



KARNATAKA STATE DISASTER MANAGEMENT PLAN

2019-20



KARNATAKA STATE DISASTER MANAGEMENT AUTHORITY (KSDMA)
Revenue Department (Disaster Management) , Bengaluru

B.S. YEDIYURAPPA
CHIEF MINISTER



VIDHANA SOUDHA
BENGALURU - 560 001

Date : 25/10/2019

MESSAGE

The Karnataka State has been experiencing loss and damage due to drought, flood, landslides, cyclone and man induced disasters every year. Although, the State Government is involved in relief and response operations during disasters, the pre disaster activities of preparedness, prevention, mitigation and reconstruction require greater attention.

The Government of Karnataka is committed to provide efficient Governance and ensure failsafe Disaster Management mechanism at State, District and local levels.

The Government of Karnataka took a decision to release compensation amount far more than that is prescribed by Government of India keeping the actual damage and loss incurred by the people. In order to ensure effective response, the State Government has constituted SDRF and extended support to NDRF to setup a battalion in Bangalore. Similar SDRF battalions have been proposed to be established at Mangaluru, Kalaburgi and Belagavi.

The State Disaster Management Plan incorporates various actions for the departments, functionaries and community to promote a culture of preparedness and mitigation. The plan envisages participation of not only the Government but also other concerned including community to set in motion all disaster management activities for response and recovery without loss of critical time in the event of any disaster.

The vision of disaster resilient Karnataka will be achieved through effective implementation of this plan. The plan facilitates in bringing together all necessary sources of Government, Private, NGOs, Community and individuals for taking appropriate and timely action. The Karnataka State Disaster Management Authority will stress more on proactive measures and constantly keep alert at all levels of taluk, district and the State.


(B.S. YEDIYURAPPA)

Chief Minister and Chairman,
Karnataka State Disaster Management Authority



Government of Karnataka



Shri. R Ashoka
Minister of Revenue and Vice-President
Karnataka State Disaster Management Authority
Government of Karnataka

MESSAGE

The State has established State Disaster Management Authority to take care of the overall Disaster Management. Although Disasters have no boundary, the marginalized communities with high concentration of poor both in urban and rural settlements are generally found to be more susceptible to natural and man induced disasters. We have learnt from the past experiences that the poor living in slums, huts, fragile houses, low lying areas and hazardous locations had suffered comparatively higher disaster risk and losses. The administrative intervention alone will not be adequate for mitigation and response since the efforts have to be backed up through community based organizations, local governments, NGOs including private sector. The state Government has initiated proactive measures to constitute and setup SDMF and SDRF to cater to the speedy mitigation and response. Through ATI, Mysore, need based training programmes are conducted for the officers of Government Departments, PRIs, ULBs and other organizations to build the capacity of the departments for preparedness, mitigation, prevention and response. The State Government is committed to mitigate the disaster risk by adopting proactive policy and plan through the programmes of disaster resistant social housing, schools, disaster safe building bye-laws, repair, renewal and retro-fitting of public and school buildings, departmental mitigation plans. The State Disaster Management Plan highlights the importance of district plan incorporating the disaster risk reduction through Government schemes of NRHM, NUHM, MNREGA, Housing, JnNURM etc. The State plan lays down clearly the responsibilities, operating procedures for the officers, functionaries and departments that need to be activated before, during and after the disaster.

Date : 25-10-2019
Place : Bengaluru

Sign 

ಟಿ.ಎಂ. ವಿಜಯ್ ಭಾಸ್ಕರ್, ಭಾ.ಆ.ಸೇ.,
ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿ
T.M. VIJAY BHASKAR, I.A.S.,
Chief Secretary



ಕರ್ನಾಟಕ ಸರ್ಕಾರ
Government of Karnataka

MESSAGE

Recent disasters both manmade and natural in Kodagu, Dharwad, Kanaganamaradi, Sulwadi, Bagalakote provide evidence to the state being vulnerable to unexpected disasters vis-a-vis frequently occurring drought and flood. Karnataka stands second only to Rajasthan in terms of drought affected areas with about 80% of the area vulnerable to drought. About 22% of the total geographical area is under moderate earthquake damage risk zone. Almost all the districts in the State are facing the brunt of moderate to severe floods. Landslides are common in six districts of Western Ghats. Cyclone and wind also affect about 15 districts.

The Government has strengthened the institutional structure at district and state levels to manage disasters by mobilizing all possible resources. The District Disaster Management Authority in every district would be the nerve centre and has been provided with adequate resources and powers to take all necessary preparedness, mitigation and response measures. Every district has prepared a disaster management plan on the lines of National and State plans and guidelines of NDMA. The State plan envisages mainstreaming of disaster risk reduction into district development plan. Therefore, the schemes of housing, infrastructure, power, health etc., need to carefully assess at the time of formulation, the probable risks and hazards that might arise in future and consider fully the disaster risk reduction as an integral part of every scheme and development plan. The PRIs and ULBs are vested with resources for development and development plan and these organizations will jointly prepare disaster risk reduction plans.

The Centre for Disaster Management, ATI, Mysuru has been actively involved in training and capacity enhancement of the functionaries of PRIs, ULBs, Departments, NGOs and community at the grass root level. The CDM, ATI, Mysuru conducts training at the state, district, taluk and village levels and provides professional support to the district administrations to prepare district DM plans by providing them with online DDMP templates. The State Disaster Management Plan will guide and give directions to the functionaries, departments and other agencies to take stringent actions to ensure the vision of disaster resilient Karnataka.

Date : 21.10.2019
Place : Bengaluru


(T. M. VIJAY BHASKAR)



Government of Karnataka

T.K. Anil Kumar, IAS
Secretary, Revenue Department (DM)
Government of Karnataka



FOREWORD

The Disaster Management Act-2005 under chapter 3 made it mandatory for every state to constitute SDMA and prepare SDMP based on the previous lessons. During 2018-20 Karnataka state has experienced Kodagu flood, Dharwad building collapse, Bagalkote flood, 164 drought affected taluks, Kanaganamaradi bus plunge incident, Sulwadi prasad poisoning, Aero-India parking fire and air crash among many other disasters. The SDMA shall prepare the state disaster management plan as per the guidelines of NDMA, National Plan and Disaster Management Act 2005. The Revenue Department (DM) has taken steps to implement the provisions of the Disaster Management Act-2005. The experiences drawn from the above disasters revealed the fact that the preparedness level and mitigation efforts at the district and local levels to respond to the disaster events is not adequate. The repeated occurrence of floods, drought and other disasters in North Karnataka could not be prevented despite the previous experiences. The issues of relief and rehabilitation in the flood affected areas have remained unresolved. The tragedy and the lessons learnt from the drought and floods changed the mindset of the government and the focus of disaster management shifted from Rescue, Relief and Restoration to Planning, Preparedness and Prevention. The Government has proactively created state disaster mitigation and response fund and constituted state disaster response force and extended support to setup a battalion of NDRF in Bengaluru, Mangaluru, Belagavi. Projects are taken up to adopt GIS, GPS and RS technology for managing disasters in the state.

In order to streamline the disaster management in the state, the District Disaster Management Authority (DDMA) has been set up in every district to take the responsibility of planning and management of disasters in the district. Under the supervision of the Deputy Commissioner, the District Administration has prepared the DDMP. The State and District level emergency operation centres have been set up to monitor the timely disaster response. The state DM policy stresses on strategy for DRR, institutional framework, community participation, effective communication and up to date DM Plan at all levels. The Revenue Department(DM), has prepared Crisis Management Plan providing indicative guidelines for operating during and after a disaster event.

The CDM, ATI, Mysore is providing training and enhancing competencies of the functionaries for effective Disaster Management by networking with District, State and National level institutions. The State Disaster Management Plan will be a guiding tool and give direction to all the departments, district administrations, DDMA's, public and private agencies, industries and community for better preparedness, prevention, mitigation, response and reconstruction activities. The plan will guide all concerned functionaries and agencies to take timely action so that the impact of any disaster is reduced to the minimum.

Date : 7-9-2019
Place : Bengaluru

Sign: 
7/9



Government of Karnataka

Dr.Thrilok Chandra K.V, I A S.

Director,

State Disaster Management Authority (SDMA),

Department of Revenue (DM)

Government of Karnataka

MESSAGE

The State Disaster Management Plan has been prepared as per the provisions of Disaster Management Act- 2005 Chapter -3. This plan presents detailed disaster vulnerability of the State and provides guidelines to departments, district administrations, NGOs, community and all the stakeholders involved in the management of disasters (pre, during and post). It incorporates 15 chapters and 15 annexures clearly describing the standard operating procedures for the departments and officers at various stages of disasters. Preparedness, mitigation, prevention and early warning, recovery and rehabilitation, DRR in development schemes are some of the important aspects clearly explained in the plan. This serves as a guiding tool for effective management of disasters at the state, district and local levels towards goal of DRR as per the provisions of DM Act-2005 and NDMA guidelines.

Date: 25-10-2019

Place: Bengaluru.


Dr. Thrilok Chandra K. V.

Kapil Mohan, I.A.S.,
Director General
Administrative Training Institute, Mysuru



PREFACE

The State Executive Committee (SEC) of the State Disaster Management Authority (SDMA) has sanctioned the up-scaling of the activities of the Center for Disaster Management (CDM) at ATI, Mysuru from the year 2019-20. The CDM started functioning with the appointment of adequate faculty and staff. The proposal to sanction enhanced funding to CDM has been approved by the Department of Disaster Management. The implementation of CDM action plan 2019-20 comprising 113 training programmes covering all 30 districts, research and documentation, case studies, training modules, handbooks, preparation of state disaster management plan, professional help to districts in the preparation of district plans, providing online DDMP templates etc., have been launched from March 2019. Prior to the preparation of KSDMP, a series of workshops at the state, regional and district levels have been organized inviting stakeholders from government, NGOs, scientists and experts to seek feedback and suggestions for correction of the previous KSDMP. After the corrections are duly addressed, the draft copy of the KSDMP was circulated to all the stakeholders for further errors and corrections needed. The KSDMP 2019-20 has been finalized after incorporating all suggestions and deletions. At the same time NDMA guidelines, DM Act-2005 and national DM plan have been referred and followed.

The Plan lays down crucial steps to be initiated at the state and lower units of administration. Although, the State Government has been taking care of relief and response operations during disasters, greater attention and efforts are required for preparedness, mitigation and reconstruction. This state plan is aimed at guiding the district administrations, line departments and all the agencies and industrial establishments and the community at large to ensure that the management plans for preparedness, mitigation, response and reconstruction are in place so that the impact due to any emergency or disaster situation is minimum and be able to facilitate faster recovery.

The Centre for Disaster Management, ATI Mysuru has been functioning at ATI Mysuru extending its training and capacity building activities to the state, district and taluka levels. It has been indeed a strenuous task for ATI and CDM to do the work since the work involved conducting workshops in all 30 districts and ATI Mysore followed by collection and analysis of data from different departments and other sources. Disaster management requires a different set of skills and knowledge. The officers and functionaries working in Government departments, PRIs, ULBs, NGOs, Private Sector, Community and other agencies need to develop multidisciplinary skills and knowledge in the areas of disaster management. KSDMP includes a comprehensive training plan for all the districts in the state for all levels of employees. The KSDMP covers the plans for prevention, mitigation, preparedness, response including rescue, relief and recovery. It is hoped that the KSDMP would serve as a guide and performance aid to the state Government to take up preparedness, prevention, mitigation and response measures in all the departments, PRIs and ULBs. The main aim of the KSDMP is to reduce the risks being caused due to various disasters in the state.

I would like to acknowledge the contributions of Dr. Ashok Sanganal, Sr Faculty, all faculty and staff of CDM, ATI, all officers of line departments, DM experts, district and taluka level officers, NGOs, research institutions, technical institutions for their professional contributions and feedback. I express thanks to the Department of Revenue (Disaster Management), Government of Karnataka for entrusting this work to CDM ATI Mysuru.

Date:
Place: Mysore

(Kapil Mohan)

PROCESS FOR PREPARATION OF STATE DISASTER MANAGEMENT PLAN

- Review of Disaster management Act-2005, NDMP and NDMA guidelines for preparation of SDMP
 - State Level Workshops to seek suggestions to modify previous SDMP
 - District Level Workshops to seek suggestions to modify previous DDMP
 - Tools and questionnaires sent to departments and analysis of data obtained
 - Review of District Disaster Management Plans
 - Review of previous year SDMPs and lessons
 - Review of DDMAAs conducted in four regions by the CDM,ATI, Mysuru
 - Study on TNA for identification of training and non-training needs for 18 departments
 - Review of Development Programmes and schemes for incorporation of DRR in district development plan and schemes.
 - The SDMP covered entire disaster cycle namely Prevention & Mitigation, Preparedness and Response, Recovery and Rehabilitation
 - Departments budgets based on the disaster risk reduction plan
 - Draft Plan shall be revised on half yearly basis based on the public and expert consultations
 - Review of State Disaster Management Plans of other states
 - SoPs for Officials and Departments
-

TERMINOLOGY

Definition of Disaster

The Disaster Management Act, 2005 defines disaster as “a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man made causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of, property, or damage to, or degradation of, environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area

Disaster Management

"Disaster Management" means a continuous and integrated process of planning, organising, coordinating and implementing measures which are necessary or expedient for-

- prevention of danger or threat of any disaster;
- mitigation or reduction of risk of any disaster or its severity or consequences;
- capacity-building;
- preparedness to deal with any disaster;
- prompt response to any threatening disaster situation or disaster;
- assessing the severity or magnitude of effects of any disaster;
- evacuation, rescue and relief;
- rehabilitation and reconstruction;

Hazard

Hazard is a damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. Natural Hazards: Natural processes or phenomena occurring in the biosphere that may cause a damaging event Geological Hazards: Natural earth processes or phenomena that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.

Risk

Risk is defined as the probability of harmful consequences, or expected losses (deaths, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between natural or human-induced hazards and vulnerable conditions. Conventionally risk is expressed by the notation

Risk = Hazards x Vulnerability

As a result of disaster, society incurs both loss and damage. The extent of damage and loss together provides an indicator of the likely risk.

Vulnerability

Vulnerability is defined as the conditions determined by physical, social, economic, and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards. Based on the factors and processes the vulnerability may be classified as Physical Vulnerability, Social Vulnerability, Economic Vulnerability, and Environmental Vulnerability etc.

Capacity

Capacities which signify the strengths and resources available within a community, society or organization that can reduce the level of risk or the effects of a disaster.

Mitigation

The lessening of the adverse impacts of hazards and related disasters. It describes the activities undertaken to reduce the risks or impact of any disaster. This efforts of mitigation can be further classified into Structural and non-structural and short-term and long-term mitigation strategies.

Preparedness

The knowledge and capacities developed by governments, professional response and recovery, organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions. It is therefore evident that the capacity of the community and the administration shall be in consonance with the disaster vulnerability.

Response

The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduces health impacts, ensure public safety and meet the basic subsistence needs

of the people affected. The response mechanism includes the stages of Search and Rescue, Relief, Reconstruction, Recovery and Rehabilitation

Cyclone

Cyclone is defined as drastic atmospheric variation in the Earth System Science depending upon the amount of pressure variation & mode of propagation & circulation.

