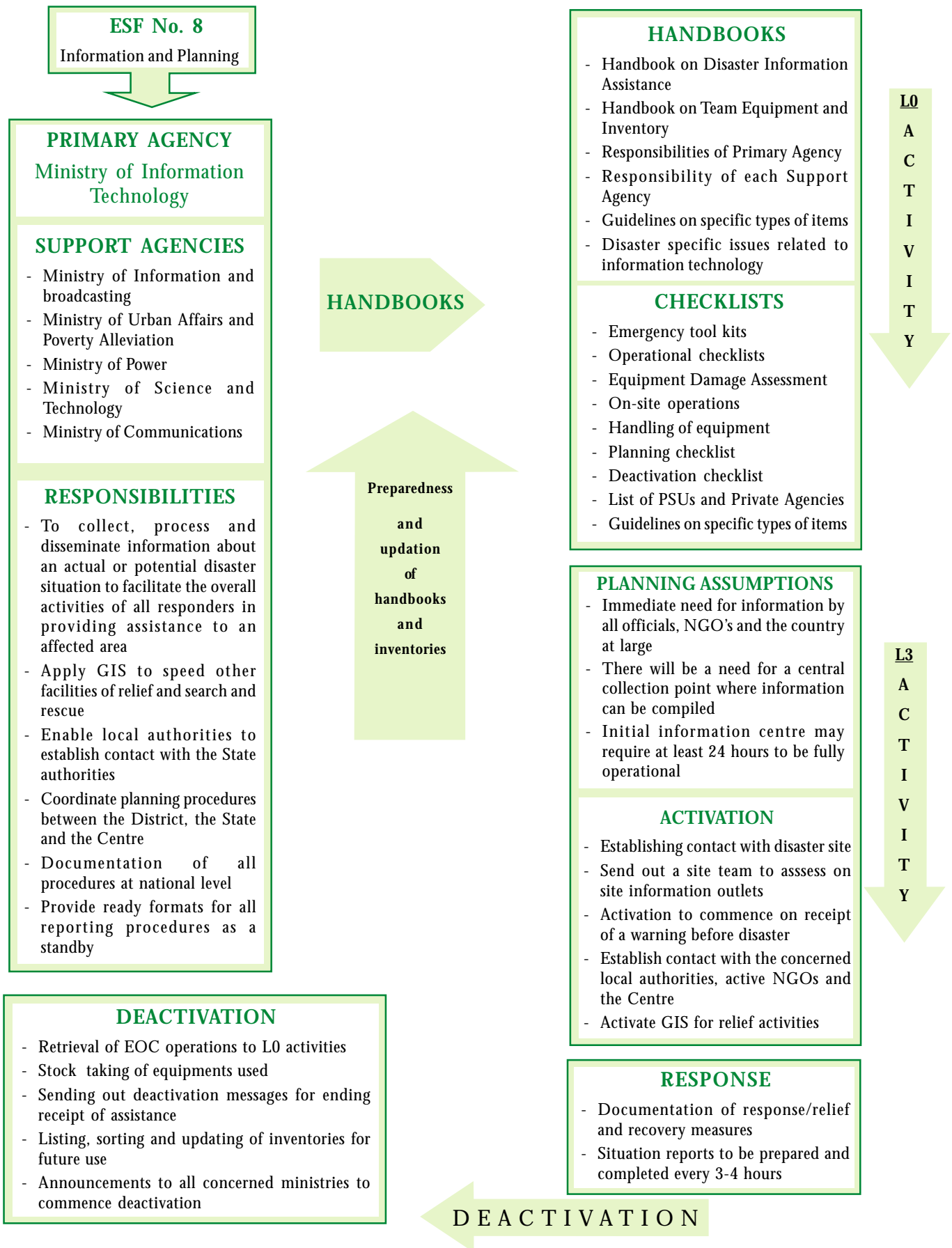
- ◆ Provide handbooks and checklists to all government functionaries

Minimum Standards Required

- ◆ Handbook on Disaster Information Assistance
- ◆ Handbook on Team Equipment and Inventory
- ◆ Responsibilities of Primary Agency
- ◆ Responsibility of each Support agency
- ◆ Guidelines on specific types of items
- ◆ Disaster specific issues related to

information technology

- ◆ Emergency tool kits
- ◆ Operational checklists
- ◆ Equipment Damage Assessment
- ◆ On-site operations
- ◆ Handling of equipment
- ◆ Planning checklist
- ◆ Deactivation checklist
- ◆ List of Public Sector Units and Private Agencies
- ◆ Guidelines on specific types of items



EMERGENCY SUPPORT FUNCTION 9

Relief Supplies

Primary Agency

- ◆ Ministry of Planning and Program Implementation

Support Agencies

- ◆ Ministry of Communication
- ◆ Ministry of Information and Broadcasting
- ◆ Ministry of Railways
- ◆ Ministry of Surface Transport
- ◆ Ministry of Power
- ◆ Ministry of Agriculture

Voluntary agencies

- ◆ VASUDEVA

Purpose

The purpose is for coordinating activities involved with the emergency provisions of temporary shelters, emergency mass feeding, and bulk distribution of coordinated relief supplies for victims of disaster. In some instances, services may also be provided to disaster workers and logistical and resource support to local entities involved in delivering emergency and recovery efforts, shelter, food, and emergency first aid following a disaster. Operate a Disaster Welfare Information (DWI) System to collect, receive, and report the status of victims and assist family reunification; and coordinate bulk distribution of emergency relief supplies.

Planning Assumptions

- ◆ Inventory of all relief supplies should be prepared during peace time or L0 phase of a disaster by the concerned departments
- ◆ All inventories are updated to suit the disaster needs

- ◆ Most of the local resources might be disrupted and outside resources (neighbouring States and Centre) may need to be tapped

- ◆ Transport of resources may require a mobilization centre at nearest functional transport junctions

Activities on the Receipt of Warning or Activation of EOC

- ◆ Establish a mobilization Centre at the airport/railway station for the movement of relief supplies
- ◆ Deploy special aircrafts and trains for the movement of relief supplies as planned in the L0 phase
- ◆ Inform all suppliers of relief material within 2-3 hours of the disaster to keep the required supplies ready
- ◆ Arrange motor equipment for transportation of relief supplies
- ◆ Provide assistance in establishing local offices, relief camps etc., by providing beddings, furniture etc
- ◆ Provide survival kits to relief workers before they leave for the disaster site

Responsibilities

- ◆ Locate, procure and issue resources to Central agencies involved in disaster response
- ◆ Locate and coordinate space for disaster management activities
- ◆ Coordinate and determine the availability of and provide non-edible relief supplies stocked during the L0 phase
- ◆ Provide support for procurement of telecom equipment for ESF No.2
- ◆ Coordinate the transfer of extra Central property and dispose it where required

- ◆ Procure required stocks from vendors and supply them to the disaster area
- ◆ Emergency tool kits
- ◆ Operational checklists for team leaders and team members
- ◆ Handling/storage of relief supplies
- ◆ On-site operations
- ◆ Planning checklist
- ◆ Deactivation checklist
- ◆ List of PSUs and Private Agencies
- ◆ Guidelines on specific types of items for each disaster
- ◆ Guide for developing relief supplies needs list
- ◆ Manual on disaster specific relief operations

Minimum Standards Required

- ◆ Handbook on Relief supplies Assistance
- ◆ Handbook on Team Equipment and Inventory
- ◆ Responsibilities of Primary Agency and each Support Agency
- ◆ Guidelines on specific types of items for each disaster
- ◆ Manual on disaster specific relief operations

ESF No. 9

Relief supplies

PRIMARY AGENCY

Ministry of Planning & Program Implementation

SUPPORT AGENCIES

- Ministry of Communication
- Ministry of information and Broadcasting
- Ministry of Railways
- Ministry of Surface transport
- Ministry of Power
- Ministry of Agriculture
- VASUDEVA

RESPONSIBILITIES

- Coordinate activities involved with the emergency provisions
- Temporary shelters
- Emergency mass feeding
- Bulk distribution
- To provide logistical and resource support to local entities
- Operate a Disaster Welfare Information (DWI) System to collect, receive, and report the status of victims, assist family reunification; and coordinate bulk distribution of emergency relief supplies
- In some instances, services also may be provided to disaster workers

DEACTIVATION

- Retrieval of EOC operations and personnel
- Stocking of excess supplies for future use
- Sending out deactivation messages for ending receipt of supplies
- Listing, sorting and updation of inventories for future use

HANDBOOKS

P
R
E
P
A
R
E
D
N
E
S
S

HANDBOOKS

- Handbook on Relief supplies Assistance
- Handbook on Team Equipment and Inventory
- Responsibilities of Primary Agency and each Support Agency
- Guidelines on specific types of items for each disaster
- Manual on disaster specific relief operations

CHECKLISTS

- Emergency tool kits
- Operational checklists
- Handling/storage of relief supplies
- On-site operations
- Planning checklist
- Deactivation checklist
- List of PSUs and Private Agencies
- Guidelines on specific types of items for each disaster
- Guide for developing relief supplies needs list

PLANNING ASSUMPTIONS

- Rapid coordination to mitigate potential donations problems is required
- Donors both national and international will offer assistance of virtually any kind
- Offers of assistance will be made available directly to all levels of government-Centre, State and local as well as voluntary organisations

ACTIVATION

- Set up donation management desk at transport junction
- Prepare a list of requirements according to socio-cultural needs of the area
- Coordinate transportation of material from different parts of the country

RESPONSE

- Support to Local Administration
- Allocate and specify type of requirements depending on need
- Organise donation(material) for easy distribution before entering disaster site

DEACTIVATION

L0
A
C
T
I
V
I
T
Y

L3
A
C
T
I
V
I
T
Y

EMERGENCY SUPPORT FUNCTION 10

Food

Primary Agency

- ◆ Ministry of Food and Civil Supplies

Support Agencies

- ◆ Ministry of Surface transport
- ◆ Ministry of Civil Aviation
- ◆ Ministry of Railways
- ◆ Ministry of Social justice and Empowerment

Purpose

To identify the basic needs of food in the aftermath of a disaster or emergency. To obtain appropriate supplies and transporting such supplies to the disaster area and identify, secure, and arrange to transport food assistance to the affected areas, and authorise food stamp assistance following a major disaster or emergency requiring Central response.

Planning Assumptions

- ◆ Most of the food processing units and supplies may be disrupted
- ◆ Water supply and potable water systems may be unusable
- ◆ There may be a total disruption of energy sources
- ◆ Activities on the receipt of warning or activation of EOC
 - ◆ Determine the critical need of food for the affected area people
 - ◆ Catalogue of available resources of food
 - ◆ Ensure that food distributed is fit for human consumption
 - ◆ Allocate food in different packs that can be given to families on a take-

home basis while others that can be distributed in relief camps

- ◆ Initiate, direct and market procurement of critical food available from different inventories

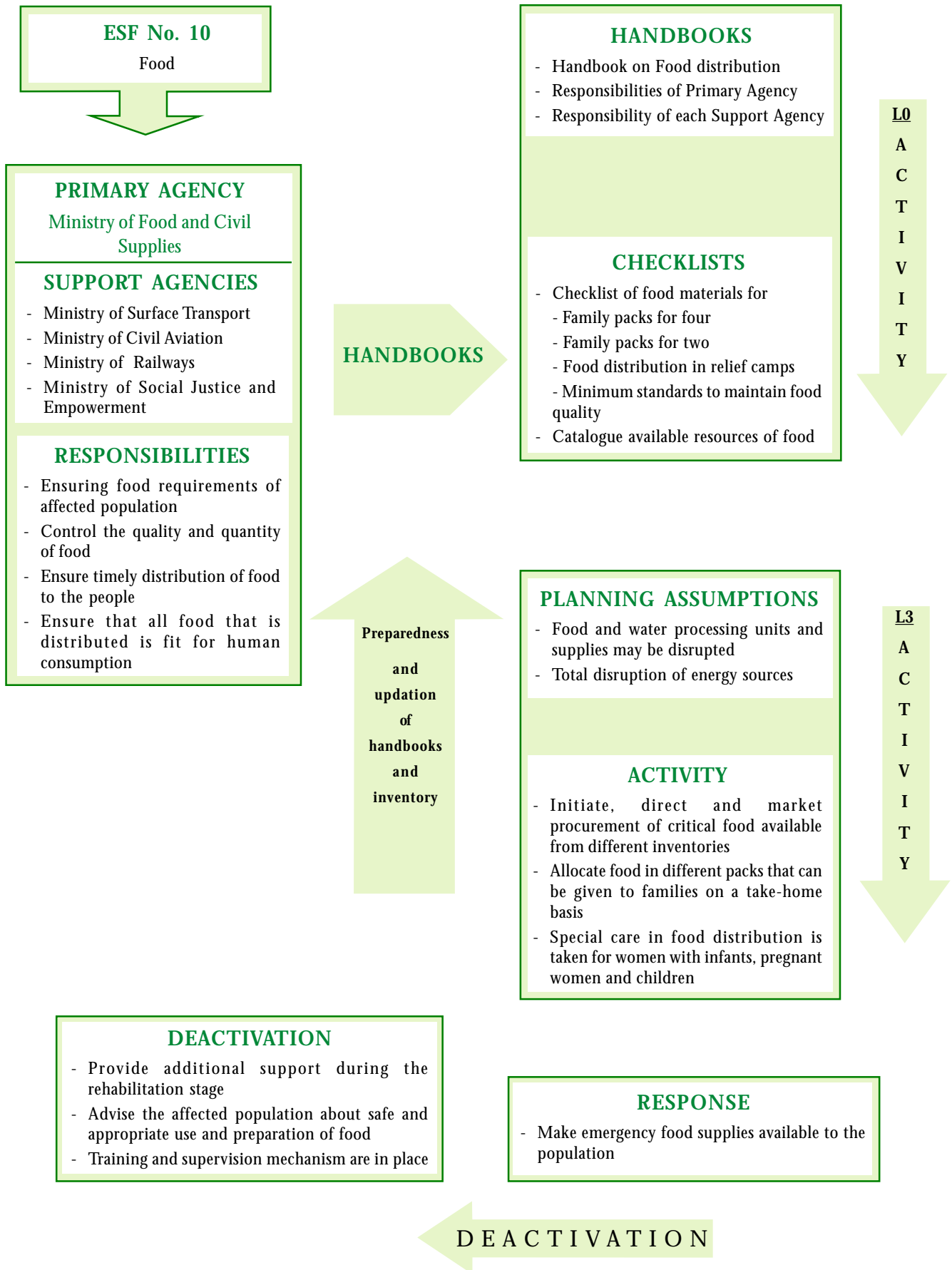
Responsibilities of Primary Agency

- ◆ Coordinate with local authorities and State officials to determine requirement of food for affected population
- ◆ Make emergency food supplies available to State from national resources
- ◆ Ask other States that are geographically close to the affected areas to send food to the site
- ◆ Mobilise and coordinate with other ESFs for air dropping of food to affected site
- ◆ Ensure quality and control the type of food
- ◆ Prepare separate food packs for relief camps and for air dropping and distribution
- ◆ Prepare family packs as well as large quantity containers according to the need and ease of distribution as well as transportation
- ◆ Control the quality and quantity of food that is distributed to the affected population
- ◆ Develop a plan that will ensure timely distribution of food to the people
- ◆ Ensure that special care in food distribution is taken for women with infants, pregnant women and children

Standards Required

- ◆ Checklist of food materials for:
 - ◆ Family packs for four

- ◆ Family packs for two
- ◆ Food distribution in relief camps
- ◆ Minimum standards to maintain food quality
- ◆ Catalogue available resources of food
- ◆ Handbook on food distribution
- ◆ Responsibilities of Primary Agency
- ◆ Responsibility of each Support Agency



EMERGENCY SUPPORT FUNCTION 11

Drinking Water and Water Supply

Primary Agency

- ◆ Ministry of Water Resources

Support Agencies

- ◆ Ministry of Rural Development
- ◆ Ministry of Health and Family welfare
- ◆ Ministry of Consumer Affairs and Public Distribution
- ◆ Ministry of Agriculture

Purpose

To provide a minimum quantity of clean drinking water and to reduce the spread of diseases through water during disaster times and to allow people to perform daily tasks.

Planning Assumptions

- ◆ Most of the water available will be unfit for drinking
- ◆ Existing storage bodies of water will be damaged and unusable
- ◆ There will be an urgent need of water to assist victims in rescue operation

Activities on the Receipt of Warning or Activation of EOC

- ◆ Setting up water points in key locations and in relief camps
- ◆ Maintaining and providing clean water

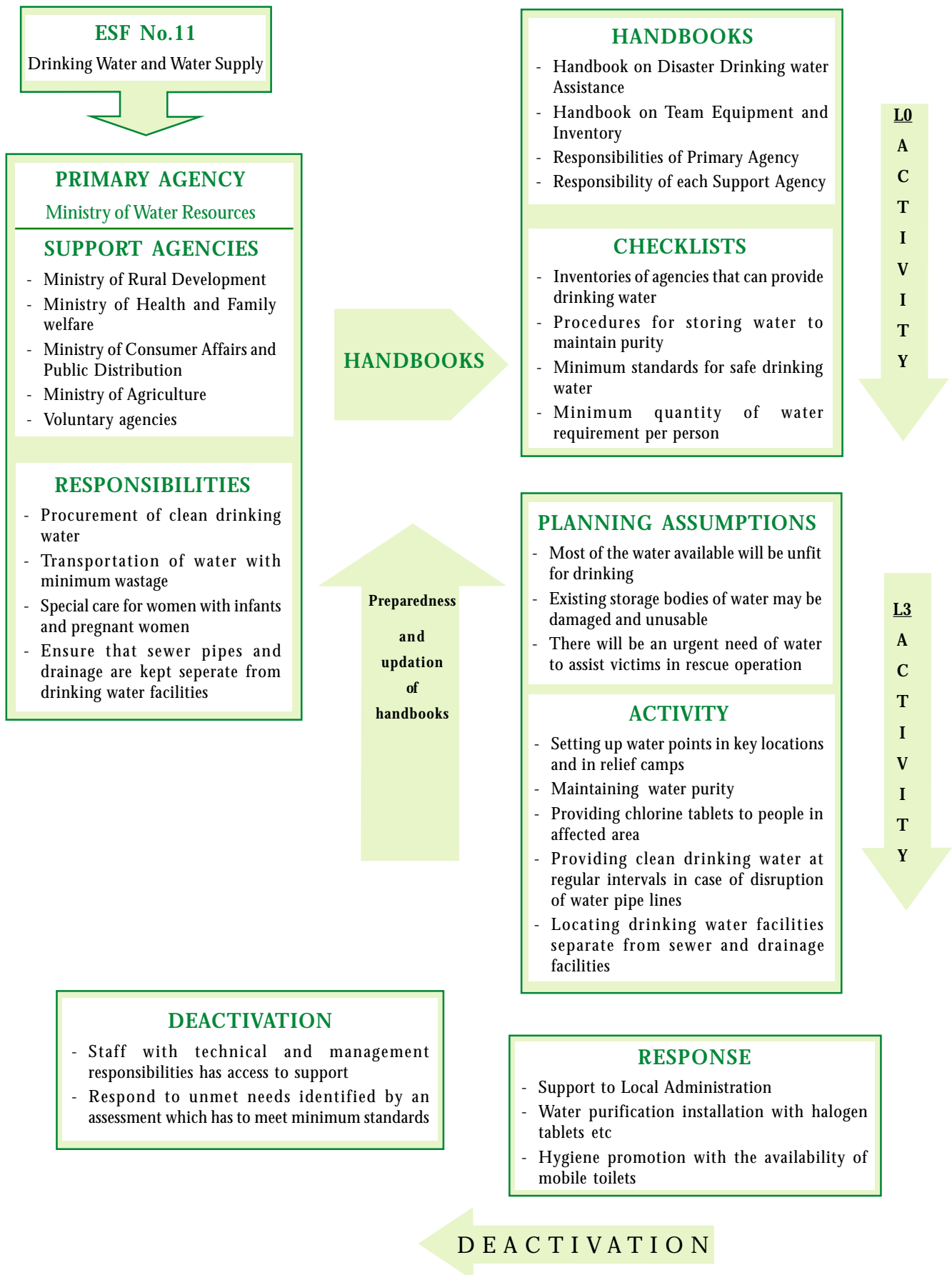
Responsibilities

- ◆ Procurement of clean drinking water
- ◆ Transportation of water with minimum wastage
- ◆ Special care for women with infants and pregnant women

- ◆ Ensure that sewer pipes and drainage lines are kept separate from drinking water facilities
- ◆ Provide chlorine tablets to people in affected area
- ◆ Providing clean drinking water at regular intervals in case of disruption of water pipe lines
- ◆ Locate drinking water facilities separate from sewer and drainage facilities
- ◆ Ensure that the remaining or unaffected sources of water do not get contaminated and the distribution of water is equal to all victims in the area.
- ◆ Identify and mark damaged water pipelines and contaminated water bodies and inform disaster victims against using them
- ◆ Inform other related ESFs of damaged pipelines for repair work

Minimum Standards Required

- ◆ Handbook on Disaster Drinking water Assistance
- ◆ Handbook on Team Equipment and Inventory
- ◆ Responsibilities of Primary Agency
- ◆ Responsibility of each Support Agency
- ◆ Inventories of agencies that can provide drinking water
- ◆ Procedures for storing of water to maintain purity
- ◆ Minimum standards for safe drinking water
- ◆ Minimum quantity of water requirement per person



EMERGENCY SUPPORT FUNCTION 12

Shelter

Primary Agency

- ◆ Ministry of Urban Affairs and Poverty Alleviation

Support Agencies

- ◆ Ministry of Power
- ◆ Ministry of Home affairs
- ◆ Ministry of Labour
- ◆ Ministry of Surface Transport
- ◆ Ministry of Communications
- ◆ Ministry of Water Resources
- ◆ Ministry of Heavy Industries and Public Enterprise
- ◆ Central Building Research Institute (CBRI)

PSUs

- ◆ HUDCO
- ◆ BMTPC

Purpose

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.