Drought

Any lack of water to satisfy the normal needs of agriculture, livestock, industry or human population may be termed as a drought. While generally associated with semi-arid or desert climates, droughts can also occur in areas that normally enjoy adequate rainfall and moisture levels. Scientifically speaking, there is no unique definition of drought. Drought carries a different meaning in keeping with the perspectives of a scientific discipline. Accordingly, three types of drought are usually defined

Earthquake

An earthquake occurs when rocks break and slip along a fault in the earth. Energy is released during an earthquake in several forms, including as movement along the fault, as heat, and as seismic waves that radiate out from the "source" in all directions and cause the ground to shake, sometimes hundreds of kilometers away.

Flood

Flooding is an overflowing of water onto land that is normally dry. It can happen during heavy rains, when ocean waves come onshore, when snow melts too fast, or when dams or levees break. Flooding may happen with only a few inches of water, or it may cover a house to the rooftop. The most dangerous flood event, the flash flood, happens quickly with little or no warning; other flooding events occur over a long period and may last days, weeks, or longer.

Landslide

A landslide is defined as "the movement of a mass of rock, debris, or earth down a slope". Landslides are a type of "mass wasting" which denotes any down slope movement of soil and rock under the direct influence of gravity.

Tsunamis

"Tsunami" comes from the Japanese words for harbor ("tsu") and wave ("nami"). Anything that rapidly displaces a large volume of water can cause a tsunami. Typically, tsunamis are caused by underwater earthquakes, but landslides, volcanic eruptions, calving icebergs, and (very rarely) meteorite impacts can also generate tsunamis. These types of events can cause large disturbances in the surface of the ocean, and when gravity pulls the water back down, the tsunami is born.

Heat Wave

A heat wave is a prolonged period of excessively hot weather, which may be accompanied by high humidity. The definition recommended by the World Meteorological Organization is when the daily maximum temperature of more than five consecutive days exceeds the average maximum temperature by 5 °C (9 °F).

Coastal or Sea Erosion

Every land mass on Earth has miles of coast at the interface between the hydrosphere and the lithosphere. Natural forces such as wind, waves and currents are constantly shaping the coastal regions. The combined energy of these forces moves land materials. The landward displacement of the shoreline caused by the forces of waves and currents is termed as coastal erosion.

Forest fire

During summer, when there is no rain for months, the forests become littered with dry senescent leaves and twigs, which would burst into flames ignited by the slightest spark. And thus the inevitable does happen. The Himalayan forests particularly Garhwal Himalayas of Uttaranchal State have been burning regularly during the last few summers, with colossal loss of vegetation cover of that region. Forest fires can be either natural or controlled and caused by heat generated in the litter and other biomes in summer through carelessness of people (human neglect). Sometimes, forest fires purposely caused by local inhabitants

Biological Disaster

Biological Disaster may be described as a disaster caused due to natural outbreaks of epidemics or intentional use of biological agents (Viruses/bacteria etc.) through dissemination of micro-organism

or toxins in food or water or insect vector or by aerosol to harm human population, food crops and livestock to cause outbreaks of diseases.

Epidemic

The term epidemic has been derived from two Greek words, "Epi" means "upon " and "Demos" means "people". Thus, an epidemic of an infectious disease is the occurrence of a number of cases of a disease, known or suspected to be of infectious origin, that is unusually large or unexpected for the given place or time. The unusual occurrence in a community or region of disease, specific health related behaviours. Some use the term "outbreak" for a small, usually localized epidemic in the interest of minimizing public alarm, unless the number of cases is indeed very large. This definition covers the usual epidemic diseases such as, measles, chickenpox, and cholera, which are compressed in time, but also the modern "slow" epidemics of non-communicable diseases like diabetic, heart attacks, and depression. Epidemics are Public Health emergencies.

Stampede

A stampede is an act of mass impulse among herd animals or a crowd of people in which the herd (or crowd) collectively begins running with no clear direction or purpose. Stampedes are believed to originate from biological responses in the brains and endocrine systems of herd animals.

Accident

Accident is a specific, identifiable, unexpected, unusual and unintended external action which occurs in a particular time and place, without apparent or deliberate cause but with marked effects.

Terrorism

Terrorism is the use of force or violence against persons or property in violation of the criminal laws for purposes of intimidation, coercion, or ransom. Terrorists often use threats to: Create fear among the public.

Nuclear Disaster

Nuclear Disaster is described as a disaster caused due to an extraordinary emission of radioactive material or radiation either through explosion of a nuclear bomb or in the operation of nuclear reactors and other nuclear related activities.

Chemical Disaster

Chemical disasters are occurrence of emission, fire or explosion involving one or more hazardous chemicals in the course of industrial activity (handling), storage or transportation or due to natural events leading to serious effects inside or outside the installation likely to cause loss of life and property including adverse effects on the environment

Industrial Disaster

Industrial disasters are disasters caused by chemical, mechanical, civil, electrical or other process failures due to accident, negligence or incompetence, in an industrial plant which may spill over to the areas outside the plant or within causing damage to life, property and environment

ABBREVIATIONS

ATI	Administrative Training Institute
CBO	Community Based Organization
CDM	Centre for Disaster Management
DC	Deputy Commissioner
DDMA	District Disaster Management Authority
DDMP	District Disaster Management Plan
DEOC	District Emergency Operation Centre
DM	Disaster Management
DRR	Disaster Risk Reduction
ESF	Emergency Support Functions
GIS	Geographical Information Systems
GO	Government Order
GSI	Geological Survey of India
GoK	Government of Karnataka
GP	Gram Panchayat
IRS	Incident Response System
IT	Information Technology
IRS	Incident Response System
ISRO	Indian Space Research Organisation
IMD	India Meteorological Department
KSDMP	Karnataka State Disaster Management Plan
KSDMA	Karnataka State Disaster Management Authority
KSNDMC	Karnataka State Natural Disaster Monitoring Centre
KRSRSAC	Karnataka State Remote Sensing Application Centre
NCC	National Cadet Corps
NDMA	National Disaster Management Authority
NDRF	National Disaster Response Force
NGO	Non-Governmental Organisation
NREGA	National Rural Employment Guarantee Act
NSS	National Service Scheme
NYKS	Nehru Yuva Kendra Sangathan
PRI	Panchayati Raj Institution
PWD	Public Works Department
SCMC	State Crisis Management Committee
SDMA	State Disaster Management Authority
SDRF	The State Disaster Response Force
SEC	State Executive Committee
SEOC	State Emergency Operation Centers
SIDM	The State Institute of Disaster Management
SOP	Standard Operating Procedures

CONTENT

SL. No.	Title	Page No.
	<ul style="list-style-type: none">• Messages• Foreword• Preface• Process for Preparation of KSDMP:2019-20• Terminology• Abbreviations	
CHAPTER 1 – INTRODUCTION.....		1-13
1.1	Review of Existing State Disaster Management Plan (SDMP)	1
1.2	Vision	1
1.3	Purpose	1
1.4	Objectives	1
1.5	Past Disaster Events in Karnataka	2
1.5.1	Drought Profile of Karnataka from 2015-18	2
1.5.2	Profile of Rainfall	5
1.5.3	Profile of Floods	6
1.5.4	Major Disaster Events in Karnataka: 2012-19	7
1.6	Kodagu Flood-2018	8
1.7	Bus fall into canal in Kanaganamaradi, Mandya District	8
1.8	Dharwad Building Collapse – 2019	9
1.9	Aero- India Bengaluru – 2019 : Car parking fire incident	9
1.10	Temple Prasad Poisoning in Sulwadi, Chamarajanagar Nagar District	10
1.11	Bandipur Forest Fire – 2019	10
1.12	Drought	10
1.13	Initiatives by Government of Karnataka	11
1.13.1	Karnataka State Disaster Management Authority & DDMA	11
1.13.2	Department of Disaster Management	11
1.13.3	District Disaster Management Plans (DDMP)	11
1.13.4	State Emergency Operation Centre (SEOC)	11
1.13.5	District Emergency Operation Centre (DEOC)	11
1.13.6	Crisis Management Plan	11
1.13.7	State Disaster Management Policy	12
1.13.8	Karnataka State Natural Disaster Monitoring Centre(KSNDMC)	12
1.13.9	State Disaster Response Force	12
1.13.10	Remote Sensing and Geographical Information System (GIS) for Disaster Management Support - KRSAC	12
1.14	Multi-Hazard Disaster Management Plan	12
1.15	Trigger Mechanism	12
1.16	Approaches and Policy Statement towards Management of Disasters	13
CHAPTER 2 – KARNATAKA STATE PROFILE.....		14-31
2.1	Location	14
2.2	Area and Administrative Divisions	14
2.3	Demography	14

2.4	Geology	18
2.5	Climate and Rainfall	19
2.6	Temperature	20
2.7	Education	20
2.8	Health	20
2.9	Agriculture	22
2.10	Forests	22
2.11	Mines	23
2.12	Transport and Communication	24
2.13	Irrigation and Power	26
2.13.1	Major Dams in Karnataka	27
2.14	River Systems and Dams	27
2.15	Tourism	30

CHAPTER 3 – HAZARD RISK AND VULNERABILITY ASSESSMENT.....32-64

3.1	Introduction	32
3.2	Levels of Disasters	32
3.3	Classification of Disasters	32
3.4	Drought	33
3.5	Ground Water Status	38
3.7	Cyclones, Winds and Coastal Erosion	40
3.7.1	Floods	42
3.7.2	Rainfall Forecasting	44
3.7.3	Status of Minor Irrigation Tanks	44
3.8	Earthquakes	45
3.8.1	Landslide	48
3.8.2	Landslide Profile of Western Ghat in Karnataka	50
3.8.3	Road Accidents	51
3.8.4	Cyclone	52
3.8.5	Population in the Malnad Zone Districts of Karnataka Vulnerable to Cyclone Risk	52
3.8.6	Population in the Districts of interior Karnataka Vulnerable to Cyclone Risk	52
3.8.7	Chemical and Industrial Hazards	53
3.8.8	Steps taken by the State Government	56
3.8.9	Fire Accidents	56
3.8.10	Communicable Diseases	57
3.9	Man-Animal Conflict	57
3.9.1	Special Tiger Protection Force (STPF)	58
3.9.2	Forest Fire	59
3.10	District Specific Hazards & Vulnerability	59
3.10.1	Bangalore Urban District	59
3.10.2	Gulbarga District	59
3.10.3	Dakshina Kannada District	60
3.10.4	Udupi District	60

3.10.5	Bagalkote District	60
3.10.6	Uttara Kannada District	61
3.10.7	Hassan District	62
3.10.8	Dharwad District	62
3.10.9	Haveri District	62
3.10.10	Belagavi District	63
3.10.11	Gadag District	63
3.10.12	Mandya District	63
3.10.13	Mysuru District	63
3.10.14	Shivamogga District	63
3.10.15	Yadgir District	64

CHAPTER 4 – PREPAREDNESS MEASURES AND INSTITUTIONAL FRAMEWORK.....65-79

4.1	Organizational Structure for Disaster Management in Karnataka	65
4.2	Hierarchy of Organizations from National to State Level	66
4.3	Karnataka State Disaster Management Authority (KSDMA)	67
4.4	Structure of Karnataka State Disaster Management Authority (KSDMA)	67
4.4.1	Periodicity of Meeting of KSDMA	68
4.5	Karnataka State Executive Committee (KSEC)	68
4.5.1	Structure of Karnataka State Executive Committee for DM	68
4.5.2	Operations of Karnataka State Executive Committee	69
4.6	Karnataka State Crisis Management Committee	69
4.6.1	Organization Structure of State Level Incident Response	70
4.6.2	State Crisis Management Committee	70
4.7	Institutional Framework for Metropolitan Cities	70
4.8	District Disaster Management Authority(DDMA)	70
4.9.	State Crisis Management Committee	72
4.10	District Crisis Management Committee	72
4.10.1	Local Authorities(PRIs, ULBs and Development Authorities etc.)	74
4.10.2	The State Disaster Response Force	75
4.10.3	Line Departments of the GoK	75
4.10.4	Role of CDM, Administrative Training Institute (ATI)	76
4.10.5	Role of National Cadet Corps, National Service Scheme, and Nehru Yuva, Kendra Sanghatan	76
4.10.6	Non Government Organisations(NGOs)	76
4.10.7	Other Research, Technical and Educational Institutions	76
4.11	Communication Structure for Disaster Management	76
4.11.1	Karnataka State Emergency Operation Centre	76
4.11.2	Modernization of Emergency operation Center (EOC)	77
4.11.3	Coordination between EOC and District Control Room	77
4.11.4	Minimum Facilities in the EoC	78
4.12	Mock Drills	78
4.13	Resource Inventory	79

CHAPTER 5 – LEVELS OF PLANNING FOR DISASTER MANAGEMENT AND MONITORING.....80-90

5.1	Levels of DM Plans in the State	80
5.2	Karnataka State Disaster Management Plan(KSDMP)	80
5.3	District Disaster Management Plan	80
5.4	DM Plan at Department and Organization	81
5.5	School/College DM Plan	82
5.6	Taluka/Hobli Level and Town/City Disaster Management Plan	82
5.7	Village/Community Level DM Plan	83
5.8	Hospital DM Plan	84
5.9	Onsite and Off-site DM Plan for MaH Industrial Units	84
5.10	Dams- Emergency Action Plan	84
5.11	Railway Disaster Management Plan(RDMP)	85
5.11.1	Railway Disaster Mitigation Plan	86
5.11.2	Railway Disaster Response Plan	86
5.12	Heritage Area Disaster Management Plan	86
5.13	DM plan for large Congregations & crowds	86
5.14	Environment and Disasters	87
5.15	Climate Change and Disaster Risks	87
5.16	Gender concerns in Disasters	87
5.17	Cyber Crime Management in Karnataka	87
5.18	Animal Care Management during Disasters	87
5.19	Psychosocial Care in Disasters	88
5.20	Monitoring	88
5.20.1	Overview of Monitoring tools	88
5.20.2	Departmental preparedness reports	89
5.20.3	Action taken report	89
5.20.4	First Information Report	89
5.20.5	Daily Situation report	90
5.20.6	Annual Report	90
5.21	Disaster Scenario – Strategy for L3 Type Disaster	90

CHAPTER 6 -PREVENTION AND MITIGATION.....91-110

6.1	Introduction	91
6.2	Disaster Mitigation	91
6.3.	Mitigation Strategy	92
6.3.1	Benefits of Mitigation	92
6.3.2	Training Needs Assessment	92
6.3.3	NGOs, Private Sector	92
6.3.4	Community Efforts at Mitigation	93
6.3.5	Community Level Training and Public Awareness Activities	93
6.3.6	Mobilizing Community Efforts for Mitigation Measures	93
6.3.7	Demonstration Houses:	93
6.4	Institutional Mechanisms	94

6.4.1	Disaster mitigation: Strengthening institutional frameworks	94
6.4.2	Incentives and Resources	94
6.4.3	Insurance	94
6.5	Siting and Safety	94
6.6	Role of Media in Mitigation	94
6.7	Structural Alterations for Buildings	95
6.8	Drought Mitigation Measures for Karnataka	95
6.9	Coastal Mitigation Measures	99
6.10	Flood Mitigation	99
6.10.1	Illustration	100
6.11	Watershed Management	100
6.12	Earthquake Mitigation Measures	101
6.13	Cyclones	101
6.14	Epidemics	102
6.15	Road Accidents	103
6.16	Fires	104
6.17	Industrial and Chemical Accidents	105
6.18	General Guidelines for Evacuation	107