Planning Assumptions

- ◆ Most of the existing structures may be severely damaged
- ◆ The offices of the local authorities and PWD departments may be affected adversely
- ◆ Local sources of heavy machinery and clearance equipment may also not be accessible
- ◆ External sources of heavy machinery for

clearance may be required from existing inventories

- ◆ Large population in the affected area may be rendered homeless
- ◆ Some of the open areas that can be used as relief and shelter sites may also be badly affected

Activities on the Receipt of Warning or Activation of EOC

- ◆ Locate adequate relief camps based on survey of damage
- ◆ Quick assessment of functional and stable building structures
- ◆ Clear areas for setting up relief camps
- ◆ In case of damage to offices, assist local authorities to establish and house important telecom equipment and officials at the earliest
- ◆ Develop alternative arrangements for the population living in structures that might be affected even after the disaster (earthquakes, floods etc.)
- ◆ Set up relief camps and tents using innovative methods that save time

Responsibilities

- ◆ A quick assessment of damaged areas and areas that can be used for relief camps for the displaced population
- ◆ Survey of population that can be provided assistance at their own place and need not be shifted to relief camps
- ◆ Locate relief camps close to open traffic and transport links
- ◆ Provide adequate and appropriate shelter to the entire population
- ◆ Adhere to minimum standards for setting up relief camps
- ◆ Provide shelter structures in accordance with the climate of the area and transportation conditions

- ◆ Keep families together as far as possible in relief camps. If not, then mothers and their children should be kept together
- ◆ Ensure that temporary shelters are not prone to leakage and breakage as far as possible
- ◆ Assist other ESFs in equipping shelter and relief sites with basic needs of communication and sanitation

Minimum Standards Required

- ◆ Inventories of manufacturing agencies
- ◆ Procedures of storage
- ◆ Minimum standards for relief camps
- ◆ Minimum standards of requirements of space per person
- ◆ Handbook on Team Equipment and Inventory
- ◆ Responsibilities of Primary Agency
- ◆ Responsibility of each Support Agency
- ◆ Handbook on tent structure and other collapsible structures
- ◆ Handbook on assembling of structures
- ◆ Inventories of agencies that can be used for the tent establishment
- ◆ Minimum standards for shelter
- ◆ Relief camps
- ◆ Tents and other temporary structures
- ◆ Location of camps for different disasters
- ◆ Existing locations that can be used for shelter
- ◆ Minimum standards for buildings to be used as relief camps

ESF No.12

Shelter

PRIMARY AGENCY

Ministry of Urban Affairs
and Poverty alleviation

SUPPORT AGENCIES

- Ministry of Power
- Ministry of Home Affairs
- Ministry of Labour
- Ministry of Surface Transport
- Ministry of Communications
- Ministry of Water Resources
- Ministry of Heavy Industries and Public Enterprise
- CBRI
 - PSUs
 - HUDCO
 - BMTPC

RESPONSIBILITIES

- Provide adequate and appropriate shelter to the entire population
- Quick assessment and identifying the area for the establishment of relief camps
- Identifying the population which can be provided with support in their own place and need not be shifted/reallocated
- Locate relief camps close to open traffic and transport links

HANDBOOKS

Preparedness
and
updation
of
handbooks
and
inventory

HANDBOOKS

- Handbook on Team Equipment and Inventory
- Responsibilities of Primary Agency
- Responsibility of each Support Agency
- Handbook on tent structure

CHECKLISTS

- Inventories of agencies that can be used for tent establishment
- Minimum standards for shelter
- Relief camps
- Tents and other temporary structures
- Location of camps for different disasters
- Minimum standards for buildings to be used as relief camps

PLANNING ASSUMPTIONS

- Existing structures are severely damaged
- The offices of the local authorities and PWD affected adversely
- Heavy machinery and clearance equipment may also not be accessible
- Large population rendered homeless

ACTIVITY

- Quick assessment of functional and stable building
- Clearing of the areas for establishment of relief camps
- Set up relief camps and tents using innovative methods that can save time
- Assist local authorities to set up important telecom and other services facilities

L0
A
C
T
I
V
I
T
Y

L3
A
C
T
I
V
I
T
Y

DEACTIVATION

- Activities related to the rehabilitation process
- Affected population is included in the shelter programme
- Volunteers are trained, supervised and equipped adequately to carry out the resettlement efficiently

RESPONSE

- Support to Local Administration
- Locate adequate relief camps based on survey of damage
- Develop alternative arrangements for population living in structures that might be affected even after the disaster

DEACTIVATION

EMERGENCY SUPPORT FUNCTION 13

Media

Primary Agency

- ◆ Ministry of Information and Broadcasting

Support Agencies

- ◆ Ministry of Information Technology
- ◆ Ministry of Transport
- ◆ Ministry of Communication
- ◆ Ministry of Health and Family Welfare
- ◆ Ministry of Agriculture
- ◆ Ministry of Science and technology
- ◆ Press Trust of India (PTI)

Voluntary Agencies

- ◆ VASUDEVA
- ◆ Indian Red Cross

Purpose

To provide and collect reliable information on the status of the disaster and disaster victims for effective coordination of relief work at the State level as well as the national and international levels.

Planning Assumptions

- ◆ Most of the existing media network would have undergone heavy damage
- ◆ It may not be possible to get accurate information from the affected area within the first few hours of the disaster

Activities on the Receipt of Warning or Activation of EOC

- ◆ Send news flashes of latest updates/donation requirements for disaster area all over the country
- ◆ Use appropriate means of disseminating information to all victims in the affected area

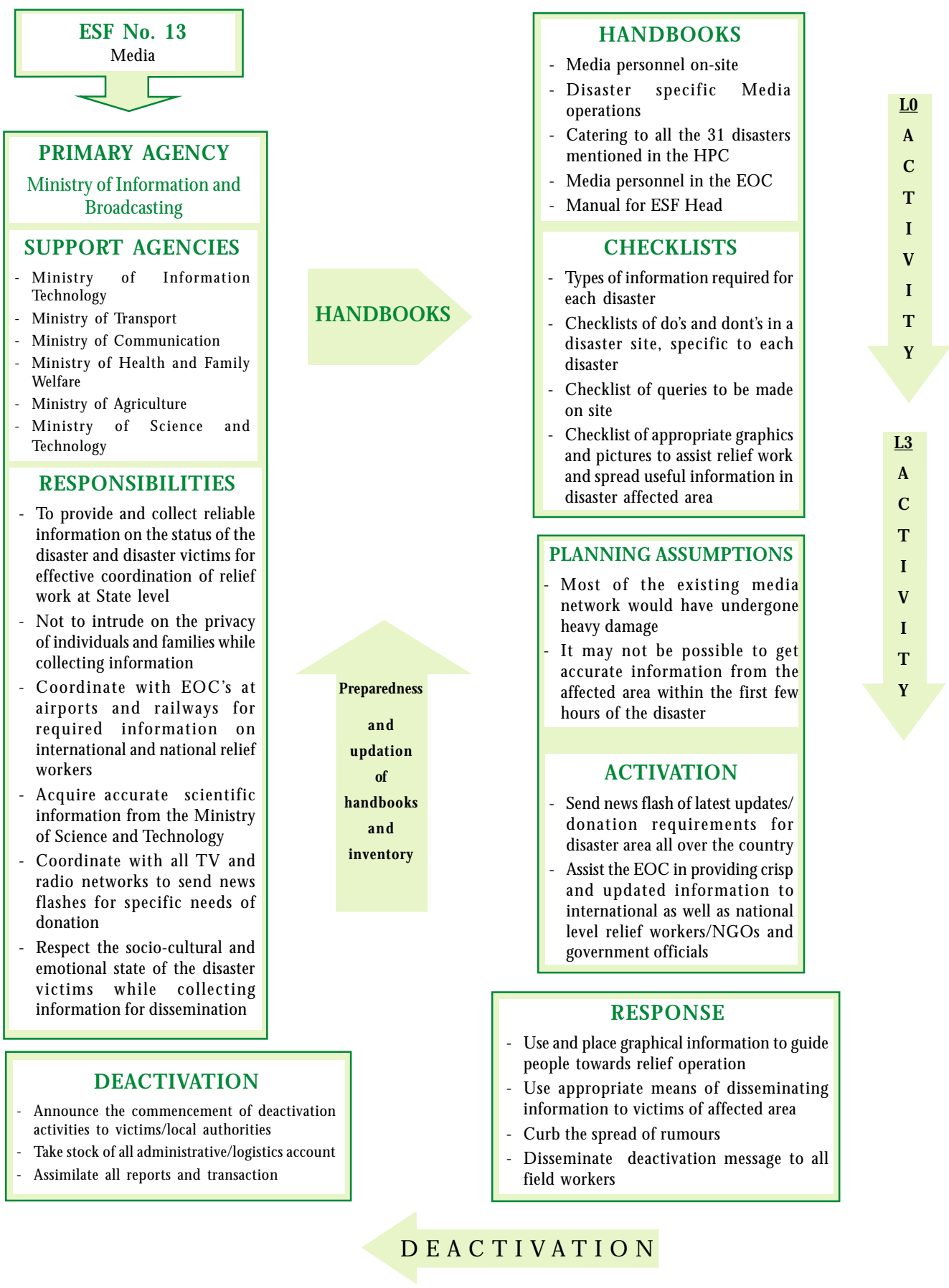
- ◆ Curb the spread of rumours
- ◆ Caution the victims about the do's and don'ts during a disaster

Responsibilities

- ◆ Acquire accurate scientific information from the Ministry of Science and Technology
- ◆ Coordinate with all TV and radio networks to send news flashes for specific needs of donation
- ◆ Develop appropriate graphics and pictures to assist relief work and spread useful information in the disaster affected area
- ◆ Not to intrude on the privacy of individuals and families while collecting information
- ◆ Coordinate with the EOCs at the airport and railways for required information for international and national relief workers
- ◆ Deploy trained media personnel who are experienced
- ◆ Provide information of emergency numbers and other key contact numbers on television, through newspapers, loud speakers and radio networks
- ◆ Keep the rest of the country updated and well informed about the status of the disaster
- ◆ Help victims as well as emergency workers in providing information regarding hospitals, help desks etc
- ◆ Acquire and flash names of disaster victims on television and radio networks
- ◆ Provide information on basic do's and don'ts
- ◆ Flash warning signals on all TV and radio networks
- ◆ Inform unaffected population about hospitals where they can find victims and where assistance is required
- ◆ Inform unaffected population of blood banks

Minimum Standards Required

- ◆ Media personnel on-site
- ◆ Disaster specific media operations
- ◆ Catering to all the 31 disasters mentioned in the HPC
- ◆ Media personnel in the EOC
- ◆ Manual for ESF Head
- ◆ Types of information required for each disaster
- ◆ Checklists of do's and don'ts in a disaster site, specific to each disaster
- ◆ Checklist of queries to be made on site
- ◆ Checklist of appropriate graphics and pictures to assist relief work and spread useful information in the disaster affected area
- ◆ Standard operating procedures and responsibilities of Radio and TV stations



EMERGENCY SUPPORT FUNCTION 14

Helplines

Primary Agency

Ministry of Disaster Management

Secondary Agencies

Ministry of Health and Family Welfare

Ministry of Home Affairs

Ministry of Power

Ministry of Civil Aviation

Ministry of Communications

Ministry of Science and Technology

Purpose

The purpose of ESF 14 is to collect, process and disseminate information about the welfare of citizens of the affected area and managing the tremendous flow of information. The speed with which information is received and with which it changes, requires that a system be developed to ensure accuracy as well as easy and appropriate access. The helplines will be responsible for providing, directing, and coordinating logistical/resource operations.