CHAPTER 7– COMMUNICATION, RESPONSE, RELIEF, REHABILITATION AND RE-CONSTRUCTION PLAN.....111-128

7.1	Strategy	111
7.2	Response Measures	111
7.3	Multi-disaster action plan	111
7. 3.1	Warning or Occurrence of Disaster	112
7.4	Incident Response System (IRS)	113
7.4.1	Incident Commander	113
7.4.2	Functions of the Incident Commander	114
7.4.3	Incident Response System-Flow chart	114
7.5	State Emergency Operation Center	114
7.6	Control Room (Main Message Room)	117
7.7	Multi-district Disasters	118
7.8	Activating the EOCs	119
7.9	Incident Response -State	119
7.9.1	Incident Response- District	120
7.10	Non-governmental organizations (NGOs) and Voluntary Agencies	121
7.11	Dissemination of Other IEC Materials	122
7.12	Drills	122
7.13	Reconstruction and Rehabilitation	122
7.14	Reconstruction and Resettlement	123
7.15	Owner Driven Construction	123
7.16	Disaster Specific Response Plan- L2 and L3 Earthquake Disaster	
	Real Time Information on Earthquake	123
7.17	Impact Assessment	123
7.18	Indicative criteria for damage and usability classification of buildings	125
7.19	Information Management and Helpline	126

7.20	Prevention of Human Trafficking of Widows/Orphans	126
7.21	Identification and Disposal of Dead Bodies	126
7.22	Psycho-social Support	127
7.23	Financial Assistance to the Victims of Disaster	127
7.24	Landscape-Specific Response Plan	127

CHAPTER 8– CAPACITY BUILDING, TRAINING AND HUMAN RESOURCE DEVELOPMENT AND PUBLIC AWARENESS.....129-144

8.1	Introduction	129
8.1.1	Opportunity for Capacity Building in Disaster Management	129
8.2	Capacity Building for Disaster Response	129
8.3	Capacity Building for Disaster Management & Training in Karnataka	130
8.3.1	CDM ATI Mysore	130
8.3.2	Nodal training institute/Net working role	130
8.3.3	Training Needs Analysis(TNA) for Disaster Management in Karnataka	130
8.3.4	Training Areas & Targets	130
8.3.5	Statement showing the number of officers/officials/Elected representatives for DM training from District Level/Taluk Level/Sub-taluk level	131
8.3.6	Training Output (2018-19 to 2022-23)	140
8.3.7	Training Modules and Design	140
8.3.8	Training Materials/ Handouts/Reading Materials	140
8.3.9	Books/Case studies, Action Research	141
8.3.10	Short films/E-Lectures	141
8.4	Sate Level Training at ATI, Mysore	141
8.4.1	District Level Training	141
8.4.2	Taluk Level Training	141
8.4.3	Village/Community Level Training	141
8.4.4	School Safety Training	141
8.4.5	Field Training	142
8.4.6	SATCOM/Satellite Based Training	142
8.4.7	Mock Drills	142
8.4.8	TTX, Mock Drill and Demonstration	142
8.4.9	Geographical Information system (GIS) – Laboratory	142
8.4.10	Group Activities/Exercises	142
8.4.11	Role Plays	143
8.5	Evaluation of CDM Training	143
8.6	Capacity Building for Gender Perspective in DM	143
8.7	Capacity Building for Psychosocial Care (PSC) During Disasters	144
8.8	Outcome of the CDM Training	144

CHAPTER 9 - COMMUNITY BASED DISASTER PREPAREDNESS & AWARENESS 145-146

9.1	Introduction	145
-----	--------------	-----

9.2	Why Community Involvement in Disaster Management?	145
9.3	Community Based Disaster Preparedness	145

CHAPTER 10 - INSTITUTIONAL ARRANGEMENTS FOR IMPLEMENTATION OF PREPAREDNESS, PREVENTION, RESPONSE AND RECOVERY

.....		147-155
10.1	Introduction	147
10.2	KSDMA and Revenue Department (DM), GoK	147
10.3	Institutional Arrangement for Preparedness	148
10.4	Institutional Arrangement for Mitigation	148
10.5	Institutional Arrangement for Response	148
10.6	Role of State Government Department/Agencies in Disaster Management	148
10.6.1	Central Water Commission (CWC)	149
10.6.2	Bureau of Indian Standards (BIS)	149
10.6.3	Interest Group/Voluntary Groups	149
10.6.4	Association of Local Occupation groups	149
10.6.5	Geological Survey of India	149
10.6.6	Building Material & Technology Promotion Council (BMPTC)	149
10.6.7	CFTRI and DFRL	149
10.6.8	Religious Bodies	150
10.6.9	Educational Institutions	150
10.6.10	Indian Red Cross Society	150
10.6.11	Media	150
10.7	Use of technology	150
10.8	General Preparedness	150
10.9	Revenue Department (Disaster Management)	150
10.10	Home Department	151
10.11	Voluntary, Bilateral and Multilateral Agencies	151
10.12	NGOs & CBOs	151
10.13	Bilateral Organizations	152
10.14	Corporate Bodies	153
10.15	UN Agencies	153
10.16	UNICEF (United Nations International Children's Emergency Fund)	153
10.17	UNDP (United Nations Development Programme)	153
10.18	WFP (World Food Programme)	154
10.19	FAO (Food and Agriculture Organization)	154
10.20	WHO (World Health Programme)	154
10.21	Important organisations and contact details	154

CHAPTER 11 - MAINSTREAMING DISASTER REDUCTION WITH DEVELOPMENT PLAN OF THE STATE AND DISTRICTS.....156-163

11.1	Introduction	156
11.2	Approaches to Integration of Disaster Management in Development Planning	157

11.2.1	Short-term Plan (Up to 2 years)	158
11.2.2	Medium Term Disaster Risk Reduction plans	158
11.2.3	District Development Plan	158
11.3	Mainstreaming Disaster Risk Reduction in District Development Plan	159
11.4	Responsibility of Mainstreaming DRR in District Development Plan	160
11.5	Mainstreaming DRR into ongoing Flagship Programmes	161

**CHAPTER 12- BUDGET AND FINANCIAL ARRANGEMENTS FOR DISASTER
MANAGEMENT.....164-167**

12.1	Introduction	164
12.2	Budget for Line Departments	165
12.3	State Disaster Response Fund (SDRF)	165
12.3.1	Funds allocation from Government of India during calamities	167

**CHAPTER 13- STANDARD OPERATING PROCEDURE (SOPS) FOR OFFICERS
.....168-185**

13.1	Introduction	168
13.2	SOP for Secretary Revenue (Disaster Management)	168
13.3	SOP for Deputy Commissioner	168
13.4	SOP for Superintendent of Police (SP)	173
13.5	SOP for District Health Officer DHO	174
13.6	SOP for Assistant Commissioner	176
13.7	SOP for Tahsildar	176
13.8	SOP for Deputy Superintended of Police	177
13.9	SOP for Circle Inspector (Law and Order)	177
13.10	SOP for Inspector (Traffic)	178
13.11	SOP for Dy. Director of Factories	178
13.12	SOP for the Regional Fire Officer	179
13.13	SOP for Fire Station Officer	179
13.14	SOP for Home Guards Commandant	179
13.15	SOP for Superintendent Engineer Public Works/Highway	180
13.16	SOP for Deputy Director of Animal Husbandry	180
13.17	SOP for RTO	180
13.18	SOP for Environmental Officer Pollution Control Board	181
13.19	SOP for Executive Engineer KPTCL	181
13.20	SOP for Executive Engineer of Panchayat Raj Engineering	181
13.21	SOP for Dy. Director, Food and Civil Supplies	181
13.22	SOP for District Information Officer	182

CHAPTER 14- Standard Operating Procedures for Departments.....186-230

14.1	Introduction	186
------	--------------	-----

14.1.1	Response	186
14.1.2	Role of Specialized agencies	186
14.1.3	State EOC	187
14.1.4	Sequence of Action at the State Level	187
14.1.5	State Disaster Management Authority (SDMA)	187
14.1.6	State Executive Committee (SEC)	187
14.1.7	Role of Key Departments	188
14.1.8	District Emergency Operation Centre (DEOC)	188
14.1.9	District Disaster Management Authority	188
14.1.10	First Response	188
14.1.11	First information report	188
14.1.12	Daily Situation Report	189
14.2	State Disaster Management Authority	189
14.3	Trigger Mechanism and Incident Response System (IRS)	191
14.4	Roles and Responsibilities of Chief Secretary as RO of the State	191
14.4.1	Coordination of Response at the State Level	192
14.5	Roles and Responsibilities of Deputy Commissioner as RO	192
14.6	Area Command (AC)	193
14.6.1	Unified Command (UC)	193
14.7	Local Authorities PRIs and ULBs	194
14.7.1	Community Participation in Disaster Response (CBDM)	194
14.7.2	Role of Village Disaster Response Committees (VDRC)	194
14.8	State Emergency Operations Centre (SEOC)	195
14.8.1	Incident Response Team (IRT)	195
14.8.2	Incident Response System (IRS) Facilities	195
14.9	Roles and Responsibilities of Nodal Departments/ Agencies	196
14.9.1	Standard Operating Procedures for Responsible Departments/Agencies	198
14.9.2	Department of Revenue (Disaster Management)	198
14.9.3	Department of Transport	204
14.9.4	Department of Public Works	205
14.9.5	Department of Irrigation	208
14.9.6	Department of Agriculture	210
14.9.7	Department of Animal Husbandry	212
14.9.8	Department of Education	214
14.9.9	Department of Technical Education	215
14.9.10	Department of Health & Family Welfare	216
14.9.11	Department of Environment and Forests	219
14.9.12	Department of Forest	220
14.9.13	Department of Urban Development	221
14.9.14	Department of Food, Civil Supplies and Consumer Affairs	221
14.9.15	Department of Rural Development & Panchayat Raj	222
14.9.16	Department of Information and Public Relations	223
14.9.17	Department of Energy	224
14.9.18	Departments of Industries, Factories and Boilers	225
14.9.19	Department of Labour & Employment	226
14.9.20	Department of Finance	226

CHAPTER 15. Karnataka State Natural Disaster Monitoring Centre 231--237

15.1	Objectives	231
15.2	Distinct role of KSNDMC	231
15.3	Real Time Data Base Management through network of weather monitoring/ Rainfall Stations.....	232
15.4	The Mechanism of customized Grampanchayath level High-Intensity Rainfall (HIRA) and Heavy rainfall alerts generation and dissemination to the Executives of GOK	233
15.5	The Mechanism of customized Grampanchayath level weather forecast and advisory SMS dissemination to the farmers.....	234
15.6	The Network of VSAT enabled and solar powered Permanent Seismic Monitoring stations at 14 places across Karnataka State	236
15.7	KSNDMC proactively provides Science and Technology based inputs and Assistance line departments of Government of Karnataka	236

PART II ANNEXURES

Annexure I-	Format for First Information Report on occurrence of natural calamity	1
Annexure II-	Rapid Assessment	2
Annexure III-	Situation Report	3-5
Annexure IV-	Rapid Assessment Format	6-10
Annexure V-	Flow Chart for Disposal of Dead Bodies at District Level	11
Annexure VI-	Guidelines for Disposal of Animal Carcasses	12
Annexure VII-	Guidelines for Composting	12
Annexure VIII-	Disposal of Animal Carcasses at District Level	13
Annexure IX-	Emergency Support Functions (ESFs) Plan	14-24
Annexure X-	Do's and Don'ts	25-26
Annexure XI-	Emergency Support function	27-30
Annexure XII-	Preparation of DDMP – Templates	31-33
Annexure XIII-	Requirement of Equipment and Machinery for Disaster Management	34-37
Annexure XIV-	Stampede and Crowd Management Plan	38-45
Annexure XV-	List of important contact addresses	46-58

CHAPTER 1

INTRODUCTION

Background

The State Government is mandated to prepare and revise every year the State Disaster Management Plan as per the broad guidelines issued by National Disaster Management Authority (NDMA) and National Disaster Management Plan (NDMP)-2016. It is the responsibility of the State Disaster Management Authority (SDMA) to revise the plan every year based on the experiences and lessons learnt from the previous natural and man-made disasters in the state. The Centre for Disaster Management (CDM), ATI, Mysuru has been entrusted the task of preparation and revision of KSDMP in consultation with all stakeholders.

1.1 Evaluation of Previous Karnataka State Disaster Management Plan (KSDMP)

The State Executive Committee (SEC) meeting held on 12-03-2019 under the chairmanship of Chief Secretary, GoK gave directions to the Centre for Disaster Management, ATI Mysuru to assess and revise the existing KSDMP by seeking suggestions from the stakeholders namely government departments, district administrations, research and scientific organizations, ULBs, PRIs and non-government organizations. To do this, the Centre for Disaster Management, ATI, Mysuru organized a series of special workshops inviting administrators, disaster professionals, scientists, engineers, NGO representatives, officers and elected representatives from ULBs and PRIs. The suggestions, corrections to each chapter of the KSDMP provided by the participants have been carefully discussed and accordingly appropriate modification and updation have been carried out while revising the KSDMP: 2019-20. Improvement in the quality of maps, responsibilities of officials, means to reduce the risks, past disaster events in the state and learning experiences from the events are incorporated.

1.2 Vision

Fail proof communication, authentic and accurate data base documented, rehearsed to be activated in the shortest possible time with minimum simple orders and procedures ensuring participation by administration, communities, industries, private/NGOs, Volunteers at all levels, making optimal utilization of human and material resources with no gaps or no overlaps to prevent/minimize loss to lives and property and faster restoration of normal life in the affected areas.

The plan will act as a performance aid and guide to district administrations, line departments and all the agencies, industrial establishments and the community at large to ensure that the management plans for preparedness, mitigation, response and reconstruction are in place so that the impact due to any emergency or disaster situation is minimum and be able to facilitate faster recovery.

1.3 Purpose

- Assess the hazard, vulnerability and risks in the state
- Assess the status of existing resources and facilities available with the various departments and agencies involved in disaster management in the state;
- Assess their adequacies in dealing with a disaster;
- Identify the requirements for institutional strengthening, technological support, up-gradation of information systems and data management for improving the quality of administrative response to disasters at the state level;
- Make the state disaster management plan an effective response mechanism as well as a policy and planning tool.

1.4 Objectives

- Promoting a culture of prevention and preparedness at all levels.
- Community as the most important stakeholder in the DM process.
- Encouraging mitigation measures.
- Mainstreaming DM concerns into the developmental planning process.

- Putting in place a streamlined and institutional techno-legal framework for the creation of an enabling regulatory environment and a compliance regime.
- Developing contemporary forecasting and early warning systems backed by responsive and fail-safe communications and Information Technology (IT) support.
- Promoting a productive partnership with the media to create awareness and contributing towards capacity development.
- Ensuring efficient response and relief with a caring approach towards the needs of the vulnerable sections of the society.
- Undertaking reconstruction as an opportunity to build disaster resilient structures and habitat.
- Undertaking recovery to bring back the community to a better and safer level than the pre-disaster stage.

1.5 Past Disaster Events in Karnataka

Past disaster Events in Karnataka

Year	Drought		Flood/Heavy Rainfall		Hail-storm		Earthquake		Landslide	
	Distri ct	Talu k	District	Taluk	Distri ct	Talu k	Distri ct	Talu k	Distri ct	Talu k
2012	28	157	-	-						
2013	28	125	8	35						
2014	9	34	8	42	13					
2015	27	136	-	-						4
2016	30	164	6	24						
2017	Nil	Nil	-	-						
2018	30	164	7	25					04	07
2019 (Upto April)			10	19						

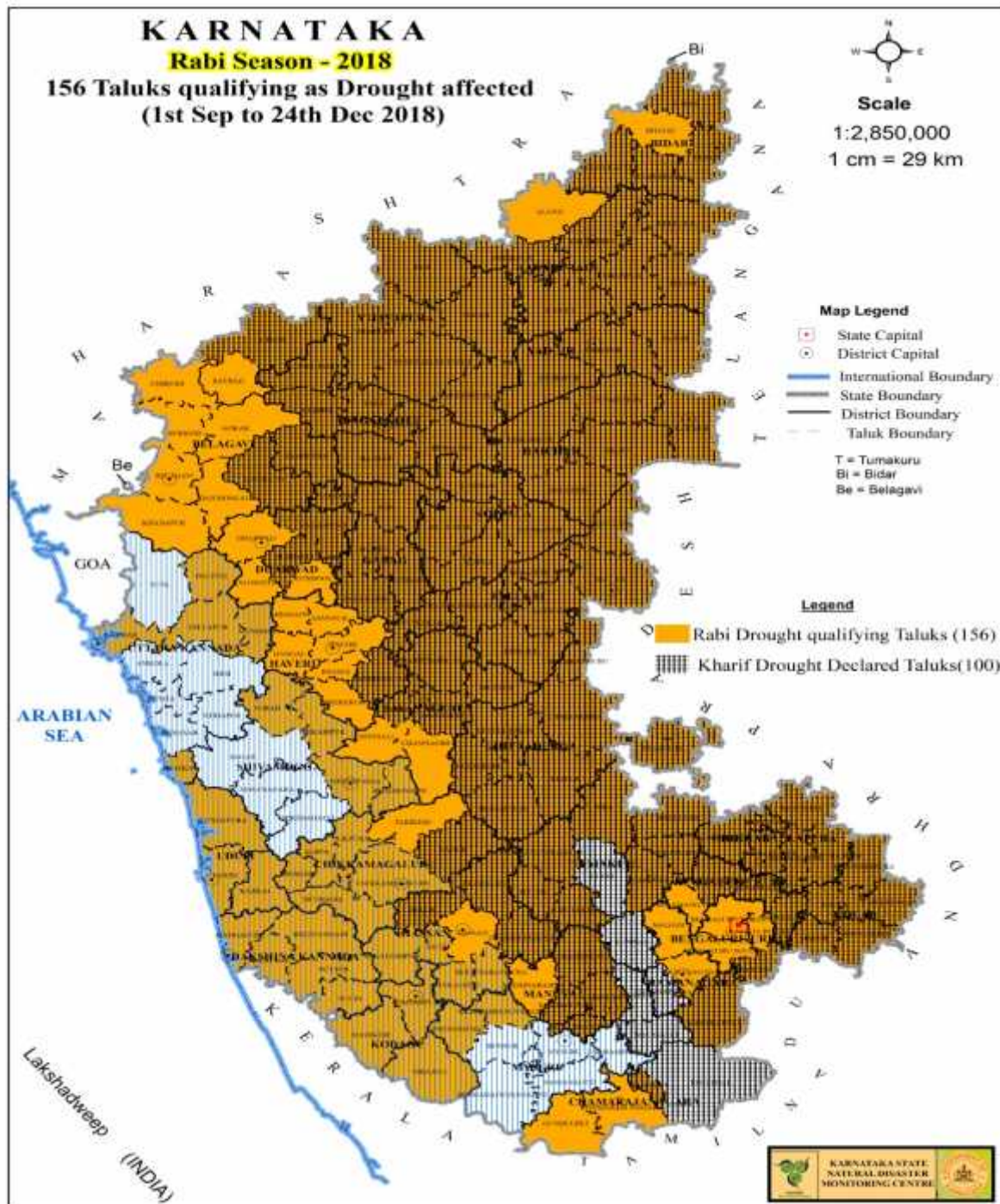
Source: KSNDMC

1.5.1 Drought Profile of Karnataka from 2015-18

Sl. No.	District Name	2015 Taluks	2016 Taluks	2017 Taluks	2018 Taluks (Upto March-2019)
1	Bengaluru Urban	Nil	4	Nil	4
2	Bengaluru Rural	3	4	Nil	4
3	Ramanagara	1	4	Nil	4
4	Kolar	5	5	Nil	5
5	Chikkaballapura	6	6	Nil	6
6	Tumakuru	9	10	Nil	10
7	Chitradurga	5	6	Nil	6
8	Davanagere	5	6	Nil	6
9	Chamarajanagara	3	4	Nil	4
10	Mysuru	5	7	Nil	2
11	Mandya	7	7	Nil	7
12	Ballari	7	7	Nil	7
13	Koppala	4	4	Nil	4
14	Raichur	5	5	Nil	5
15	Kalaburagi	7	7	Nil	7

16	Yadgir	3	3	Nil	3
17	Bidar	5	1	Nil	5
18	Belagavi	10	10	Nil	10
19	Bagalkote	6	6	Nil	6
20	Vijayapura	5	5	Nil	5
21	Gadag	5	5	Nil	5
22	Haveri	6	7	Nil	7
23	Dharwad	5	5	Nil	5
24	Shivamogga	1	7	Nil	7
25	Hassan	8	7	Nil	8
26	Chikkamagaluru	3	6	Nil	6
27	Kodagu	1	3	Nil	3
28	Dakshina Kannada	Nil	2	Nil	5
29	Udupi	Nil	3	Nil	3
30	Uttara Kannada	6	8	Nil	5
Total		136	164	0	164

Source: KSNDMC



1.5.2 Profile of Rainfall

Sl. No.	District Name	No. of. Taluks - 2018					No. of. Taluks - 2019 (1st Jan to 22nd April)				
		Exc ess	Nor mal	Defi cit	Sca nty	Nil Rainfall	Exc ess	Nor mal	Defi cit	Sca nty	Nil Rainfall
1	Bengaluru Urban	0	4	0	0	0	2	2	0	0	0
2	Bengaluru Rural	0	3	1	0	0	2	1	1	0	0
3	Ramanagara	0	4	0	0	0	0	4	0	0	0
4	Kolar	0	2	3	0	0	3	2	0	0	0
5	Chikkaballapura	0	0	6	0	0	1	2	3	0	0
6	Tumakuru	0	7	3	0	0	4	4	2	0	0
7	Chitradurga	0	5	1	0	0	1	4	0	1	0
8	Davanagere	0	5	1	0	0	0	2	2	2	0
9	Chamarajana gara	1	3	0	0	0	0	1	3	0	0
10	Mysuru	3	4	0	0	0	1	3	2	1	0
11	Mandya	0	7	0	0	0	0	1	6	0	0
12	Ballari	0	2	5	0	0	0	1	4	2	0
13	Koppala	0	0	4	0	0	0	2	0	2	0
14	Raichur	0	0	3	2	0	0	0	2	3	0
15	Kalaburagi	0	0	7	0	0	0	1	3	3	0
16	Yadgir	0	0	3	0	0	0	0	1	2	0
17	Bidar	0	0	5	0	0	0	0	0	5	0
18	Belagavi	0	1	9	0	0	0	0	6	4	0
19	Bagalkote	0	0	6	0	0	0	0	5	1	0
20	Vijayapura	0	0	5	0	0	0	3	2	0	0
21	Gadag	0	0	5	0	0	0	3	2	0	0
22	Haveri	0	4	3	0	0	1	3	3	0	0
23	Dharwad	0	5	0	0	0	3	2	0	0	0
24	Shivamogga	0	7	0	0	0	0	0	7	0	0
25	Hassan	4	4	0	0	0	0	2	6	0	0
26	Chikkamagaluru	6	1	0	0	0	0	2	5	0	0
27	Kodagu	3	0	0	0	0	0	2	1	0	0
28	Dakshina Kannada	1	4	0	0	0	0	3	1	1	0
29	Udupi	0	3	0	0	0	0	1	0	2	0
30	Uttara Kannada	3	5	3	0	0	1	6	1	3	0
Total		21	80	73	2	0	19	57	68	32	0

Source: KSNDMC

1.5.3 Profile of Floods

Sl. No.	District Name	No. of Taluks				
		2015	2016	2017	2018	2019
1	Bengaluru Urban	Nil	Nil	Nil	Nil	Nil
2	Bengaluru Rural	Nil	Nil	Nil	Nil	Nil
3	Ramanagara	Nil	Nil	Nil	Nil	Nil
4	Kolar	Nil	Nil	Nil	Nil	Nil
5	Chikkaballapura	Nil	Nil	Nil	Nil	Nil
6	Tumakuru	Nil	Nil	Nil	Nil	Nil
7	Chitradurga	Nil	Nil	Nil	Nil	Nil
8	Davanagere	Nil	Nil	Nil	Nil	Nil
9	Chamarajanagara	Nil	Nil	Nil	Nil	Nil
10	Mysuru	Nil	Nil	Nil	Nil	Nil
11	Mandya	Nil	Nil	Nil	Nil	Nil
12	Ballari	Nil	Nil	Nil	Nil	Nil
13	Koppala	Nil	Nil	Nil	Nil	Nil
14	Raichur	Nil	3	Nil	Nil	Nil
15	Kalaburagi	Nil	7	Nil	Nil	Nil
16	Yadgir	Nil	3	Nil	Nil	Nil
17	Bidar	Nil	5	Nil	Nil	Nil
18	Belagavi	Nil	5	Nil	Nil	Nil
19	Bagalkote	Nil	1	Nil	Nil	Nil
20	Vijayapura	Nil	Nil	Nil	Nil	Nil
21	Gadag	Nil	Nil	Nil	Nil	Nil
22	Haveri	Nil	Nil	Nil	Nil	Nil
23	Dharwad	Nil	Nil	Nil	Nil	Nil
24	Shivamogga	Nil	Nil	Nil	4	Nil
25	Hassan	Nil	Nil	Nil	1	Nil
26	Chikkamagaluru	Nil	Nil	Nil	4	Nil
27	Kodagu	Nil	Nil	Nil	3	Nil
28	Dakshina Kannada	Nil	Nil	Nil	5	Nil
29	Udupi	Nil	Nil	Nil	3	Nil
30	Uttara Kannada	Nil	Nil	Nil	5	Nil
Total		0	24	0	25	0

Source: KSNDMC

1.5.4 Major Disaster Events in Karnataka-2012-19

SL No	Year	Major Disaster Events
1	2012	<ul style="list-style-type: none"> • 157 out of 176 taluks were drought affected • 45.85 lakh ha remained unsown • More than 3.0 lakh ha early sown crops completely lost • About 13.2 lakh ha rainfed crops with > 50% loss • Fire accidents, etc.
2	2013-14	<p>Loss and Damages caused due to hailstorms during 2013 The incessant and very heavy Hailstorm caused loss of human lives and livestock and losses/damages to crops and infrastructure. The damages / losses to high value horticulture crops are significant.</p> <p>23 human lives lost During Hailstorm during Feb-March 2014. 12 human Injuries have been reported where disability is 40 to 80% 719 Cattle lost 1627 houses damaged 2,73,605 hectare Agriculture Crops damaged, Estimated Loss Rs.366.68 Crores 18,415 hectare horticulture crops damaged, Estimated Loss Rs.506.12 Crores Transformers and electrical supply lines damaged worth Rs.6.06 crores The worst affected districts are Bijapur, Belgaum, Bellary, Yadgiri, Bidar, Bagalkot, Raichur, Gulbarga and Chitradurga</p>
3	2013-14	<p>Loss and Damages caused due to floods during 2013-14</p> <ul style="list-style-type: none"> • 7 districts affected by Heavy rain/Flood. • 118 hoblis falling in 64 taluks of 22 districts affected by drought. • 7.07 lakh ha affected by drought • 119 human lives lost During 2013 • 259 people lost their limbs or eyes with disability upto 80%, 301 people injured and hospitalized. • 286 cattle lost, Fodder has been damaged in 3804 Ha Estd Loss – 1200.80 Lakhs • 11,537 houses damaged • 1,33,572 hectare agriculture crops damaged • 1,16,024 hectare horticulture crops damaged • Roads Damaged (km) : 5,764 • Bridges/ Culverts Damaged (nos): 1464 • Irrigation Tanks damaged (nos): 395 • 221 minor irrigation works damaged • 967 water supply schemes are damaged • Transformers and electrical supply lines damaged worth Rs.30.99crores. <p>Drought Losses and Damages</p> <ul style="list-style-type: none"> • 28 districts and 125 taluks affected by Drought
4	2014-15	<p>Flood Loss and Damages</p> <ul style="list-style-type: none"> • Loss of Human life – 218 • Loss of Domestic life – 330 • Damage to Houses – 27377 • Infrastructure Loss – Rs. 574.30 crores <p>Drought Loss and Damages</p> <ul style="list-style-type: none"> • 9 Districts and 35 taluks declared as drought affected
5	2015-16	<p>Drought :27 Districts and 137 taluks Loss due to hailstorms - 711 crores</p>
6	2016-17	<p>Drought : 30 Districts and 164 taluks Floods/ Heavy Rainfall: 6 Districts and 24 taluks</p>

7	2017-18	<ul style="list-style-type: none"> • Bangalore Urban Floods 2017 • Mangalore Floods /Landslides 2017
8	2018-19	<p>Drought: 30 districts and 162 taluks Floods/ Heavy Rainfall: 7 Districts and 25 taluks Landslide: District: 04 and 07 taluks</p> <ul style="list-style-type: none"> • Kodagu Floods/Landslides -2018 • Bus fall into canal in Kanaganamaradi, Mandya District-2018 • Temple Prasad Poisoning in Sulvaadi, Kollegal, Chamaraja Nagar-2018
9	2019 (Upto April)	<p>Heavy Rainfall: 10 Districts and 19 taluks</p> <ul style="list-style-type: none"> • Bengaluru Car Park Fire in Aero India event - 2019 • Bengaluru Air Crash in Aero India event -2019 • KFD (Kyasanur Forest Disease) -2019 • Dharwad Building Collapse- 2019 • Bandipur forest fire -2019 • Chamundi hill forest fire -2019

1.6 Kodagu flood-2018

The main reason for Kodagu landslide and flood is due to heavy rainfall during August 2018. From 15-21 August, 2018 three taluks namely, Virajpet, Somwarpet and Madikeri taluks have reported an excess rainfall of 150mm to 200mm on each of the days. The month of the August received an average excess rainfall of 22%, 28% and 32% in Virajpet, Somwarpet and Madikeri taluks respectively over and above the average rainfall of past 20 years. There were 105 confirmed landslides. Kodagu district reported a total loss of Rs. 1725.23 Crores which included property loss of Rs 1401.97 Crores, crop damages of Rs.30002.14 Lakhs, housing damage of Rs. 2304.68 lakh and animal loss of Rs. 18.39 lakh. The district administration provided effective response and relief during the disaster. In addition to fire service, home guards, civil defence, health and other line departments, NDRF, SDRF, and NGOs were requested to work in the search and rescue, and relief operation. **“Refer chapter - III for details of loss and damage in Kodagu Flood -2018”.**

Lessons learnt:

- Administration found it difficult and overwhelmed with the task of supply and distribution of materials and goods during relief. There is a need to use computer registration using appropriate software.
- Warehouse or storage points to be nearer to affected places
- GPS to be installed in relief vehicles for real-time monitoring
- Assigning responsibilities and span of control to be done through Incident Response System to minimize overburdening
- Prepare GIS maps of safe and unsafe Areas
- Hazardous areas to be displayed through high visibility Warning Boards
- Foundation to be on hard soil/Strata
- Drainer lines on either side of road(water must flow away within 2-3 hrs)
- Retaining Walls/suitable Plantation/Grouting etc.
- Alarm Bells to give warning at every 1km distance when rainfall exceeds normal
- Kodagu Disaster Response Force to be set up.