Planning Assumptions

- ◆ Access to disaster area will depend upon the re-establishment of ground and water routes
- ◆ Early damage assessment may be incomplete, inaccurate and general and rapid assessment may be required to determine response time
- ◆ There will be a flood of information and confusion about the injured population
- ◆ The communication with the affected area is partially impaired

Activities on the Receipt of Warning or Activation of EOC

- ◆ One of the most critical needs will be having a simplified way of identifying and tracking victims and providing assistance to them
- ◆ Identify locations for setting up transit and relief camps, feeding centres and setting up of helplines at the nodal points in the State and providing people the information about numbers
- ◆ Setting up of toll free numbers and trying to establish the estimation of the damage and the victims in the area from other sources
- ◆ All technical officers should be notified and should meet the staff to review emergency procedure
- ◆ Review and update precautionary measures and procedures that should be taken to protect equipment and the post-disaster procedures to be followed
- ◆ Emergency tool kit should be assembled for each block of the affected area
- ◆ All work teams should be issued a two way communication link

Responsibilities

- ◆ Coordinate, collect, process, report and display essential elements of information and facilitate support for planning efforts in response operations
- ◆ Coordinate pre-planned and event-specific aerial reconnaissance operations to assess the overall disaster situation
- ◆ Pre-positioning assessment teams headed by the State Coordinating Officer and deployment of other advance elements
- ◆ Emergency clearing of debris to enable reconnaissance of damaged areas and passage of emergency personnel and

equipment for life saving, property protection and health and safety

Standards to be Developed

- ◆ Check list of tool kit (land line connection, portable TV and battery powered radios, etc.)
- ◆ Inventory of engineering equipment
- ◆ Area Specific handbook on Team Equipment and Inventory
- ◆ Responsibilities of Primary Agency and each Support Agency
- ◆ Guidelines on specific types of items/ situations for specific disasters
- ◆ Inventory of equipment/agencies/ personnel
- ◆ Emergency tool kits
- ◆ Operational checklists for team heads and team members
- ◆ Equipment Damage Assessment
- ◆ Deactivation checklist
- ◆ Guidelines on specific types of items for each disaster

ESF No. 14

Helplines

PRIMARY AGENCY

Ministry of Disaster Management

SUPPORT AGENCIES

- Ministry of Health and Family Welfare
- Ministry of Home Affairs
- Ministry of Power
- Ministry of Civil Aviation
- Ministry of Communications
- Ministry of Science and Technology

RESPONSIBILITIES

- Coordinate, collect, process, report and display essential elements of information and facilitate support for planning efforts in response operations
- Coordinate pre-planned and event-specific aerial reconnaissance operations to assess overall disaster situation
- Pre-positioning assessment teams headed by the State Coordinating Officer and deployment of other advance elements
- Emergency clearing of debris to enable reconnaissance of damaged areas and passage of emergency personnel and equipment for life saving, property protection and health and safety

HANDBOOKS

HANDBOOKS

- Handbook on Team Equipment and Inventory
- Responsibilities of Primary Agency and each Support Agency
- Guidelines on specific types of items/situations for specific disasters

CHECKLISTS

- Check list of tool kit (land line connection, portable TV and battery powered radios, etc.)
- Inventory of engineering equipment
- Inventory of equipment / agencies/ personnel
- Emergency tool kits

L0
A
C
T
I
V
I
T
Y

PLANNING ASSUMPTIONS

- Access to disaster area will depend upon the re-establishment of ground and water routes
- Early damage assessment may be incomplete, inaccurate and general and rapid assessment may be required to determine response time
- There will be a flood of information and confusion about the injured population

ACTIVATION

- Setting up of toll free numbers and trying to establish the estimation of the damage and the victims in the area from the other sources

L3
A
C
T
I
V
I
T
Y

Preparedness
and
updat
ion
of
hand
books
and
in
ven
to
ry

DEACTIVATION

- Announce the commencement of deactivation activities
- Take stock of all administrative /logistics account
- Assimilate all reports and transaction of information during the disaster for easy documentation

RESPONSE

- One of the most critical needs will be having a simplified way of identifying and tracking victims and providing assistance
- Identify locations for setting up transit and relief camps, feeding centres and setting up of the helplines at the nodal points in the State and providing the people the information about the numbers

DEACTIVATION

Disaster Specific Modules

Each disaster brings with it a unique set of problems and situations. If these situations have not been anticipated well in advance, then the difficulties faced by the victims as well as the disaster managers increase enormously. Therefore, there is a need to address the characteristics of each disaster separately. In essence, although the back end activities during a disaster can be addressed through a multi-hazard approach, the front end or site specific needs have to be addressed through separate disaster specific modules. These modules will have to be developed further, keeping in view the brief outline provided in the following chapter.

A response to any situation should occur at two levels; one, there should be a general preparedness for averting all disasters outlined by the HPC; two, there should be adequate preparedness for disaster mitigation. However, each disaster creates unique and unprecedented situations that might require a specific and an in-depth approach in order to tackle it. Although most factors are common and a multi-hazard approach caters to them, specific inventories especially in the area of health, search and rescue, warning and monitoring systems change according to each disaster. Therefore, emergency operators should be well prepared to address the unique problems of each disaster also. There is thus a need to prepare plans that cater to and integrate with the multi-hazard disaster plan. In this section a general introduction to earthquakes and other subgroups has been attempted, in order to highlight the specific needs arising from disasters in terms of:

- ◆ Information Requirement
- ◆ ESF inventories and duties

EARTHQUAKE

Emergency Support Function	Requirements
1) Communication Assess damage to and reinstate communication facilities Establish communication with and from disaster site at the earliest	VSATs, battery charged communication equipment Inventory of mobile communication facilities
2) Public Health and Sanitation Assess extent and type of injuries Special care for epidemic outbreaks Distribute chlorine tablets Ensure purity of drinking water, free from contamination Provide drugs and medications for water borne diseases	Specialised medical team to handle orthopaedic and surgery related injuries, epidemics, preventive medicine practitioners Mobile hospitals
3) Power Assess damage to electric poles and stations etc Short circuiting measures Restore facilities at local and State level on priority	Inventory of power installations of the area Generators etc
4) Transport Provide transport for relief supplies Coordinate with other ESF for clearing of roads and other means of transport Provide appropriate transport for easy access to damaged areas	Inventory of transport/water way facilities in the area
5) Donation Compile information on the specific needs of the people for type of donations required Distribute donations by means of air dropping and boats to marooned victims	Socio-economic needs Cultural needs
6) Search and Rescue Aerial survey for victims Specialised sniffer dogs Collapsed structure search and rescue experts	Equipment cache
7) Public Works and Engineering Clear areas for relief camps Clear roads for easy access Seal areas and buildings that are likely to cause further damage Build temporary bridges, access ways for ease of access	Specialised equipment for large debris Specialised equipment for bridges and other temporary structures
8) Food Provide food packs that contain dry and non-perishable food items	Inventory of non-perishable food items
9) Information and Planning Release flood related information to all ESF Provide access to resource inventories and document all situation- reports and procedures	Disk net All Inventories
10) Relief Supplies Provide basic logistic materials required for local administration Provide other relief materials such as batteries, flash lights etc., to victims and rescue workers	Inventory of relief supplies

11) Drinking water Provide clean drinking water Ration existing water supplies for even distribution Mark and warn people against contamination Isolate contaminated sources of water	Inventory of water sources of the area
12) Shelter Provide weather resistant shelter Place shelters in a safe area Shelters should adhere to the climatic conditions of the area	Inventory of specific type of shelters for earthquakes
13) Media Information on current status	
14) Helplines Provide information on marooned victims Hospitals Receive messages of victims and forward them to relatives outside the disaster area Provide emergency phone lines	Inventory of emergency phone numbers

Depending on the nature of disaster some ESFs may be more actively involved than others. However, for an L3 disaster all ESFs require to be on alert and be prepared.

The following example of the EARTHQUAKE module briefly lists down variables of the disaster and related action/information

EARTHQUAKE MODULE

1. Earthquakes

- National Threat L3
- Vulnerability to earthquakes
- Vulnerability Map
- List of areas that should plan for L3 vulnerability to earthquakes

2. Anticipated Intensity

- ◆ Magnitude
- ◆ Characteristics

3. List of Secondary disasters

Secondary disasters could include major road closures, extensive damage to structures, loss of public utilities, and multiple injuries and deaths. The demands upon public safety agencies

will be overwhelming. Non-public responders such as the Volunteer Center will play a major role in recovery.

- ◆ Floods
- ◆ Urban/Wild Fires
- ◆ Hazardous Material Incidents
- ◆ Accidents -Road, Railway

4. Response Activities

The National Response Plan incorporates common ESF functions and responsibilities. The response to the following areas of functions will have to be specific to earthquakes.

Checklist Incident Command System

- ◆ Injuries: Designate First Aid area and report location to Incident Commander Check for injured and treat as appropriate; if possible move to First Aid area.
- ◆ Gas: If odour of gas is present (check outside as well as inside), get gas shut-off wrench from disaster supplies and shut off gas.
- ◆ Structural Condition: Be cautious — aftershocks may follow earthquakes.

Check for visible signs of damage. Evacuate if structural stability seems questionable (err on side of safety). If possible, retrieve any cellular phones but do not place yourself or others at risk to do so.

- ◆ Telephone and Communications: If electrical power is off, a non-Centrex phone system will probably not work; Centrex systems do not require power to operate and therefore should be a better option. If electrical power is off, the telephone on your fax machine will also probably not work. If available, use cellular phone(s), but only if no other telephones are working.
- ◆ Power: If power is out, do not light candles during an earthquake. There are two dangers — from explosion

caused by gas leak and ignited by spark from match, and from candles falling and starting fires. For lighting, use flashlights, lanterns and lightsticks. Use a generator, if one is available.

- ◆ Building Tenants: Check on welfare of other tenants in the building if appropriate.
- ◆ Hazards: Rope off areas where electrical lines are downed and structural hazards exist. Inform Incident Commander of downed lines, gas leaks and water line breaks. Remove anything blocking street, which may prevent access by emergency vehicles except downed electrical lines.
- ◆ Damage Assessment: Conduct detailed damage assessment as soon as possible and photograph or video record the damage.

MODEL FRAMEWORK FOR DISASTER-SPECIFIC APPROACH – SUB GROUP I

Floods and Drainage Management

Emergency Support Function	Requirements
1) Communication Warn people against areas that are likely to get flooded Assess damage to communication facilities	VSATs, battery charged communication equipment
2) Public Health and Sanitation Assess the advent of infectious diseases Warn people on special measures against epidemics Special care for waterborne diseases and epidemic outbreaks Distribute chlorine tablets Ensure purity of drinking water, free from contamination Provide drugs and medications for water borne diseases	Specialised medical team to handle epidemics, cases of drowning, and water borne diseases
3) Power Damage to electric poles and stations etc., due to flooding Short circuiting measures Restore facilities at local and State level	Inventory of power installations of the area
4) Transport Provide boats as a means of transport	Inventory of transport/water way facilities in the area
5) Donation Compile information on specific needs of the people Distribute donations by means of air dropping and boats to marooned victims	Socio-economic needs Cultural needs
6) Search and Rescue Aerial survey for marooned victims	Deep sea divers S&R boats Equipment cache

7) Public Works and Engineering Clear areas for relief camps Clear roads for easy access Seal areas and buildings that are likely to cause further damage Build temporary bridges for ease of access	Specialised equipment for functioning in flood prone areas inventory Specialised equipment for bridges and other temporary structures
8) Food Provide food packs that contain dry and non-perishable food items	Inventory of non-perishable food items
9) Information and Planning Release flood related information to all ESF Provide access to resource inventories and document all situations-reports and procedures	Disk net All Inventories
10) Relief Supplies Provide basic logistic materials required for local administration Provide relief materials such as batteries, flash lights to victims/ rescue workers	Inventory of relief supplies
11) Drinking water Provide clean drinking water Ration existing water supplies for even distribution Mark and warn people against contamination and isolate contaminated sources	Inventory of water sources of the area
12) Shelter Provide weather resistant shelter Place shelters in a safe area Shelters should adhere to the climatic conditions of the area	Inventory of specific type of shelters for cyclones and floods
13) Media Information on current status	
14) Helplines Provide information on marooned victims and hospitals Receive messages for victims and forward them to relatives outside disaster area Provide emergency phone lines	Inventory of emergency phone numbers

Cyclones, Tornadoes, Hurricanes

Emergency Support Function	Requirements
1) Communication Warn people against areas that are likely to get flooded Assess damage to communication facilities	VSATs, battery charged communication equipment
2) Public Health and Sanitation Assess the advent of infectious diseases Warn people on special measures against epidemics Special care for waterborne diseases and epidemic outbreaks Distribute chlorine tablets Ensure purity of drinking water, free from contamination Provide drugs and medications for water borne diseases	Specialised medical team to handle epidemics, cases of drowning, water borne diseases
3) Power Damage to electric poles and stations etc., due to flooding Short circuiting measures Restore facilities at local and State level	Inventory of power installations of the area

4) Transport Provide boats as a means of transport	Inventory of transport/water-way facilities in the area
5) Donation Compile information on the specific needs of the people for the type of donations required Distribute donations by means of air dropping and boats to marooned victims	Socio-economic needs Cultural needs
6) Search and Rescue Aerial survey for marooned victims	Deep sea divers S&R boats Equipment cache
7) Public Works and Engineering Clear areas for relief camps Clear roads for easy access Seal areas and buildings that are likely to cause further damage Build temporary bridges for ease of access	Inventory of specialised equipment for functioning in flood prone areas and for bridges and other temporary structures
8) Food Provide food packs that contain dry and non-perishable food items	Inventory of non-perishable food items
9) Information and Planning Release flood related information to all ESF Provide access to resource inventories and document all situation- reports and procedures	Disk net All Inventories
10) Relief Supplies Provide basic logistic materials required for local administration Provide other relief materials such as batteries, flash lights etc., to victims and rescue workers	Inventory of relief supplies
11) Drinking water Provide clean drinking water Ration existing water supplies for even distribution Mark and warn people against contamination Isolate contaminated sources of water	Inventory of water sources of the area
12) Shelter Provide weather resistant shelter Place shelters in a safe area Shelters should adhere to the climatic conditions of the area	Inventory of specific type of shelters for cyclones and floods
13) Media Information on current status	
14) Helplines Provide information on marooned victims Hospitals Receive messages of victims and forward them to relatives outside the disaster area Provide emergency phone lines	Inventory of emergency phone numbers

Hailstorm, Cloud Burst, Snow Avalanches, Heat & Cold Waves, Thunder & Lightning

Emergency Support Function	Requirements
1) Communication Warn people against areas that are likely to be hit Assess damage to communication facilities	VSATs, battery charged communication equipment
2) Public Health and Sanitation Assess the advent of infectious diseases Warn people on special measures against epidemics Special care for waterborne diseases and epidemic Ensure purity of drinking water, free from contamination Provide drugs and medications for water borne diseases Prevent occurrence of dehydration, burns	Specialised medical team to handle epidemics, cases of drowning, frost bites, heat strokes, burns, water borne diseases
3) Power Damage to electric poles and stations etc., due to flooding Short circuiting measures Restore facilities at local and State level	Inventory of power installations of the area
4) Transport Provide boats as a means of transport	Inventory of transport/water way facilities in the area
5) Donation Compile information on the specific needs of the people for type of donations required Distribute donations by means of air dropping and boats to marooned victims	Socio-economic needs Cultural needs
6) Search and Rescue Aerial survey for marooned victims	Deep sea divers S&R boats Equipment cache
7) Public Works and Engineering Clear areas for relief camps Clear roads for easy access Seal areas and buildings that are likely to cause further damage Build temporary bridges for ease of access	Inventory of specialised equipment for functioning in vulnerable areas and for bridges and other temporary structures
8) Food Provide food packs that contain dry and non-perishable food items	Inventory of non perishable food items
9) Information and Planning Release related information to all ESF Provide access to resource inventories and document all situation—reports and procedures	Disk net All Inventories
10) Relief Supplies Provide basic logistic material required for local administration Provide other relief materials such as batteries, flash lights etc., to victims and rescue workers	Inventory of relief supplies

<p>11) Drinking water Provide clean drinking water Ration existing water supplies for even distribution Mark and warn people against contamination Isolate contaminated sources of water</p>	Inventory of water sources of the area
<p>12) Shelter Provide weather resistant shelter Place shelters in a safe area Shelters should adhere to the climatic conditions of the area</p>	Inventory of specific type of shelters for cyclones and floods
<p>13) Media Information on current status</p>	
<p>14) Helplines Provide information on marooned victims Hospitals Receive messages of victims and forward them to relatives outside the disaster area Provide emergency phone lines</p>	Inventory of emergency phone numbers

Sea Erosion

Emergency Support Function	Requirements
<p>1) Communication Warn people against areas that are likely to get flooded Assess damage to communication facilities</p>	VSATs, battery charged communication equipment
<p>2) Public Health and Sanitation Assess the advent of infectious diseases Warn people on special measures against epidemics Special care for waterborne diseases and epidemic outbreaks Distribute chlorine tablets Ensure purity of drinking water, free from contamination Provide drugs and medications for water borne diseases Monitor situation</p>	Specialised medical team to handle epidemics, cases of drowning, and water borne diseases
<p>3) Power Damage to electric poles and stations etc., due to flooding Short circuiting measures Restore facilities at local and State level Monitor situation</p>	Inventory of power installations of the area
<p>4) Transport Provide boats as a means of transport Provide transport for evacuation Monitor situation</p>	Inventory of transport/water way facilities in the area

5) Donation Compile information on the specific needs of the people for type of donations required Distribute donations by means of air dropping and boats to marooned victims	Socio-economic needs Cultural needs
6) Search and Rescue Aerial survey for marooned victims	Deep sea divers S&R boats Equipment cache
7) Public Works and Engineering Clear areas for rehabilitation sites Seal areas and buildings that are likely to cause further damage Build temporary bridges for ease of access	Specialised equipment for functioning in prone areas inventory Specialised equipment for bridges and other temporary structures
8) Food Provide food packs that contain dry and non-perishable food items	Inventory of non-perishable food items
9) Information and Planning Release related information to all ESF Provide access to resource inventories and document all situation- reports and procedures	Disk net All Inventories
10) Relief Supplies Provide basic logistic materials required for local administration Provide other relief materials such as batteries, flash lights, etc., to victims and rescue workers	Inventory of relief supplies
11) Drinking water Provide clean drinking water Ration existing water supplies for even distribution Mark and warn people against contamination Isolate contaminated sources of water	Inventory of water sources of the area
12) Shelter Provide weather resistant shelter Place shelters in a safe area Shelters should adhere to the climatic conditions of the area	Inventory of specific type of weatherproof shelters for temporary rehabilitation
13) Media Information on current status	
14) Helplines Provide information on marooned victims Hospitals Receive messages of victims and forward them to relatives outside the disaster area Provide emergency phone lines	Inventory of emergency phone numbers

Droughts

Emergency Support Function	Requirements
1) Communication Warn people against areas that are likely to be affected General Alert and Assistance	
2) Public Health and Sanitation Assess diseases Warn people on special measures against malnutrition Distribute ORS Ensure purity of drinking water Provide drugs and medications for water borne diseases	Specialised medical team to handle malnutrition and starvation related disorders
3) Power General Alert and Assistance	
4) Transport General Alert and Assistance	
5) Donation Compile information on specific needs of the people for type of donations required Distribute donations by means of air dropping	Socio-economic needs Cultural needs
6) Search and Rescue Locate survivors	
7) Public Works and Engineering Clear areas for relief camps	Inventory of specialised equipment for functioning in prone areas
8) Food Provide food packs that contain dry and non-perishable food items	Inventory of non perishable food items
9) Information and Planning Release drought related information to all ESF Provide access to resource inventories and document all situation- reports and procedures	Disk net All Inventories
10) Relief Supplies Provide basic logistic materials required for local administration Provide other relief materials such as batteries, flash lights etc., to victims and rescue workers	Inventory of relief supplies
11) Drinking water Provide clean drinking water Ration existing water supplies for even distribution Mark and warn people against contamination	Inventory of water sources of the area

12) Shelter Provide weather resistant shelter Place shelters in a safe area Shelters should adhere to climatic conditions of the area	Inventory of specific type of shelters for cyclones and floods
13) Media Information on current status	
14) Helplines Provide information on marooned victims Hospitals Receive messages of victims and forward them to relatives outside the disaster area Provide emergency phone lines	Inventory of emergency phone numbers

Sub group II has been addressed in the framework presented for earthquakes on page 102.

MODEL FRAMEWORK FOR DISASTER-SPECIFIC APPROACH – SUB GROUP III

Chemical, Industrial, Nuclear - Special care should be taken to maintain the security precautions during such disasters

Emergency Support Function	Requirements
1) Communication Assess damage to and reinstate communication facilities Establish communication with and from disaster site at the earliest Special care on Security matters	VSATs, battery charged communication equipment Inventory of mobile communication facilities
2) Public Health and Sanitation Assess extent and type of injuries Special care for epidemic out-breaks Distribute chlorine tablets Ensure purity of drinking water, free from contamination Provide gas masks	Specialised medical team to handle orthopaedic and surgery related injuries, epidemics, preventive medicine practitioners Mobile hospitals
3) Power Assess damage to electric poles and stations etc Short circuiting measures Restore facilities at local and State level on priority	Inventory of power installations of the area Generators etc
4) Transport Provide transport for relief supplies Coordinate with other ESF for clearing of roads and other means of transport Provide appropriate transport for easy access to damaged areas	Inventory of transport/water way facilities in the area
5) Donation Compile information on the specific needs of the people for type of donations required Distribute donations by means of air dropping and boats to marooned victims	Socio-economic needs Cultural needs

6) Search and Rescue Aerial survey for victims Specialised sniffer dogs Collapsed structures search and rescue experts	Equipment cache
7) Public Works and Engineering Clear areas for relief camps Clear roads for easy access Seal areas and buildings that are likely to cause further damage Build temporary bridges, access ways for ease of access	Specialised equipment for large debris Specialised equipment for bridges and other temporary structures
8) Food Provide food packs that contain dry and non-perishable food items	Inventory of non perishable food items
9) Information and Planning Release flood related information to all ESF Provide access to resource inventories and document all situation- reports and procedures	Disk net All Inventories
10) Relief Supplies Provide basic logistics materials required for local administration Provide other relief materials such as batteries, flash lights etc., to victims and rescue workers	Inventory of relief supplies
11) Drinking water Provide clean drinking water Ration existing water supplies for even distribution Mark and warn people against contamination Isolate contaminated sources of water	Inventory of water sources of the area
12) Shelter Provide weather resistant shelter Place shelters in a safe area Shelters should adhere to the climatic conditions of the area	Inventory of specific types of shelter for earthquakes
13) Media Information on current status	
14) Helplines Provide information on marooned victims Hospitals Receive messages of victims and forward them to relatives outside the disaster area Provide emergency phone lines	Inventory of emergency phone numbers

MODEL FRAMEWORK FOR DISASTER-SPECIFIC APPROACH – SUB GROUP IV

Accident related disasters – Special care should be taken to maintain the security precautions in speculative accidents

Emergency Support Function	Requirements
1) Communication Assess damage to and reinstate communication facilities Establish communication with and from disaster site at the earliest Special care on Security matters	VSATs, battery charged communication equipment Inventory of mobile communication facilities
2) Public Health and Sanitation Assess extent and type of injuries Special care for epidemic outbreaks Distribute chlorine tablets Ensure purity of drinking water, free from contamination Provide gas masks	Specialised medical team to handle orthopaedic and surgery related injuries, epidemics, preventive medicine practitioners Mobile hospitals
3) Power Assess Damage to electric poles and stations etc Short circuiting measures Restore facilities at local and state level on priority	Inventory of power installations of the area Generators etc
4) Transport Provide transport for relief supplies Coordinate with other ESF for clearing of roads and other means of transport Provide appropriate transport for easy access to damaged areas	Inventory of transport/water way facilities in the area
5) Donation Compile information on the specific needs of the people for type of donations required Distribute donations by means of air dropping and boats to marooned victims	Socio-economic needs Cultural needs
6) Search and Rescue Aerial survey for victims Specialised sniffer dogs Collapsed structures search and rescue experts	Deep sea divers, Equipment cache, Medical First Responders, Collapsed structure search and rescue responders, Fire personnel, Home guards, Police
7) Public Works and Engineering Clear areas for relief camps Clear roads for easy access Seal areas and buildings that are likely to cause further damage Build temporary bridges, access ways for ease of access Check strength of existing structures	Specialised equipment for large debris Specialised equipment for bridges and other temporary structures
8) Food Provide food packs that contain dry and non-perishable food items	Inventory of non perishable food items