1.7 Bus fall into canal in Kanaganamaradi, Mandya District-2018

On 23.11.2018 a private bus carrying about 40 passengers plunged into the Visveshwarya canal near Pandavapura in Mandya District killing a total of 30 people comprising 13 women, 9

children and 8 men. Accident occurred at 12.20 pm between Kanaganamaradi and Kurahatti gate. The passengers were trapped in the bus which fell on its left, making doors inaccessible. The bus was completely submerged in the water was lifted using hydraulic crane by 2.40pm. During the search and rescue operation the fast flowing water in the canal was minimized by stopping the release from KRS dam.

Lessons learnt

The reason quoted is similar to what was reported in the earlier road accidents leading to vehicles falling and drowning in the canals, lake and tanks. Local people complained that there should have been a wall constructed to avoid such incidents. An illuminated display board informing the drivers to slow down the speed near the stretch could also have averted this incident. It is also found that the bus was registered around 18 years and changed hands at least eight times and mechanical condition was worst. Although, it had certificate of fitness valid up to June 2019. All these factors need to be taken seriously by the concerned departments and officials as a small mistake or negligence would translate into major disaster.

1.8 Dharwad Building Collapse-2019

On 19.04.2019 an under construction multi-storey building named Renuka complex at Kumareshwar Nagar in Dharwad District collapsed like a pack of cards at around 3.30 pm. Even during construction, a few of the floors like basement, ground floor were reported to be rented for canteen, cyber cafe and shopping purposes. On this fateful day time, many people gathered in the canteen, cyber cafe and shops. At around 3.30 pm this four floor building suddenly came down to the ground without giving any notice or time to the inmates to escape. As a result, a total 62 people got trapped inside the building debris. The district administration immediately got into action and activated the line departments namely Fire and Emergency Service, Home guards, Civil defence, Police, Revenue, Health, HDMC including requesting the help of NDRF and SDRF. 220 fire men, 134 NDRF men, 37 SDRF men, 900 police personnel, 150 HDMC staff, were deployed for search and rescue operation. The operation period started on 19.04.2019 and completed on 25.04.2019 and worked 24X7 during these days. During the operation 19 dead bodies removed, 15 people severely injured, 43 people rescued safely and 50 vehicles damaged. Subsequently, owners of the building and engineer were arrested by the police. HDMC planners and engineers involved in the permission were suspended.

Lessons learnt:

The long duration of seven days operation period must have been reduced with proper preparedness and response using appropriate equipments. This might be the reason for more deaths. The HDMC must ensure safe design and construction at every stage of construction of private and public buildings. It is reported that building was poorly designed. It had extra two floors which were under construction without permission from HDMC. It must be made mandatory for the HDMC, owners, contractors, engineers to prepare and follow strict procedures for safe design, construction and ensure implementation at all stages of construction from foundation to finishing. Needless to say that there might be many such unsafe buildings already constructed and those under construction which need to be immediately identified and actions taken before another similar disaster strikes.

1.9 Aero-India Bengaluru-2019: Car parking fire incident

The event 12th edition of the Aero-India Bengaluru-2019 was held from 20-24 February, 2019. The car parking area near the event caught fire in which over 300 cars were gutted on the fourth day of the event. Although, security arrangements were made with fire engines placed intact in the vicinity, the fire could not be controlled. The reasons could be that the dried grass in the parking area might have caught fire due to unknown a reason which needs to be investigated.

Lessons learnt:

The area earmarked for parking area in such large congregations and crowds must be pre-planned with all necessary precautions such as clearing of dry grass, watering, rolling and leveling in addition to other response measures. Such plans must be verified by concerned departments together

before vehicles are allowed to park. The event also witnessed crashing of two jets of Indian Air Force's aerobatic team killing a pilot.

1.10 Temple Prasad Poisoning in Sulvaadi, Chamaraja Nagar District

Sulvaadi village has 370 households with the population of 1500. Kichkuth Maaramma Temple is located half a kilometer from local Primary Health Centre. On 14.12.2018 between 10am to 12.30 pm, a pooja was held in which about 120 devotees from 23 neighboring villages were gathered to perform pooja. Vegetable rice bath was prepared as Prasad to distribute to the devotees. Soon after consuming prasad, 57 people started suffering from stomachache, vomiting and diarrhoea and started pouring to PHC. Doctors in PHC were unable to manage all the affected patients and 108 was called to transport the patients to district civil hospitals. Subsequently, at 12.30pm due to the increasing severity of the situation patients were taken to hospitals neighboring districts. The DHO took the samples of the vegetable rice bath for laboratory testing. As prevention, 16 BLS and 8 ALS ambulances were kept ready. A total of 121 persons were ill and out of which 17 people died. Many more were taking treatment in neighboring districts.

Lessons learnt:

Temple prasad screening committee with doctor must be created. A Grama Panchayat level public food screening committee to ensure safety of the food distribution need to be formed. Task force comprising Muzurai staff, local police, medical officers, revenue inspector, PDO, representatives of local self groups, NGO., may be assigned the overall local incidents including natural and manmade disasters. The reasons as reported in the media so far are predicted to be internal conflict within temple management. The case is under judicial enquiry.

1.11 Bandipur Forest Fire -2019

A massive forest fire broke out in Bandipur National Park. It was estimated by ISRO and NRSC through their satellite imageries that an area of 10,920 acres was destroyed between 21-25 February, 2019. With the fire spreading rapidly due to winds, the authorities closed the Gundlupet-Ooty National highway and safaris in Bandipur National Park were also cancelled. Strong winds were making the job of fire fighters, forest staff and volunteers more difficult. Many smaller mammals and reptiles were killed, along with thousands of trees. There had been no forest-fire incidents noted in Bandipur National Park in the previous two years. In addition to measures taken by forest department, two Mi-17 helicopters were deployed to douse the fire. A total of 10 sorties were flown, dropping approximately 30,000 litres of water.

Lessons learnt:

Forest department including other line department like police, fire, civil defence, media professionals, local community, NGOs need to be trained and create local community based fire management committee. Forest department shall initiate the use of technology for receiving fire alarms and early warning. Immediate response mechanism such as IRS which was adopted for forest fire incident response in developed countries successfully must also be adopted in such forest fire incidents in India.

1.12 Drought

Karnataka stands second next to Rajasthan in the ranking of drought. Almost every year the state is experiencing drought with over more than 100 taluks declared as drought affected. 157 taluks in 2012, 125 taluks in 2013, 136 taluks in 2015, 164 taluks in 2016 and again 164 taluks in 2018 indicate the severity of the drought situation.

Lesson learnt:

We have an excellent system of drought monitoring through KSNDMC. Telemetric rain gauge stations have been installed at every GP and villages to ensure accurate rainfall data and prediction of future rainfall in towns and villages. The consequences of drought are in the form of migration of farmers, distress sale of cattle and domestic animals, shortage of drinking water,

depleting ground water table, farmer's suicides, crop loans, poverty, school dropouts, malnutrition, morbidity and mortality among farming community particularly small and marginal farmers. Farmer's woes in terms of poor compensation and crop insurance are experienced every year despite the measures taken by the government.

1.13 Initiatives by Government of Karnataka

1.13.1 Karnataka State Disaster Management Authority & DDMA

As stipulated in the Disaster Management Act 2005, the State Government has established State Disaster Management Authority (SDMA) as the apex body in the state entrusted with overall responsibility of disaster management headed by the Chief Minister. Every district has a District Disaster Management Authority headed by the Deputy Commissioner. The purpose is to strengthen the organizational structure and command system at every level of administration for better disaster management. (Refer Chapter-4).

1.13.2 Department of Disaster Management, GoK

The GoK has set up a separate Department of Revenue (Disaster Management) headed by the Principal Secretary (DM).

Principal Secretary to Government,
Revenue Department (DM)
Room No. 546-547, 5th Floor, 2nd Stage
M.S. Building, Dr.B.R.Ambedkar Veedhi,
Bengaluru- 560 001
Ph No.: 080- 2235 3980, 2232 0582
Fax: 080- 22354321
E-mail: secyrelif-rev@karnataka.gov.in

1.13.3 District Disaster Management Plans (DDMP)

Under the overall supervision of Revenue Department (DM), the Centre for Disaster Management (CDM) at ATI Mysuru has been imparting training to the officials of line departments, DDMA, District Administration including PRIs, ULBs, Civil Defense and Home guards on DDMP and its execution. The templates in Kannada, Online DDMP templates, workbook on district disaster management plan, tools for risk assessment and data collection, field survey, secondary data to be used, institutional structures to be created, preparedness, mitigation and response measures, SoPs and details of contact addresses of resources including key responsible officers are discussed during every training programme conducted by CDM at ATI Mysuru.

1.13.4 State Emergency Operation Centre (SEOC)

The SEOC has been set up in MS-Building (Govt. Secretariat) Bengaluru to monitor efficient Disaster Management in the State. The SEOC has been networked with all 30 districts.

State Emergency Operating Centre
Toll Free No. 1070
Website: ksdma.co.in

1.13.5 District Emergency Operation Centre (DEOC)

All 30 district administrations under the supervision of respective DCs have setup DEOC with wireless communication and emergency facilities. Free toll Number, STD code + 1077

1.13.6 Crisis Management Plan

The Revenue Department (DM), GoK has prepared Crisis Management Plan providing indicative guidelines for operating during and after a disaster event. The crisis management plan provides information on institutional arrangements for crisis response explaining the functions of KSDMA, SEC and DDMA including NDRF, SDRF, local authorities, EoC, contingency action, for early warning, SAR, Relief Camps and Restoration activities viz., damage, assessment, essential

services, mass casualty management, disposing carcasses and dead, food, sanitation and other services including monitoring.

1.13.7 State Disaster Management Policy

The policy envisages the participation of all stakeholders to manage disasters at all stages viz. prevention, mitigation, preparedness, response and rehabilitation. The policy stresses on strategy for DRR, institutional framework, community participation, effective communication and updation of DM Plans at all levels.

1.13.8. Karnataka State Natural Disaster Monitoring Centre (KSNDMC)

The state has established institutional mechanism to monitor the drought indicators by establishing KSNDMC, a drought and flood monitoring centre way back in 1988. GPRS enabled telemetric rain gauges have been installed and operational in all the 747 hoblies and 5647 telemetric rain gauge stations in all gram panchayats. GPRS enabled weather stations have been installed at 135 hobli centres. It disseminates weather related information to all the concerned in the state 24X7. The KSNDMC has been transferred to Revenue Department (DM) which was earlier attached to Science & Technology Department (Refer chapter 15).

Director KSNDMC: Mob: 9742204377

Karnataka State Natural Disaster Monitoring Centre,
KSNDMC Campus, Major Sandeep Unnikrishnan Road, Near Attur Layout, Yelahanka,
Bangalore - 560 064, Karnataka, INDIA,

Phone No : +91 080 67355000, Email : dmc.kar@nic.in, dmc.kar@gmail.com.

Website: [http](http://www.karnataka.gov.in)

Face book Connect: <https://www.facebook.com/KSNDMC>

1.13.9 State Disaster Response Force

Constitution of Karnataka State Disaster Response Force (KSDRF) has been approved by the cabinet and is under the process of establishment in all four regions of Karnataka. The NDRF has started imparting training to the SDRF personnel in Bengaluru.

1.13.10 Remote Sensing and Geographical Information System (GIS) for Disaster Management Support- KRSAC

Remote sensing satellite Imagery and Geographical Information System can give a wealth of information for assessment and analysis of natural disasters. High resolution, spatial and temporal, satellite imagery applications such as flood monitoring and forest fire detection, offer an effective response if the actual disaster were to strike. Natural disasters usually occur with little to no warning, often resulting in the loss of human life, and incur extensive damage to property and the local economy. Karnataka Geographical Information System (K-GIS), a flagship programme of the Govt. of Karnataka, A web application for disaster management support was developed by KRSAC and hosted on KGIS portal (<http://kgis.krsac.in/revenue/GisView.aspx>) for the effective support system.

Address- Major Sandeep Unnikrishnan Road,
Doddabettahalli, Vidyaranyapura Post,
Vignana Kendra,
Bengaluru, Karnataka 560097
Contact Number: 080 2972 0557

1.14 Multi-Hazard Approach

This Plan is the first attempt to bring out a common plan for the State for five categories of possible disasters identified by the HPC and the expert committee to which the State is vulnerable to. The Plan has a multi-hazard approach and incorporates various actions which will promote a culture of preparedness through extensive consultations.

1.15 Trigger Mechanism is an emergency quick response mechanism, which would spontaneously set in motion all disaster management activities for response and recovery without loss of critical time. This would entail all the participating managers to know in advance the task assigned to them and the manner of response. The Trigger Mechanism has been envisaged as a preparedness plan whereby the receipt of a signal of an impending disaster or on the occurrence of sudden disaster would

simultaneously energize and activate all response and mitigation mechanism without loss of crucial time. This would necessitate the participating managers to know in advance the tasks assigned to them and the manner of response. Identification of available resources, manpower, material, equipment and adequate delegation of financial and administrative powers are prerequisites to the successful operation of Trigger Mechanism.

1.16 Approaches and Policy Statement towards Management of Disasters

The approach adopted in the preparation of the State Disaster Management Plan is holistic and will address the multi-hazards the State is vulnerable to. It takes into account past lessons and experiences and is built on what exists at different levels, streamlining bottlenecks in systems and operational management procedures. The State Plan also adopted the generic categorization of disasters as suggested by the HPC with specific plans to handle different disasters by various departments at the State level.

CHAPTER 2

KARNATAKA STATE PROFILE

2.1 Location

The State of Karnataka is located within 11.5 degree north and 18.5 degree north latitudes and 74 degree east and 78.5 degree east longitude. It is situated on a tableland where the western and eastern ghat ranges converge into the Nilgiri hill complex, in the western part of the deccan peninsular region of India.