<p>9) Information and Planning Release flood related information to all ESF Provide access to resource inventories and document all situation- reports and procedures</p>	<p>Disk net All Inventories</p>
<p>10) Relief Supplies Provide basic logistic materials required for local administration Provide other relief materials such as batteries, flash lights etc., to victims and rescue workers</p>	<p>Inventory of relief supplies</p>
<p>11) Drinking water Provide clean drinking water Ration existing water supplies for even distribution Mark and warn people against contamination Isolate contaminated sources of water</p>	<p>Inventory of water sources of the area</p>
<p>12) Shelter Provide weather resistant shelter Place shelters in a safe area Shelters should adhere to the climatic conditions of the area</p>	<p>Inventory of specific type of shelters for earthquakes</p>
<p>13) Media Information on current status</p>	
<p>14) Helplines Provide information on marooned victims Hospitals Receive messages of victims and forward them to relatives outside the disaster area Provide emergency phone lines</p>	<p>Inventory of emergency phone numbers</p>

MODEL FRAMEWORK FOR DISASTER-SPECIFIC APPROACH – SUB GROUP V

Biological related Disasters

Emergency Support Function	Requirements
1) Provide communication assistance to medical teams	VSATs, battery charged communication equipment for field operations, inventory of mobile communication facilities
2) Public Health and Sanitation - Assess extent and type of diseases. Establish cause. Network with medical institutions for specialised diagnosis and cure. Isolate infected patients. Take medical measures to curb epidemics etc. Special care for epidemic outbreaks. Distribute chlorine tablets. Ensure purity of drinking water, free from contamination. Provide gas masks	Specialised medical team to handle orthopaedic and surgery related injuries, epidemics, preventive medicine practitioners. Mobile hospitals
3) Provide power backup for medical operators and hospitals for uninterrupted power supply. Provide mobile power backup for field operations	Inventory of power installations of the area, generators etc
4) Provide transport for relief supplies and medicines	Inventory of transport/water way facilities in the area
5) Compile donation information on the specific needs of the people for type of donations required. Distribute donations by means of air dropping and boats to marooned victims	Socio-economic needs, Cultural needs
6) Search and Rescue-Search and isolate infected people	Protective gear
7) Public Works and Engineering-Isolate and barricade affected areas and hospitals	Protective gear
8) Food-Provide clean food according to need	Inventory of non –perishable food items
9) Information and Planning-Release flood related information to all ESF. Provide access to resource inventories and document all situation-reports and procedures	Disk net All Inventories
10) Relief Supplies-Provide specific need of relief	Inventory of relief supplies
11) Drinking water-Provide clean drinking water Ration existing water supplies for even distribution. Mark and warn people against contamination. Isolate contaminated sources of water	Inventory of water sources of the area
12) Shelter-Provide isolated structures and temporary structures for displaced/unaffected people	Inventory of specific type of shelters for earthquakes
13) Media-information on current status	
14) Helplines-Provide information on marooned victims. Hospitals-Receive messages of victims and forward them to relatives outside the disaster area and provide emergency phone lines	Inventory of emergency phone numbers

Follow-Up Actions

The document of the National Disaster Response Plan was evolved out of intensive consultations and study of various mechanisms of disaster responses followed in different parts of the world. In the process, many new ideas and concepts have been developed and incorporated. These concepts have been included in order to develop a framework for the plan which will have to be dealt with in detail as part of the follow-up actions to be undertaken after the first document of the Response Plan. The follow-up actions will have to address the need for meticulous planning and preparedness in the form of handbooks and checklists for response activities at all levels. The exact specifications of EOCs, the activities and responsibilities of each ESF and detailed disaster-specific modules are some of the priority areas that will have to be looked into for further detailing of the Response Plan.

This document of the National Disaster Response Plan incorporates many new concepts and has tried to build these concepts into the existing framework and functioning of the Government of India. The response to a disaster requires both indigenous systems as well as effective planning and preparedness strategies. Since the damage and effect of the disasters are so extreme, in case of a response situation multiple players have to effectively coordinate and communicate with each other for a quick and efficient recovery and control over the situation. However, the responses require detailed and unique responses from all the players.

Therefore it is recommended that all involved ministries and other agencies should prepare and detail out their role as evident in various parts of the document.

Primarily, all Emergency Support Functions will have to further detail out their operations based on the guidelines mentioned in the document. Other activities that can greatly decrease response time such as maps, equipment caches and directories will also have to be developed by

the concerned authority. The four key areas that require follow-up actions are:

- ◆ Developing checklists, handbooks and guidelines
- ◆ GIS maps
- ◆ EOC and ICS layouts and databases
- ◆ ESFs
- ◆ Preparing Disaster-Specific Modules

LIST OF CHECKLISTS AND HANDBOOKS

Documents Required for Quick Assessment and Response

1. Declaration of L3 - Format
2. Deployment of Assessment Team - Format
3. CRC Responsibilities - Handbook
4. Survival Kit - Checklist
5. Assessment Equipment - Checklist
6. National Assessment - Format
7. National Media Release
8. Handbooks for
 - ◆ International NGO
 - ◆ NGO
 - ◆ Media Personnel
 - ◆ Researchers/Students
 - ◆ Field/Relief Workers
 - ◆ Government Functionaries
9. EOC Set-up - Checklists
10. Layout and dimensions, equipment, etc., for EOC - Minimum standards Handbook
11. ESF Desk - Checklist
12. Matrix of primary and secondary functions of each ESF
13. Do's and don't's to be followed during disaster times in EOC
14. Regular staff - Schedule and Checklist

15. Staff on Call - Schedule and Checklist
16. Staff on Disaster Duty - Schedule and Checklist

DOCUMENTS FOR EACH ESF

ESF 1 - Communication

- ◆ Checklist of tool kits
- ◆ Handbook on Disaster Telecommunication Assistance
- ◆ Handbook on Team Equipment and Inventory
- ◆ Responsibilities of Primary Agency
- ◆ Responsibility of each Support Agency
- ◆ Emergency tool kits
- ◆ Operational checklists
- ◆ Equipment Damage Assessment
- ◆ On-site operations
- ◆ Planning checklist
- ◆ Deactivation checklist
- ◆ List of PSUs and Private Agencies

ESF 2 – Public Health and Sanitation

- ◆ Detailed checklist of symptoms of common diseases along with medicine dosages for each disaster
- ◆ Checklist of doctor's tool kit for specialised doctors
- ◆ Checklist for maintaining hygienic conditions
- ◆ Disaster Health Assistance and emergency services
- ◆ Team Equipment and Inventory
- ◆ Responsibilities- Primary /Support Agencies
- ◆ Minimum standards of health facilities
- ◆ Location of health facilities in disaster area (map)
- ◆ Information manual for biological disaster

- ◆ Doctor's manual for emergency relief
- ◆ Emergency toolkits
- ◆ Operational checklists for health officials
 - Equipment Damage Assessment
 - On-site operations
- ◆ Planning checklist
 - Qualification of health personnel
 - Checklist of doctor's tool kit
 - Symptoms of common ailments
- ◆ Deactivation checklist
- ◆ Dosages checklist for common epidemics and ailments during a disaster

ESF 3 - Power

- ◆ Handbook on Disaster Power Assistance
- ◆ Handbook on Team Equipment and Inventory
- ◆ Responsibilities of Primary Agency
- ◆ Responsibility of each Support Agency
- ◆ Manuals on handling of equipment which is unique to a particular disaster
- ◆ Emergency toolkits
- ◆ Operational checklists
- ◆ Equipment Damage Assessment
- ◆ On-site operations
- ◆ Planning checklist
- ◆ Deactivation checklist
- ◆ List of PSUs and Private Agencies
- ◆ Minimum qualifications and equipment required for personnel in EOC and on-site
- ◆ Deactivation checklist

ESF4 - Transport

- ◆ Inventories of available transport facilities
- ◆ Responsibilities of Primary Agency
- ◆ Responsibility of each Support Agency

- ◆ Handbook on transport assistance
- ◆ Handbook on Team Equipment and Inventory
- ◆ Emergency tool kits
- ◆ Operational checklists
- ◆ Equipment Damage Assessment
- ◆ On-site operations
- ◆ Formats for check of bridges and other steel works
- ◆ Planning checklist
- ◆ Deactivation checklist
- ◆ List of PSUs and Private Agencies

ESF 5- Search and Rescue

- ◆ Training handbooks on MFR and CSSR
- ◆ Inventory of volunteers who have already completed the course successfully and can be utilised in the search and rescue operations.
- ◆ Handbook on team Equipment and Inventory
- ◆ Responsibilities of Primary Agency
- ◆ Responsibility of each Support Agency
- ◆ Emergency toolkits
- ◆ Operational checklists
- ◆ Medical tool kits
- ◆ On-site aerial surveys
- ◆ MFR and CSSR kits
- ◆ Deactivation checklist
- ◆ List of PSUs and Private Agencies/ NGOs working in the area

ESF 6 - Donation

- ◆ Guidelines on specific types of items
- ◆ Guide for developing donations which needs a list to be prepared by the Voluntary Agencies (family pack or mass relief pack, colour coding)

- ◆ Emergency tool kits (first aid items)
- ◆ Equipment Damage Assessment
- ◆ On-site operations checklist and the coordinating field station map
- ◆ Planning checklist
- ◆ Deactivation checklist
- ◆ List of PSUs and Private Agencies
- ◆ Handbook on disaster donation assistance
- ◆ Handbook on Team Equipment and Inventory
- ◆ Responsibilities of Primary Agency
- ◆ Responsibility of each Support Agency
- ◆ Guidelines on specific items and continued response for donation and relief management

ESF 7- Public Works and Engineering

- ◆ By-laws for all disasters
- ◆ Checklist of tool kit
- ◆ Inventory of engineering equipment
 - ◆ Disaster specific
 - ◆ Area specific
- ◆ Handbook on Disaster Engineering Assistance
- ◆ Handbook on Team Equipment and Inventory
- ◆ Responsibilities of Primary Agency and each Support Agency
- ◆ Guidelines on specific types of items/ situations for specific disasters
- ◆ Inventory of equipment / agencies/ personnel
- ◆ Emergency tool kits
- ◆ Operational checklists for team heads and team members
- ◆ Equipment Damage Assessment
- ◆ Handling of heavy equipments

- ◆ Deactivation checklist
- ◆ Guidelines on specific types of items for each disaster
- ◆ Guide for by-laws to be followed
- ◆ Qualification of labour /other site assistants

ESF 8 – Information and Planning

- ◆ Handbook on Disaster Information Assistance on Disknet
- ◆ Handbook on Team Equipment and Inventory
- ◆ Responsibilities of Primary Agency
- ◆ Responsibility of each Support Agency
- ◆ Guidelines on specific types of items
- ◆ Disaster specific issues related to information technology
- ◆ Emergency tool kits
- ◆ Operational checklists
- ◆ Equipment Damage Assessment
- ◆ On-site operations
- ◆ Handling of equipment
- ◆ Planning checklist
- ◆ Deactivation checklist
- ◆ List of PSUs and Private Agencies
- ◆ Guidelines on specific types of items

ESF 9 – Relief Supplies

- ◆ Handbook on Relief Supplies Assistance
- ◆ Handbook on Team Equipment and Inventory
- ◆ Responsibilities of Primary Agency and each Support Agency
- ◆ Guidelines on specific types of items for each disaster
- ◆ Manual on disaster-specific relief operations
- ◆ Emergency tool kits

- ◆ Operational checklists for team leaders and team members
- ◆ Handling/Storage of relief supplies
- ◆ On-site operations
- ◆ Planning checklist
- ◆ Deactivation checklist
- ◆ List of PSUs and Private Agencies
- ◆ Guidelines on specific types of items for each disaster
- ◆ Guide for developing relief supplies needs list

ESF 10 - Food

- ◆ Checklist of food materials for
 - ◆ Family packs for four
 - ◆ Family packs for two
 - ◆ Food distribution in relief camps
- ◆ Minimum standards to maintain food quality
- ◆ Catalogue of available resources of food
- ◆ Handbook on food distribution
- ◆ Responsibilities of Primary Agency
- ◆ Responsibility of each Support Agency

ESF 11 – Drinking Water

- ◆ Handbook on disaster drinking water assistance
- ◆ Handbook on Team Equipment and Inventory
- ◆ Responsibilities of Primary Agency
- ◆ Responsibility of each Support Agency
- ◆ Inventories of agencies that can provide drinking water
- ◆ Procedures of storing water to maintain purity
- ◆ Minimum standards for safe drinking water

- ◆ Minimum quantity of requirement of water per person

ESF12 - Shelter

- ◆ Inventories of manufacturing agencies
- ◆ Procedures of storage
- ◆ Minimum standards for relief camps
- ◆ Minimum requirement of space per person
- ◆ Handbook on Team Equipment and Inventory
- ◆ Responsibilities of Primary Agency
- ◆ Responsibility of each Support Agency
- ◆ Handbook on tent structure and other collapsible structures
- ◆ Handbook on assembling of structures
- ◆ Inventories of agencies that can be used for putting up tents
- ◆ Minimum standards for shelter
- ◆ Relief camps
- ◆ Tents and other temporary structures
- ◆ Location of camps for different disasters
- ◆ Existing locations that can be used for shelter
- ◆ Minimum standards for buildings to be used as relief camps

ESF13 - Media

- ◆ Media personnel on-site
- ◆ Disaster-specific media operations
- ◆ Catering to all the L3 disasters mentioned in the HPC
- ◆ Media personnel in the EOC
- ◆ Manual for ESF Head
- ◆ Types of information required for each disaster

- ◆ Checklists of do's and don'ts in a disaster site, specific to each disaster
- ◆ Checklist of queries to be made on site
- ◆ Checklist of appropriate graphics and pictures to assist relief work and spread useful information in the disaster affected area
- ◆ Standard operating procedures and responsibilities of Radio and TV stations

ESF14 - Helplines

- ◆ Checklist of tool kit (land line connection, portable TV and battery powered radios, etc....)
- ◆ Inventory of engineering equipment
- ◆ Area Specific Handbook on Team Equipment and Inventory
- ◆ Responsibilities of Primary Agency and each Support Agency
- ◆ Guidelines on specific types of items/situations for specific disasters
- ◆ Inventory of equipment / agencies/ personnel
- ◆ Emergency tool kits
- ◆ Operational checklists for team heads and team members
- ◆ Equipment Damage Assessment
- ◆ Deactivation checklist

GIS MAPS

A GIS enabled system that can be integrated with all EOCs and the Disk net should also be developed. Each State as well as each ESF must prepare a vulnerability map of their specific area, which can be added with attributes of variables and characteristics of that area. Maps should have all disaster-related facilities and vulnerable groups marked on them. Total population and

strategic installations are the areas that need to be identified on them. These maps need to be constantly updated and can further be used as base maps for preparedness, mitigation and developmental activities.

EOC AND ICS LAYOUTS AND DATABASES

The EOC should emerge as a specialised area, following standard specifications for ease of operations. The EOC must have prescribed spaces for all operators along with state-of-the-art equipment and technology. It should have a meeting room, EOC incharge room, a communication room and a common hall for operations, fitted with LCD projectors to view current status, and GIS maps for further planning and communications. The EOC should also have a media room partitioned by a glass wall from the main operations room for media briefings and update along with a view of the projectors for 24 hours surveillance and monitoring.

An example of the Mumbai Mantralaya is given below:

BRIEF OUTLINE OF AN EMERGENCY OPERATION CENTRE

The EOC should have a Nucleus that comprises of

- ◆ Workstations for each ESF
- ◆ Room for EOC Incharge
- ◆ Media/ Conference briefing room
- ◆ LCD Projectors
- ◆ TV sets for news channels
- ◆ Phone networks with nodal ministries and other links
- ◆ FAX facilities
- ◆ Video conferencing facilities
- ◆ Computer networks

- ◆ Internet connectivity
- ◆ Mobile phones

The EOC should provide the following services to its staff

- ◆ Living quarters
- ◆ Pantry (2 weeks storage)
- ◆ EDP section
- ◆ Power/Generator backup systems
- ◆ Medical room

The structure in which the EOC is housed should be

- ◆ Disaster resistant
- ◆ Secure
- ◆ Self contained in terms of equipment, extra food storage and other such facilities

Emergency Support Functions

Each of the ESF given in the document needs further elaboration and detailing according to the specifics to each area of the

primary ministry. Each primary agency (the specific concerned ministry) will have to develop their own plans and their operations on site as well as at the EOC. The primary agencies must take into account other supporting agencies and outline their responsibilities as well. Each ESF has to work in coordination with the other which should be reflected in their respective plans.

DISASTER-SPECIFIC MODULES

The framework of the disaster-specific module has been introduced in this document. These will have further elaboration by identifying the distinct characteristics of each disaster. The approach to response towards sudden disasters such as earthquakes, floods, landslides differs from response to slow creeping disasters such as droughts, community strifes and the like. Therefore it is important to develop and address the typical situations created by various disasters in the form of separate modules.



**MEMBERS OF THE HIGH
POWERED COMMITTEE ON
DISASTER MANAGEMENT**



1. Shri J.C. Pant
Former Secy to the Govt. of India,
'SHRADHA Kunj'
159, Vasant Vihar
Dehradun
2. Shri Y.Harishankar
Secretary (Security),
Cabinet Secretariat
Rashtrapati Bhawan,
New Delhi
3. Shri M. C. Gupta
Director
IIPA, New Delhi-110 002
4. Shri T. N. Srivastava
I.A.S. (Retd.)
Former Member Secretary
11th Finance Commission
B-22, Char Imli,
Bhopal
Madhya Pradesh
5. Shri S K Purkayastha
Additional Secretary and
Central Relief Commissioner,
Deptt of Agriculture and Cooperation
MoA, Krishi Bhavan, New Delhi
6. Shri R. R. Kelkar
Director General,
Indian Meteorological Department,
Mausam Bhavan,
Lodhi Road
New Delhi
7. Shri Bhagat Singh
Principal Secy & Financial
Commissioner
Govt of Punjab, Deptt of Revenue
Punjab Secretariat,
Chandigarh
8. Dr N.S. Virdi
Director,
Wadia Institute of Himalayan
Geology,
33, General Mahadev Singh Road,
Dehradun-248 001
9. Prof. A. S. Arya
Professor Emeritus,
72/6 Civil Lines,
Roorkee-247 667
10. Shri Ramesh Chandra
Former Chairman,
Central Water Commission,
C-42, Retreat Apartment,
20 I. P. Extension, Patparganj,
Delhi-110 092
11. Shri G.B.Pradhan
Director General
Yashwant Rao Chavan Academy of
Development Administration,
Pune-411007
12. Dr. V. K. Sharma
Professor, National Centre for Disaster
Management,
Indian Institute of Public
Administration
I. P. Estate, New Delhi-2
13. Shri Alok Perti
Secretary,
Department of Relief &
Rehabilitation,
Govt. of Assam,
Dispur (Guwahati) -780006
14. Shri R.K.Bhargava
Secretary, Revenue and Forest
Department, Govt. of Maharashtra
Mumbai-400 032

15. Shri R. C. Dwivedi
Relief Commissioner,
Govt. of Uttar Pradesh,
Lucknow -226 001
16. Shri K. V. Venkatachary
Study Director,
Disaster Management Systems,
ISRO Headquarters,
Antariksha Bhawan
Bangalore
17. Shri R. M. Premkumar
Additional Secretary,
Department of Atomic Energy
Anushakti Bhavan,
Chattrapati Shivaji Maharaj Marg,
Mumbai-400001
18. Shri V. Rajagopalan
Joint Secretary,
Ministry of Environment and Forest,
Paryavaran Bhavan,
CGO Complex, Lodi Road,
New Delhi
19. Shri B. S. Lalli
Joint Secretary,
Ministry of Defence,
South Block, New Delhi
20. Shri Sanat Kaul
Joint Secretary,
Ministry of Civil Aviation,
Rajiv Gandhi Bhavan,
New Delhi
21. Shri Diwakar Prasad,
Director General, Civil Defence,
Ministry of Home Affairs,
New Delhi
22. Dr. Ira Ray
Additional DG,
Directorate General of Health
Services,
Nirman Bhavan, New Delhi
23. Shri Indra Ghosh
Executive Director (Safety),
Railway Board, Rail Bhawan
New Delhi
24. Shri N. S. Samant
Director
Department of Chemicals &
Petrochemicals,
Shastri Bhavan, New Delhi
25. Shri Naved Masood
Joint Secretary (NDM) and
Addl. Central Relief Commissioner,
Department of Agriculture &
Cooperation,
Krishi Bhawan
New Delhi
26. Dr. R. K. Bhandari
Director
CDMM, Anna University
Chennai-25
27. Shri T. N. Gupta
Advisor, MoUDPA &
Ex. Director, BMTPC
G-Wing
Nirman Bhawan
New Delhi
28. Shri Anil Sinha
Head
National Centre for Disaster
Management
IIPA, IP Estate, Ring Road
New Delhi-110002

ACRONYMS

Ministry of Agriculture	-	MoA
Ministry of Defence	-	MoD
Ministry of Surface Transport	-	MoST
Ministry of Power	-	MoP
Ministry of Health and Family Welfare	-	MoH&FW
Ministry of Water Resources	-	MoWR
Department of Animal Husbandry	-	DoAH
Ministry of Urban Development and Poverty Alleviation	-	MoUD&PA
Ministry of Planning and Programme Implementation	-	MoP&PI
Ministry of Home Affairs	-	MHA
Ministry of Rural Development	-	MoRD
Ministry of Information Technology	-	MoIT
Ministry of Information and Broadcasting	-	MoI&B
Ministry of Communication	-	MoC
Ministry of Heavy Industries	-	MoHI
Ministry of Social Justice and Empowerment	-	MoSJ&E
Ministry of Civil Aviation	-	MoCA
Ministry of Non-Conventional Energy Resources	-	MoNCR
Ministry of Petroleum and Natural Gas	-	MoP&NG
Ministry of Finance	-	MoF
Ministry of External Affairs	-	MEA
Ministry of Commerce and Industry	-	MoC&I
Ministry of Science and Technology	-	MoSc&T
Ministry of Labour	-	MoL
Ministry of Consumer Affairs and Public Distribution	-	MoCA&PD
National Crisis Management Committee	-	NCMC
Crisis Management Group	-	CMG
Emergency Support Function	-	ESF
Incident Command System	-	ICS
National Remote Sensing Agency	-	NRSA
High Powered Committee	-	HPC
Geographic Information System	-	GIS