2.2 Area and Administrative Divisions

Karnataka State has been divided into four Revenue divisions, 49 sub-divisions, 30 districts, 177 plus additional 49 taluks announced by the government for administrative purposes. The jurisdictions of the Revenue Divisions are as follows;

Name of the Revenue Division	Location of RDCs	Districts under Jurisdiction
Bengaluru Revenue Division	Bengaluru	Bangaluru Urban, Bengaluru Rural, Chikaballapura, Chitradurga, Davanagere, Kolar, Ramanagar, Shivamogga, Tumakur
Mysuru Revenue Division	Mysuru	Chamarajanagar, Chikkamagaluru, Dakshina Kannada, Hassan, Kodagu, Mandya, Mysure, Udupi
Belgaum Revenue Division	Belgaum	Bagalkote, Belagavi, Vijayapura, Dharwad, Gadag, Haveri, Uttara Kannada
Gulbarga Revenue Division	Gulbarga	Bellary, Bidar, Gulbarga, Koppal, Raichur, Yadgir

2.3 Demography

The state has a total land area of 1,91,791 sq.km, accounting for 5.83% of the total area of the country (32.88 lakh sq. km) and ranks eighth among major States in terms of size. As per 2011 Census, the State's population was 611 lakhs(approximately) with over 75% literate persons. There are 968 females per thousand population. Karnataka occupies Ninth place with regard to population and the density of population as per 2011 Census was 319 persons per sq. km which was lower than the all-India density of 382. The coastline of about 322 km long with its silver sand beaches and blue lagoons hedged by miles and miles of tall, waving, palmgroves against the back drop of majestic mountain regions is strikingly beautiful. The Malnad stretches about 650 km from north to south with an undulating range of mountains. The majority of the populations are Hindus. About 83.8% of the population are Hindus, 12.23% are Muslim, 1.91% are Christians, 0.78% are Jains, 0.73% are Buddhist and the remaining belong to other religions.

Table 2.1: Population and Percentage Share of Female Population, Literacy Rate and Density: 2011 Census

Sl. No.	District	Population			Literacy Rate				Density Per Sq. Km
		Male	Female	Total	Male	Female	Persons	Rank	
1.	Belagavi	2423063	2356598	4779661	82.2	64.54	73.48	17	356
2.	Bagalkote	950111	939641	1889752	79.23	58.4	68.82	23	288
3.	Vijayapura	1111022	1066309	2177331	77.21	56.72	67.15	26	207
4.	Bidar	870665	832635	1703300	79.09	61.55	70.51	19	313
5.	Raichuru	964511	964301	1928812	70.47	48.73	59.56	29	228
6.	Koppal	699926	689994	1389920	78.54	57.55	68.09	24	250
7.	Gadag	537147	527423	1064570	84.66	65.44	75.12	14	229
8.	Dharwad	937206	909817	1847023	86.37	73.46	80	7	434
9.	Uttara Kannada	726256	710913	1437169	89.63	78.39	84.06	4	140
10.	Haveri	819128	778540	1597668	84	70.46	77.4	10	331
11.	Bellary	1236954	1215641	2452595	76.64	58.09	67.43	25	290
12.	Chitradurga	840843	818613	1659456	81.37	65.88	73.71	16	197
13.	Davangare	986400	959097	1945497	82.4	68.91	75.74	12	328
14.	Shivamogga	877415	875338	1752753	86.07	74.84	80.45	6	207
15.	Udupi	562131	615320	1177361	91.41	71.58	86.24	3	329
16.	Chikkamagaluru	566622	571339	1137961	85.41	73.16	79.25	8	158
17.	Tumkur	1350594	1328386	2678980	82.81	67.38	75.14	13	253
18.	Bengaluru	5022661	4598890	9621551	91.01	84.31	87.67	2	4381
19.	Mandya	905085	900684	1805769	78.27	62.54	70.4	20	364
20.	Hassan	883667	892754	1776421	83.64	68.6	76.07	11	261
21.	Dakshina	103471	1054935	2089649	93.1	84.13	88.57	1	430

	Kannada	4			3				
22.	Kodagu	274608	279911	554519	87.19	78.14	82.61	5	135
23.	Mysuru	1511600	1489527	3001127	78.46	67.06	72.79	18	476
24.	Chamarajanagar	512231	508560	1020791	67.93	54.92	61.43	28	181
25.	Gulbarga	1301755	1264571	2566326	74.38	55.09	64.85	27	234
26.	Yadgir	590329	583942	1174271	62.25	41.38	51.83	30	223
27.	Kolar	776396	760005	1536401	81.81	66.84	74.39	15	386
28.	Chikkaballapura	636437	618667	1255104	77.75	61.55	69.76	21	296
29.	Bengaluru	509172	481751	990923	84.82	70.63	77.93	9	431
30.	Ramanagara	548008	534628	1082636	76.76	61.5	69.22	22	308
	Total	30966657	30128640	61095297	82.47	68.08	75.36	-	319

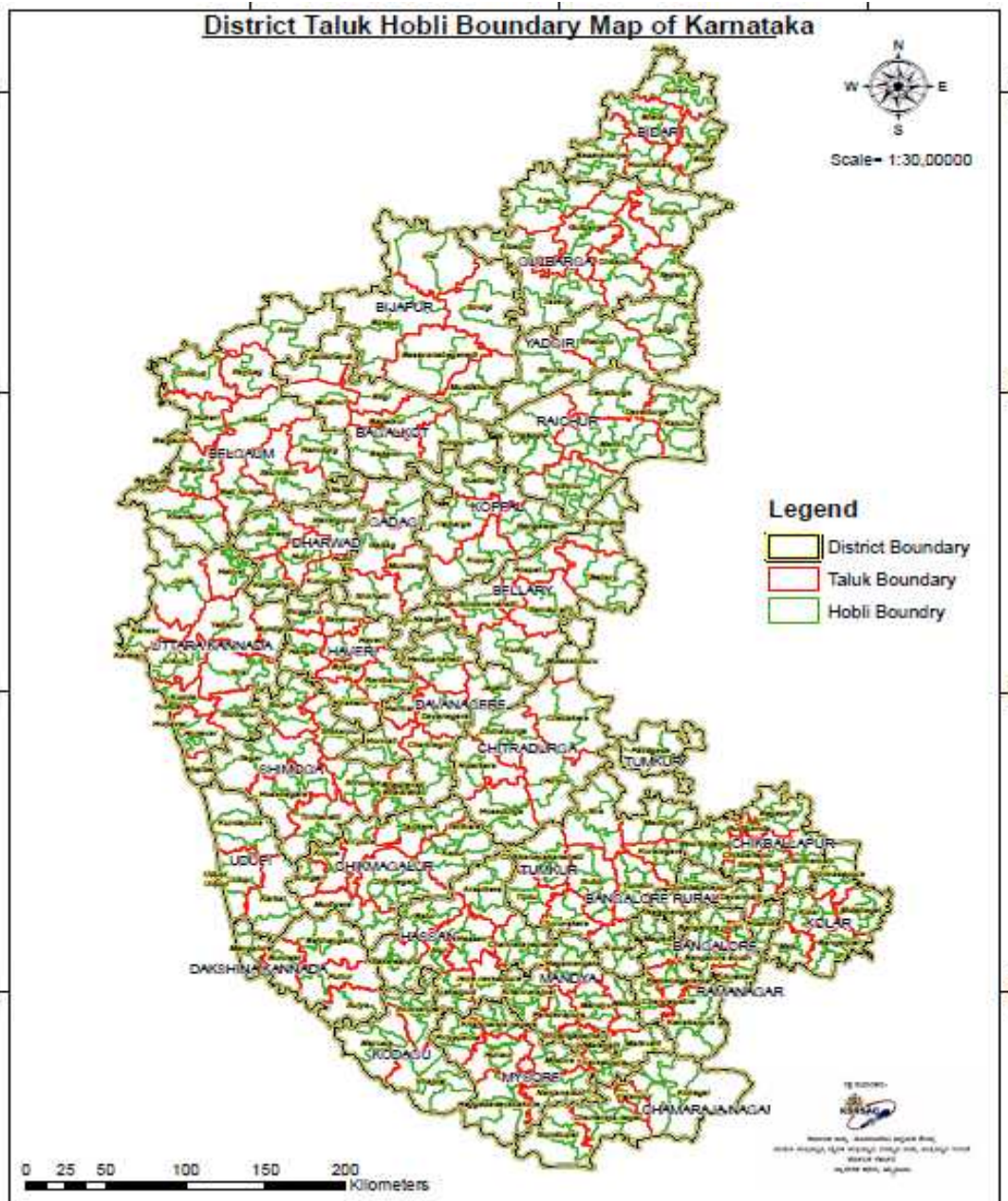


Fig: 2.1: District, Taluk, Hobli boundary Map of Karnataka

The region is well developed with coffee plantations, tea, timber, minerals and hydro-electricity. A majority of the state lies on the Deccan Plateau. The Western Ghats, with an average height of 2500 to 3000 feet separate the narrow coastal plains from the Plateau. The state capital is Bengaluru. Here is detailed information on the geography of Karnataka.

The State has four physiographic regions

1) Northern Karnataka Plateau

Northern Karnataka Plateau comprises the districts of Belagavi, Bidar, Vijayapura and kalburgi and is largely composed of the Deccan Trap. It represents a monotonous, treeless extensive plateau landscape with a general elevation of 300 to 600 meters from the mean sea level. However the river plains of the Krishna, the Bhima, the Ghataprabha and the Malaprabha with the intervening watersheds, the step like landscapes, lateritic escarpments, residual hills and ridges break the monotony of this extensive plateau. The general slope is towards the east. This region is largely covered with rich black cotton soils.

2) Central Karnataka Plateau

Central Karnataka Plateau covers the districts of Bellary, Chikmagalur, Chitradurga, Dharwad, Raichur and Shivamogga. The region represents the transitional surface between the Northern Karnataka Plateau of Deccan Trap and southern Karnataka Plateau with relatively higher surface. By and large, this region represents the area of Tungabhadra basin. The general elevation varies between 450 and 700 meters. The general slope of this region is towards the east.

3) Southern Karnataka Plateau

The Southern Karnataka Plateau covers the districts of Bengaluru urban, Bengaluru Rural, Hassan, Kodagu, Kolar, Mandya, Mysuru and Tumkur. This region largely covers the area of the Cauvery river basin. It is bounded by 600 meters contour and is characterized by a higher degree of slope. In the west and south, it is enclosed by the ranges of Western Ghats and the northern part is an interrupted but clearly identifiable high plateau. In the east the valleys of the Cauvery and its tributaries open out to form undulating plains. The general elevation of the region varies from 600 to ChamaraJanagara district and the Brahmagiri range of Kodagu district.

4) Karnataka Coastal Region

The Karnataka Coastal Region, which extends between the Western Ghats, edge of the Karnataka Plateau in the east and the Arabian Sea in the West, covers Dakshina Kannada and Uttara Kannada districts. It has difficult terrain full of rivers, creeks, water falls, peaks and ranges of hills. The coastal region consists of two broad physical units, the plains and the western ghats. The coastal plains represent a narrow stretch of estuarine and marine plains. The abrupt rise at the eastern flanks forms the western ghats. The Coastal belt with an average width of 50 to 80 km covers a distance of about 322 km from north to south.

2.4 Geology

The geology of Karnataka is largely confined to the two oldest eras; the Achaean and the Proterozoic. The rest of the great periods from Cambrian to recent are hardly represented but for minor sediments of recent age exposed along the coastal margin to the West. A substantial part of North Karnataka is covered by Deccan trap, representing phenomenal outburst of volcanic activity at the dawn of the Cenozoic era.

The state is exposed oldest rocks in Gorur area, Hassan district, Karnataka date back to about 3300 million years.

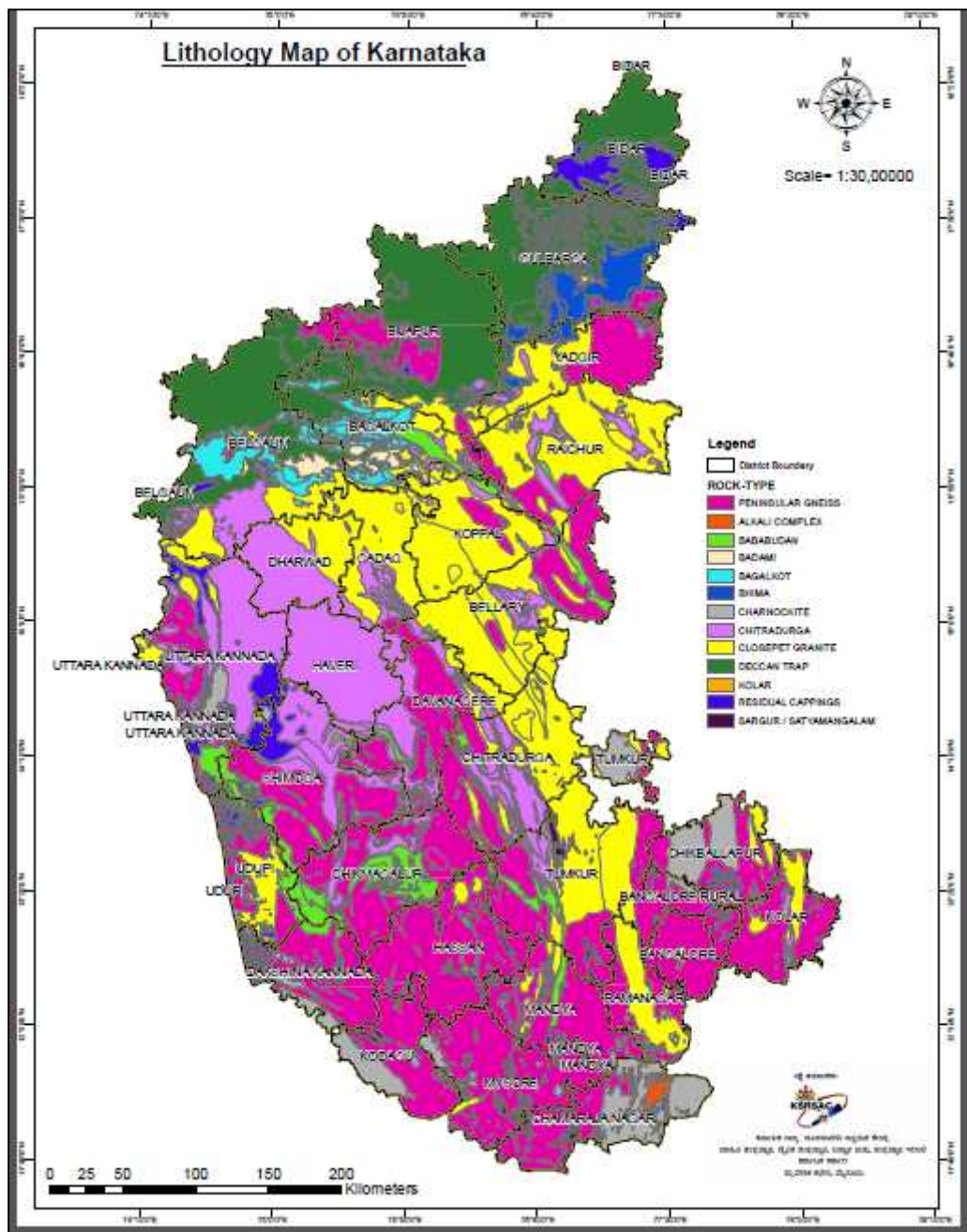


Fig. 2.2: District, Lithology Map of Karnataka

2.5 Climate and Rainfall

The state located on the western coast gets most of the precipitation from the southwest monsoon. The State enjoys three distinct climates varying with the seasons. The winter season from January to February is followed by summer season from March to May. The period from October to December forms the post-monsoon season. The period from October to March, covering the post-Monsoon and winter seasons is generally pleasant over the entire State except during a few spells of rain associated with north-east monsoon which affects the south-eastern parts of the State during October to December. The months April and May are hot, very dry and generally uncomfortable. Weather tends to be oppressive during June due to high humidity and temperature.

The South-West monsoon is the principal rainy season during which the State receives 80% of its rainfall.

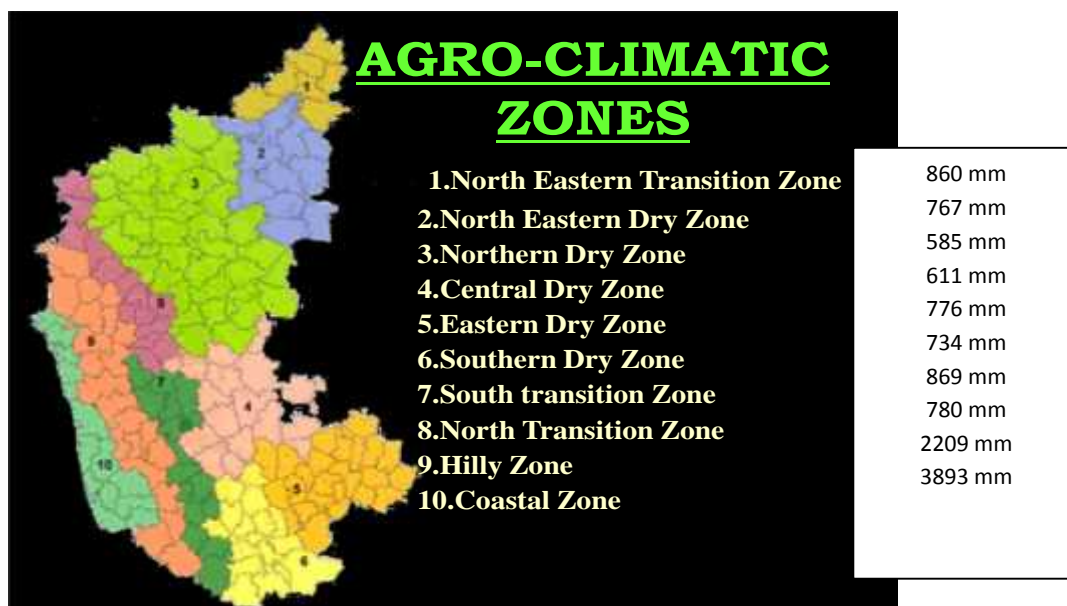


Fig: 2.3 indicates Annual Rainfall of respective zone

2.6 Temperature

April and May are the hottest months. In May, mean maximum temperature shoots upto 40 deg. C over the north-eastern corner of the State, decreasing south-westwards towards the Western Ghat region and the Coastal belt. The highest temperature recorded at an individual station in the State is 45.6 deg. C at Raichur on 23rd May, 1928, which is 6 deg. higher than the normal for the warmest months. December and January are the coldest months. The lowest temperature at an individual station was 2.8 deg. C on 16th December, 1918 at Bidar.

2.7 Education

Karnataka has 25801 lower primary schools, 36206 upper primary schools, 62007 elementary schools, 15666 secondary schools, 2012 higher secondary schools, 412 government degree colleges and 325 aided degree colleges, 25 universities, 15 deemed universities and 10 private universities, 49 medical colleges, 174 engineering colleges, many diploma colleges etc.,

2.8 Health

The state has 42 district hospitals, 1,297 primary health centres, 622 primary health units/ dispensaries, 7,793 sub-centres and over 50,000 beds in the state.

Above 100 beds healthcare services institutions are under state sector. The District Surgeons of District Hospitals are responsible for providing curative, emergency and promotive services including referral services. Presently 15 District Hospitals are under the control of Health & Family Welfare Department. 176 Taluk Health Officers are positioned at Taluk headquarter. They are the implementing authorities of Public Health, National and State Health Programs in their respective Taluks. The Medical Officers of Health at Primary Health Centre Level are responsible for the implementation of various National and State Health Programs including Family Welfare Programme and Maternal and Child Health Services. To provide Primary Health Care throughout the State, a network of 8871 Sub Centres, 2359 Primary Health Centres, 206 Community Health Centres and 146 Taluk Hospitals have been provided.

The state is especially vulnerable to stomach related diseases, TB and malaria. Many pockets in the flood plain areas become prone to epidemics after floods while malaria is endemic in the northern and other drought-prone districts of the State. Recent trends indicate that malaria is also spreading to non-endemic areas. The State also has very high infant and maternal mortality rates. Sanitation and safe drinking water coverage is also low.

Table 2.3: Registered Number of Births, Deaths, Still Births in Karnataka: 2011

Year	Live births (000s)	Still births (No.)	Birth rate	Deaths (000s)	Death rate	Infant Death (No.)	Maternal Death (No.)
2011	1109	6940	18.72	385	6.5	10231	1029

Table 2.4: Crimes against Women in Karnataka-2018-2019

Sl. No.	Crime Head	2018				2019 (Upto March)			
		DOWRY DEATHS	MOLESTATION	RAP E	POCS O Rape	DOWRY DEATHS	MOLESTATION	RAP E	POCS O Rape
1	Bagalkot	2	162	4	25	1	30	0	4
2	Ballari	9	139	12	25	0	33	2	5
3	Belagavi City	1	39	4	12	1	11	0	5
4	Belagavi Dist	3	239	23	68	0	61	6	18
5	Bengaluru City	52	810	105	270	7	202	33	63
6	Bengaluru Dist	10	132	18	39	1	27	1	17
7	Bidar	9	84	9	25	2	23	4	7
8	Chamarajana gar	4	148	10	19	1	28	3	4
9	Chickballapur	2	42	7	64	1	11	1	11
10	Chikkamagaluru	2	111	16	47	3	37	5	7
11	Chitradurga	3	196	6	14	2	52	3	10
12	Dakshina Kannada	1	53	15	27	0	8	4	11
13	Davanagere	9	152	18	42	1	47	4	13
14	Dharwad	0	26	1	15	0	4	1	3
15	Gadag	0	49	5	19	0	18	1	3
16	Hassan	6	217	20	58	3	41	2	13
17	Haveri	4	95	8	45	0	17	4	7
18	Hubballi Dharwad (c)	2	38	5	13	0	8	2	4
19	K.G.F	2	25	5	13	1	4	1	2
20	Kalaburagi	7	131	11	26	0	29	1	10
21	Kalaburagi City	8	45	5	14	0	11	3	5
22	Karnataka Railways	0	7	0	1	0	1	0	0
23	Kodagu	1	41	10	20	0	5	3	9

24	Kolar	7	63	5	33	2	12	0	12
25	Koppal	3	84	11	30	1	18	4	7
26	Mandya	5	210	11	40	2	47	3	8
27	Mangaluru City	0	92	9	25	2	18	4	10
28	Mysuru City	7	77	14	25	0	14	4	5
29	Mysuru Dist	7	200	14	41	1	49	7	12
30	Raichur	4	186	24	24	2	29	0	7
31	Ramanagara	6	134	5	20	4	28	5	11
32	Shivamogga	7	393	18	69	2	78	4	19
33	Tumakuru	9	88	19	30	0	35	7	6
34	Udupi	0	99	16	50	0	26	2	13
35	Uttara Kannada	3	117	14	24	1	38	2	3
36	Vijayapur	2	106	6	30	1	19	1	7
37	Yadgir	2	123	5	10	1	24	3	6
	Total	199	4953	488	1352	43	1143	130	357

2.9 Agriculture

Karnataka is the largest producer of coffee, raw silk and sandalwood based products like perfumes and 75% of Indian floriculture industry is located in Karnataka. The state accounts for 59% of the country's coffee production and 47% of the country's ragi production. About 70% of the people live in the villages and 71% of the total work force is engaged in agriculture.

2.10 Forests

About 38724 sq kms (or 20% of Karnataka's geographic) are covered by forests. The forests are classified as reserved (28,611 sq. km) protected (3,932 sq. km), unclosed (5,748 sq. km), village (124 sq. km) and private (309 sq.km) forests. The percentage of forests area to Geographical area in the State is less than the all-India average of about 23%, and 33% prescribed in the National Forest Policy.

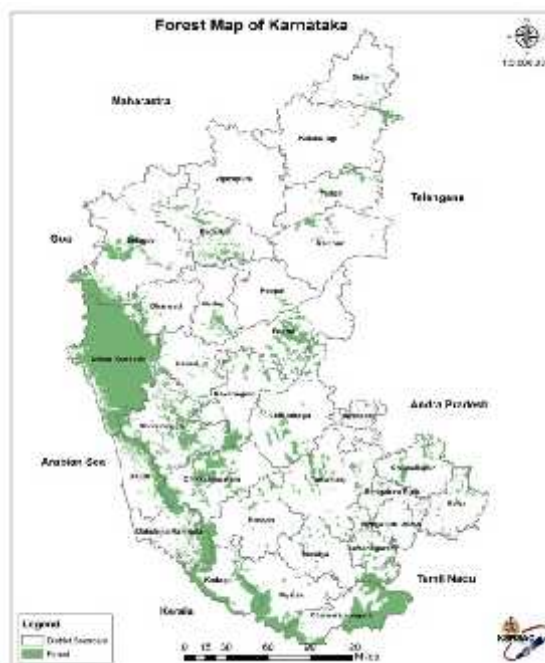


Fig. 2.4: Forest Map of Karnataka

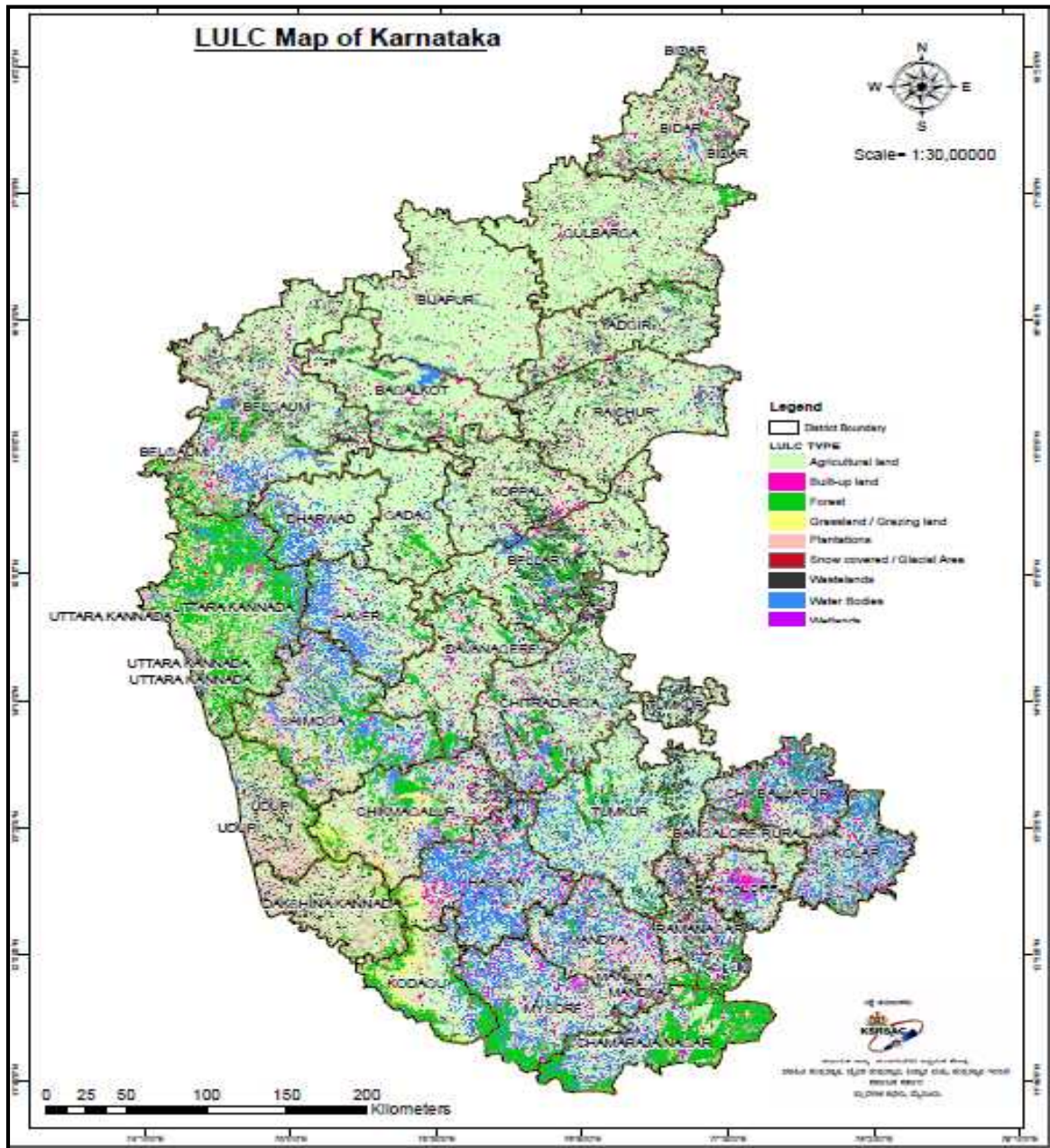


Fig. 2.5: Land Use and Land Cover Map of Karnataka

2.11 Mines

Mining is one of the major industries of the state. Chitradurga, Bellary, Belgaum and Bagalkot are some of the districts in which mining have continued to be major industries. Iron ore lies at the very center of Karnataka's mining industry. Balidala, Donimalai and Panna are some of the leading iron-ore producing areas of Karnataka. Gold and diamond mines are chief attractions of Karnataka mining. The Hutii gold mines have supplied gold to the world from very ancient times.

2.12 Transport and Communication

1) Roads

Karnataka has a total road network of NH, SH and district roads of about 52,000 km. The state has a total length of 3,843 km of national highways (NH), 28,311 km of state highways (SH) and 19,801 km of district roads. Karnataka is well connected with all the six neighboring states and other parts of India through 14 NHs.