References


- ◆ FEMA; Federal Response Plan, FEMA (USA), Apr-99
- ◆ FEMA; Federal Response Plan, FEMA, Apr-92
- ◆ National Emergency Training Centre; Donation Management Workshop FEMA, Apr-92
- ◆ FEMA; Urban Search and rescue response system-Field Operation Guide, Sep-93
- ◆ FEMA; Stafford Act, Sep-98
- ◆ Department of Health and Sanitation(USA); Disaster Medical Assistance Team- Response team manual, May-99
- ◆ FEMA; Selected Information About Federal Chemical Biological, Nuclear Consequence Management Response Teams
- ◆ FEMA; FEMA Organisation
- ◆ FEMA; National Interagency Mobilisation Guide
- ◆ FEMA US and R Task force Organisation
- ◆ FEMA; Community relations Team-Field Operation Guide, Aug-99
- ◆ IFRC Emergency Response Units
- ◆ Gary Amdahl, Disaster Response-GIS for Public Safety ESRI-Press Canada, Apr-01
- ◆ Sphere Project; The Sphere Project-Humanitarian Charter and Minimum Standards in Disaster Response
- ◆ Normeca Norwegian Mobile Hospitals and Disasters Units
- ◆ United Nations; United Nations Disaster assessment and Coordination (UNDAC), 2000
- ◆ Cabinet Secretariat; Emergency Management Systems in India-The need for review in light of best practices worldwide
- ◆ Govt. of India, HPC, Interim Report I, Jul-00
- ◆ Govt. of India, HPC, Interim Report II, Feb-01
- ◆ Govt. of India, Department of Science and Technology, Mine Fire, 2001
- ◆ Govt. of India, Department of Science and Technology, Geological Hazards,



- ◆ Ministry of Health and Family welfare, Govt. of India; Biological Disaster Management Plan, 2001
- ◆ Revenue(Relief) Department, Govt. of India, Hyderabad Earthquake Contingency Plan-Andhra Pradesh
- ◆ ERM Private India Ltd. Chemical Hazards Jan-01
- ◆ Govt. of India, IMD, Water and Climate Related disasters, 2001
- ◆ District Contingency Plan
- ◆ Reva Khetrapal, Role of Media: Preparing People to Cope with Disasters, Press Council of India, Jan-01
- ◆ Govt of India, Ministry of Home Affairs, Concept of Trigger Mechanism, Feb-01
- ◆ Govt. Of India, Chapter 9 - Calamity relief, 10th Finance Commission
- ◆ Govt. Of India, Chapter 9 - Calamity relief, 11th Finance Commission
- ◆ Govt. of India Ministry of Agriculture Establishment of the National Centre for Calamity Management (NCCM), 2001
- ◆ Govt. of India, SOI, SOI - Role in DM, 2001
- ◆ Govt. of Bangladesh, Min. of DM and Relief, Disaster management System in Bangladesh, 1999
- ◆ Srilanka, Kandy Municipal Council SriLanka, Urban Multi-Hazard Disaster Mitigation Project, 2001
- ◆ AVS Reddy, State level- Accident Related, May-01



**MEMBERS OF THE HIGH
POWERED COMMITTEE ON
DISASTER MANAGEMENT**



MEMBERS OF THE HIGH POWERED COMMITTEE FOR PREPARATION OF

DISASTER MANAGEMENT PLANS

1. Shri J.C. Pant
Former Secy to the Govt. of India,
'SHRADHA Kunj'
159, Vasant Vihar
Dehradun
2. Shri Y.Harishankar
Secretary (Security),
Cabinet Secretariat
Rashtrapati Bhawan,
New Delhi
3. Shri M. C. Gupta
Director
IIPA, New Delhi-110 002
4. Shri T. N. Srivastava
I.A.S. (Retd.)
Former Member Secretary
11th Finance Commission
B-22, Char Imli,
Bhopal
Madhya Pradesh
5. Shri S K Purkayastha
Additional Secretary and
Central Relief Commissioner,
Deptt of Agriculture and Cooperation
MoA, Krishi Bhavan, New Delhi
6. Shri R. R. Kelkar
Director General,
Indian Meteorological Department,
Mausam Bhavan,
Lodhi Road
New Delhi
7. Shri Bhagat Singh
Principal Secy & Financial
Commissioner
Govt of Punjab, Deptt of Revenue
Punjab Secretariat,
Chandigarh
8. Dr N.S. Virdi
Director,
Wadia Institute of Himalayan
Geology,
33, General Mahadev Singh Road,
Dehradun-248 001
9. Prof. A. S. Arya
Professor Emeritus,
72/6 Civil Lines,
Roorkee-247 667
10. Shri Ramesh Chandra
Former Chairman,
Central Water Commission,
C-42, Retreat Apartment,
20 I. P. Extension, Patparganj,
Delhi-110 092
11. Shri G.B.Pradhan
Director General
Yashwant Rao Chavan Academy of
Development Administration,
Pune-411007
12. Dr. V. K. Sharma
Professor, National Centre for Disaster
Management,
Indian Institute of Public
Administration
I. P. Estate, New Delhi-2
13. Shri Alok Perti
Secretary,
Department of Relief &
Rehabilitation,
Govt. of Assam,
Dispur (Guwahati) -780006
14. Shri R.K.Bhargava
Secretary, Revenue and Forest
Department, Govt. of Maharashtra
Mumbai-400 032

15. Shri R. C. Dwivedi
Relief Commissioner,
Govt. of Uttar Pradesh,
Lucknow -226 001
16. Shri K. V. Venkatachary
Study Director,
Disaster Management Systems,
ISRO Headquarters,
Antariksha Bhawan
Bangalore
17. Shri R. M. Premkumar
Additional Secretary,
Department of Atomic Energy
Anushakti Bhavan,
Chattrapati Shivaji Maharaj Marg,
Mumbai-400001
18. Shri V. Rajagopalan
Joint Secretary,
Ministry of Environment and Forest,
Paryavaran Bhavan,
CGO Complex, Lodi Road,
New Delhi
19. Shri B. S. Lalli
Joint Secretary,
Ministry of Defence,
South Block, New Delhi
20. Shri Sanat Kaul
Joint Secretary,
Ministry of Civil Aviation,
Rajiv Gandhi Bhavan,
New Delhi
21. Shri Diwakar Prasad,
Director General, Civil Defence,
Ministry of Home Affairs,
New Delhi
22. Dr. Ira Ray
Additional DG,
Directorate General of Health
Services,
Nirman Bhavan, New Delhi
23. Shri Indra Ghosh
Executive Director (Safety),
Railway Board, Rail Bhawan
New Delhi
24. Shri N. S. Samant
Director
Department of Chemicals &
Petrochemicals,
Shastri Bhavan, New Delhi
25. Shri Naved Masood
Joint Secretary (NDM) and
Addl. Central Relief Commissioner,
Department of Agriculture &
Cooperation,
Krishi Bhawan
New Delhi
26. Dr. R. K. Bhandari
Director
CDMM, Anna University
Chennai-25
27. Shri T. N. Gupta
Advisor, MoUDPA &
Ex. Director, BMTPC
G-Wing
Nirman Bhawan
New Delhi
28. Shri Anil Sinha
Head
National Centre for Disaster
Management
IIPA, IP Estate, Ring Road
New Delhi-110002

ACRONYMS

Ministry of Agriculture	-	MoA
Ministry of Defence	-	MoD
Ministry of Surface Transport	-	MoST
Ministry of Power	-	MoP
Ministry of Health and Family Welfare	-	MoH&FW
Ministry of Water Resources	-	MoWR
Department of Animal Husbandry	-	DoAH
Ministry of Urban Development and Poverty Alleviation	-	MoUD&PA
Ministry of Planning and Programme Implementation	-	MoP&PI
Ministry of Home Affairs	-	MHA
Ministry of Rural Development	-	MoRD
Ministry of Information Technology	-	MoIT
Ministry of Information and Broadcasting	-	MoI&B
Ministry of Communication	-	MoC
Ministry of Heavy Industries	-	MoHI
Ministry of Social Justice and Empowerment	-	MoSJ&E
Ministry of Civil Aviation	-	MoCA
Ministry of Non-Conventional Energy Resources	-	MoNCR
Ministry of Petroleum and Natural Gas	-	MoP&NG
Ministry of Finance	-	MoF
Ministry of External Affairs	-	MEA
Ministry of Commerce and Industry	-	MoC&I
Ministry of Science and Technology	-	MoSc&T
Ministry of Labour	-	MoL
Ministry of Consumer Affairs and Public Distribution	-	MoCA&PD
National Crisis Management Committee	-	NCMC
Crisis Management Group	-	CMG
Emergency Support Function	-	ESF
Incident Command System	-	ICS
National Remote Sensing Agency	-	NRSA
High Powered Committee	-	HPC
Geographic Information System	-	GIS



References

- ◆ FEMA; Federal Response Plan, FEMA (USA), Apr-99
- ◆ FEMA; Federal Response Plan, FEMA, Apr-92
- ◆ National Emergency Training Centre; Donation Management Workshop FEMA, Apr-92
- ◆ FEMA; Urban Search and rescue response system-Field Operation Guide, Sep-93
- ◆ FEMA; Stafford Act, Sep-98
- ◆ Department of Health and Sanitation(USA); Disaster Medical Assistance Team- Response team manual, May-99
- ◆ FEMA; Selected Information About Federal Chemical Biological, Nuclear Consequence Management Response Teams
- ◆ FEMA; FEMA Organisation
- ◆ FEMA; National Interagency Mobilisation Guide
- ◆ FEMA US and R Task force Organisation
- ◆ FEMA; Community relations Team-Field Operation Guide, Aug-99
- ◆ IFRC Emergency Response Units
- ◆ Gary Amdahl, Disaster Response-GIS for Public Safety ESRI-Press Canada, Apr-01
- ◆ Sphere Project; The Sphere Project-Humanitarian Charter and Minimum Standards in Disaster Response
- ◆ Normeca Norwegian Mobile Hospitals and Disasters Units
- ◆ United Nations; United Nations Disaster assessment and Coordination (UNDAC), 2000
- ◆ Cabinet Secretariat; Emergency Management Systems in India-The need for review in light of best practices worldwide
- ◆ Govt. of India, HPC, Interim Report I, Jul-00
- ◆ Govt. of India, HPC, Interim Report II, Feb-01
- ◆ Govt. of India, Department of Science and Technology, Mine Fire, 2001
- ◆ Govt. of India, Department of Science and Technology, Geological Hazards, 2001

- ◆ Ministry of Health and Family welfare, Govt. of India; Biological Disaster Management Plan, 2001
- ◆ Revenue(Relief) Department, Govt. of India, Hyderabad Earthquake Contingency Plan-Andhra Pradesh
- ◆ ERM Private India Ltd. Chemical Hazards Jan-01
- ◆ Govt. of India, IMD, Water and Climate Related disasters, 2001
- ◆ District Contingency Plan
- ◆ Reva Khetrapal, Role of Media: Preparing People to Cope with Disasters, Press Council of India, Jan-01
- ◆ Govt of India, Ministry of Home Affairs, Concept of Trigger Mechanism, Feb-01
- ◆ Govt. Of India, Chapter 9 - Calamity relief, 10th Finance Commission
- ◆ Govt. Of India, Chapter 9 - Calamity relief, 11th Finance Commission
- ◆ Govt. of India Ministry of Agriculture Establishment of the National Centre for Calamity Management (NCCM), 2001
- ◆ Govt. of India, SOI, SOI - Role in DM, 2001
- ◆ Govt. of Bangladesh, Min. of DM and Relief, Disaster management System in Bangladesh, 1999
- ◆ Srilanka, Kandy Municipal Council SriLanka, Urban Multi-Hazard Disaster Mitigation Project, 2001
- ◆ AVS Reddy, State level- Accident Related, May-01