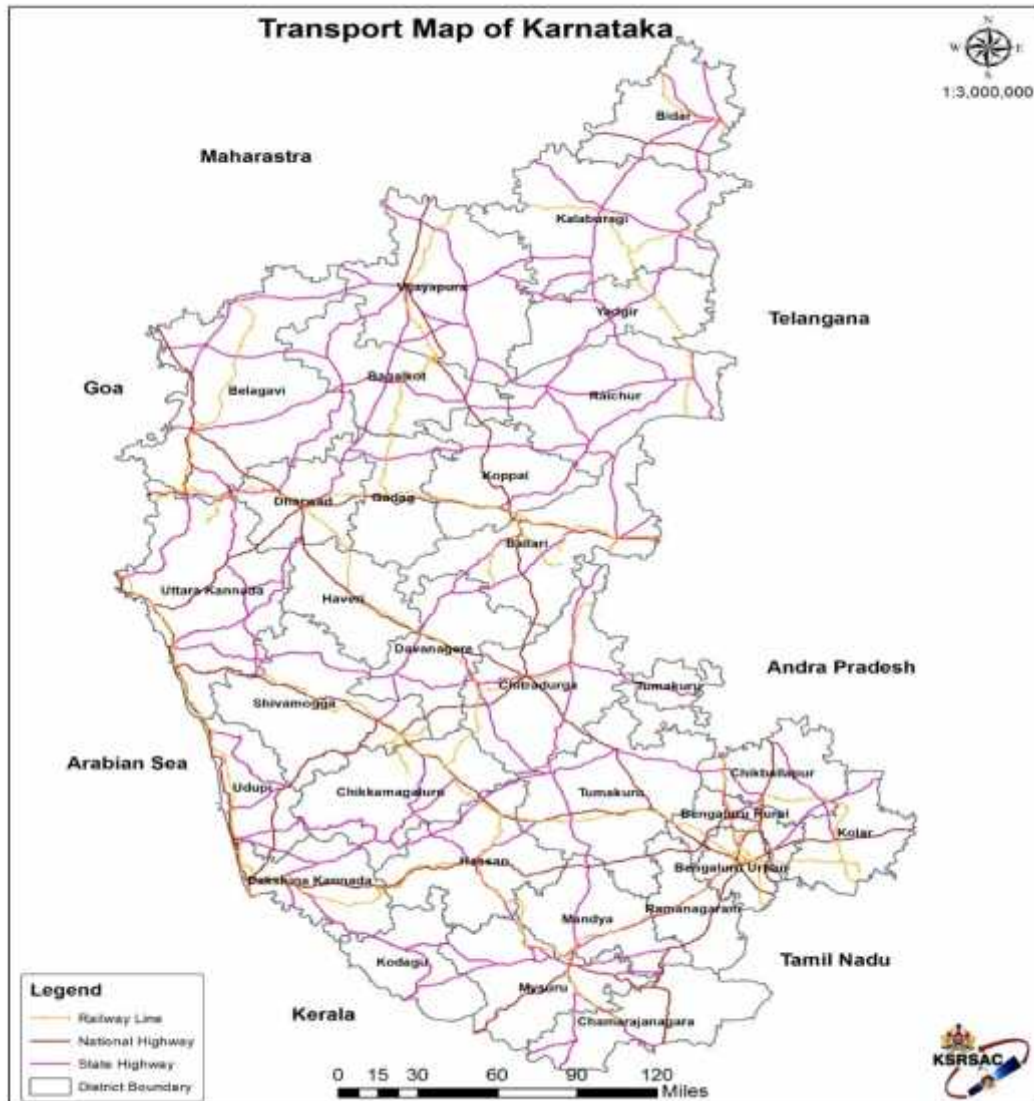


Figure: 2.6 Road Transportation Map

2) Railways

Karnataka has over 3,000 km of total rail track length. The head quarter of the South Western Zone, is at Hubli. Various parts of the state come under the South Western zone. The remaining part is under Southern Railways Zone. The coastal Karnataka is covered by the Konkan railway network.



Fig. 2.7: Railway Map of Karnataka

3) Ports

Karnataka has a vast coastline. The coastline along the eastern shore of the Arabian Sea stretches 300 km between Mangalore in Dakshina Kannada district and Karwar in Uttara Kannada district. Karnataka has two major ports namely New Mangalore Port Karwar Port and eight minor ports namely Tadri, Honnavar, Bhatkal, Kundapur, Hangarkatta, Malpe , Padubidri, Old Mangalore.

3.1 Costal Regulation Zone Map of Karnataka



Fig. 2.8: Coastal Regulation Zone Map of Karnataka

4) Airports

Karnataka has two international airports at Bengaluru and Mangalore. The new Bengaluru International Airport, opened at Devenahalli, has good international connectivity. State has domestic airlines operating at Hubballi, Mysuru, Belagavi etc. Some of the major international airlines operating their flights include; Air France, British Airways, Lufthansa, Malaysian Airline and Singapore Airlines.

2.13 Irrigation and Power

Karnataka has the basins of the Krishna, Cauvery, Godavari, North Pennar, South Pennar, Palar and the west flowing river basins as well with a drainage area of 1,90,500 sq km. The average annual yield of the rivers has been estimated as 97,352 m. cum. The ultimate irrigation potential of the State from all sources has been estimated at about 61 lakh hectares consisting of 35 lakh hectares under major and medium irrigation, 10 lakh hectares under minor irrigation (surface) projects and 16 lakh hectares under groundwater resources.

Karnataka, with 2,800 Mw of solar projects in the development pipeline, is known for housing the Pavagada solar park in Tumkur district. The mega project is expected to house solar projects with about 2,000-Mw capacity at an investment of Rs 14,800 crore. Of this, over 600 Mw has already been commissioned

The total installed generation capacity of the State is 5,836 MW. In the next 3 to 4 years, it is planned to add about 2,400 MW of additional generation capacity mainly from the following power projects:

1. Almatti Hydel Project: 290 MW
2. RTPS 8th unit 210 MW
3. Bellary Thermal Power Project 500 MW
4. Bidadi Combined Cycle Project 1,400 MW

2.13.1 Major Dams in Karnataka:

MAJOR RESERVOIR STORAGE CAPACITY AND INFLOWS – 10-09-2018										
Sl.No.	Name of the Reservoir	Reservoir Level Information (feet)			Capacity in TMC				Cumulative Inflows/Outflows	
		FRL in feet above MSL	RL as on 10/09/2018	Balance RL to reach FRL	Live Storage Capacity TMC	Live storage as on 10/09/2018 TMC	Last year live Storage as on 10/09/2017 TMC	Present Capacity % of Col. 7 as % of Col. 6	Cumulative in flows from 01.06.2018 (TMC)	Cumulative out flows from 01.06.2018 (TMC)
1	2	3	4	5	6	7	8	9	12	13
1	Linganamakki	1819.00	1817.90	-1.10	151.75	148.08	84.36	98	178.50	49.05
2	Supa	1849.92	1845.66	-4.26	145.33	139.77	80.92	96	107.40	9.39
3	Varahi	1949.50	1948.19	-1.31	31.10	30.31	17.91	97	28.75	4.01
Hydel					328.18	318.16	183.19	97	314.65	62.46
4	Harangi	2859.00	2856.60	-2.40	8.07	7.26	7.45	90	73.77	66.05
5	Hemavathi	2922.00	2919.58	-2.42	35.76	33.44	12.85	94	98.56	68.19
6	K.R.S.*	124.80	123.48	-1.32	45.05	43.22	21.49	96	216.19	175.73
7	Kabini	2284.00	2283.69	-0.31	15.67	15.47	12.54	99	187.03	173.22
Cauvery					104.55	99.39	54.33	95	468.69	376.34
8	Bhadra	2158.00	2157.77	-0.23	63.04	62.75	38.24	100	129.55	69.56
9	Tungabhadra	1633.00	1632.18	-0.82	100.86	97.70	72.41	97	333.01	245.33
10	Ghataprabha	2175.00	2175.00	0.00	48.98	48.98	33.55	100	81.90	37.79
11	Malaprabha	2079.50	2070.90	-8.60	34.35	23.46	9.55	68	26.29	4.28
12	Almatti	1704.81	1704.81	0.00	119.26	119.26	119.26	100	491.33	388.43
13	Narayanapura	1615.00	1615.07	0.07	26.14	26.15	26.00	100	401.06	382.85
Krishna					392.63	378.30	299.01	96	926.50	592.09
Total					825.35	795.85	536.53	96	1709.84	1030.89

The State has achieved 100% in village electrification. Now the main thrust is on electrification of hamlets. More emphasis is being given for reduction of commercial losses.

2.14 River Systems and Dams

There are seven river systems in Karnataka which with their tributaries, drain the state. The names of these river systems and area drained by them are given below.

Krishna River: The river Krishna is an Inter-State river in Southern India. It is the second largest river in Peninsular India, rises in the Western Ghats at an altitude of 4,385 ft. near Mahabaleshwar in Maharashtra State. It flows across the whole width of the peninsula, from west to east, for a length of about 870 miles, through Maharashtra, Karnataka and Andhra Pradesh. The entire catchment area of Krishna basin is 99,980 sq miles including the other basin states, and their catchment area. The principal tributaries of Krishna in Karnataka are Ghataprabha, Malaprabha, Bhima and Tungabhadra.

All these rivers except the Malaprabha River having their catchment area both in Karnataka and Maharashtra.

Cauvery River: The river Cauvery is an Inter-State river in Southern India. It is one of the major rivers of the Peninsular flowing east and running into the Bay of Bengal. The Cauvery rises at Talakaveri on the Brahmagiri Range of Hill in the Western Ghats, presently in the Coorg district of the State of Karnataka, at an elevation of 1,341m (4,400 ft.) above mean sea level. The catchment area of entire Cauvery Basin is 81,155-sq km including the other basin states of Cauvery River Basin and their drainage areas. The principal tributaries of Cauvery in Karnataka are the Harangi, the Hemavathy, the Lakshmanathirtha, the Kabini, the Shimsha, the Arkavathi and the Suvarnavathy. All these rivers except the Kabini River, Arkavathy River and Suvarnavathy River rise and flow fully in Karnataka.

Godavari River : The river Godavari rises in the Nasik district of Maharashtra about 50 miles from the shore of Arabian sea, at an elevation of 3500 feet, after flowing for about 910 miles in a general south-easterly direction, through Maharashtra and Andhra Pradesh, Godavari falls into the Bay of Bengal above Rajamundry. The Godavari has a drainage area of about 121,000 sq miles. The principal tributaries of Godavari are the Pravara, the Purna, the Manjra, the Pranahita, the Indravathy and the Sabari.

Dams

Nine rivers adorn the land of Karnataka and several dams are built on these rivers to utilize the waters for purposes like irrigation, drinking and hydel power generation. Krishnarajasagara Dam is popularly called KRS and is located 12 km from Srirangapatna in Mandya District.

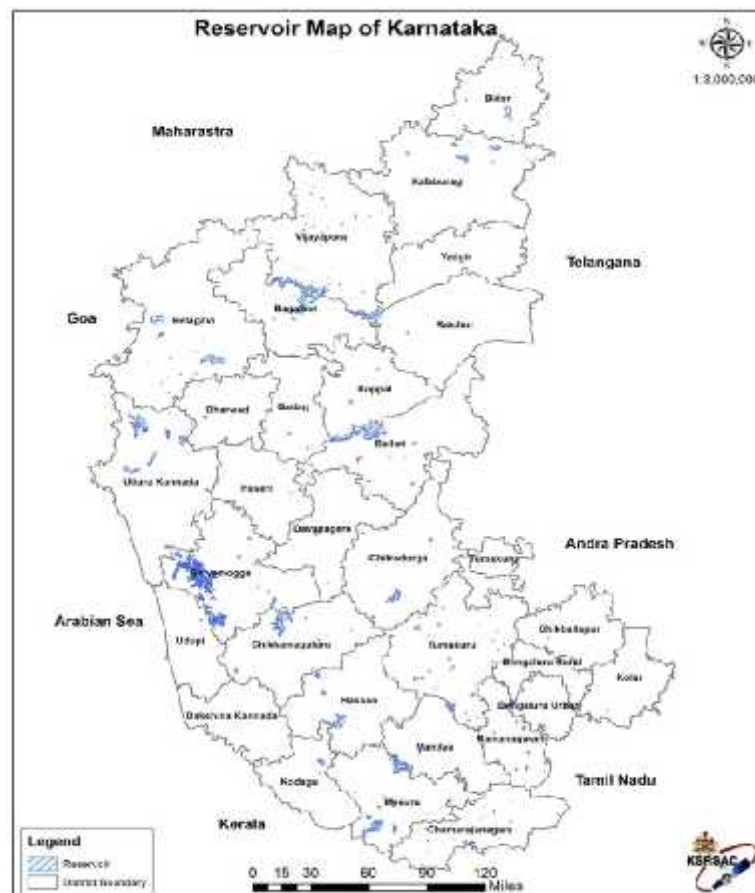


Fig. 2.7: Reservoir Map of Karnataka

The Alamatti dam stands across the River Krishna. The dam benefits the Indian states of Karnataka, Maharashtra and Andhra Pradesh. The Basava Sagara is a dam and reservoir in the Indian

state of Karnataka. The Linganamakki dam stands across the Sharavathi River in Karnataka. This dam was located in the premises of Sagara taluk. Linganamakki dam has a length of 2.4 km, extending across the Sharavathi River. Standing across the Kalinadi (Kannada) or Kali River, Supa Dam is a very important reservoir in the state. The Supa dam is located in Joida taluk of Uttara Kannada district. The main objective of building this dam was to generate power. Kali River also called Kali nadi, flowing in Joida taluk of Uttara Kannada district. Karnataka Power Corporation had built this dam and the electric power generating station successfully serves the purpose of a Hydroelectric Power station. Kadra Dam is situated in Uttara Kannada district. The dam is constructed across river Kalinadi. The basic objective to build this dam was to start about a hydroelectric project for the supply of water to turbines of electric power generating station. The Tungabhadra project is a joint venture of the states of Karnataka and Andhra Pradesh. The Tungabhadra dam, 2441 meters in length and 49.38 meters in height, is constructed on the Tungabhadra river at Mullapuram (in Bellary district) about 4.8 kilometers from Hospet. The Kabini Reservoir Project was designed across the River Kabini near Bidarahally and Beechana halli in Heggadadevanakote Taluk, Mysuru District with canals on both the banks. The Harangi Dam is a large and impressive dam on the Cauvery River in tranquil and unruffled surroundings. The dam is an ideal picnic spot and there are some short walks along selected paths. Located in Gulbarga District of Karnataka, the Narayanpur Dam stands on River Krishna. The construction of Narayanpur Dam was done in the form of earthen dam, which included 9,00,000 cubic meters of embankment, non-overflow masonry dam, 5 blocks of additional spillway and 25 blocks of main spillway. The Hemavathi reservoir is impounded behind the Gorur Dam, which is situated about 12 km from Hassan to Arakalagud. Hemavathi Reservoir is also a pilgrim spot, owing to the notable temples located near the site. The dams of Karnataka not only assures well watered quarters all across the city, but also abundant power generation.

Table 2.5 : Reservoir Levels

Sl. No.	Name of the Reservoir	Full Reservoir Level (FRL) feet above mean sea level	Reservoir level Information during recent 16 years average levels	
			Maximum	Minimum
1	2	3	4	5
(a) Hydel generation Reservoirs (Western Coast)				
1	Linganamakki	1819.00	1800.36	1753.00
2	Supa	1859.39	1786.78	1695.40
3	Varahi	1950.00	1921.88	1883.77
(b) Reservoirs of Cauvery Basin:				
4	Harangi	2859.00	2857.99	2823.70
5	Hemavathi	2922.00	2921.00	2856.57
6	K.R.S.	124.8*	124.80	74.10
7	Kabini	2284.00	2282.84	2265.4
(C) Reservoirs of Krishna Basin:				
8	Bhadra	2158.00	2145.83	2098.71
9	Tungabhadra	1633.00	1632.06	1591.40
10	Ghataprabha	2175.00	2165.13	2091.30
11	Malaprabha	2079.50	2069.67	2032.40
12	Almatti	1704.81	1701.73	1667.20

2.15 Tourism

The Department of Tourism should initiate safety and security of the tourists by preparing local specific disaster management plans since large number of people from within and outside the country visit these tourist places every day. In some places like Hampi, Badami major festivals are also organized for each crowd and stampede management plans are required to be prepared and updated every year. Refer Annexure XIV for preparation of crowd and stampede management plan.

Karnataka is a land endowed with scenic beauty. It has been steadily attracting investment from companies in the hospitality business with numerous companies setting up hotels, beach resorts, eco-friendly resorts, golf courses, aero sports facilities and amusement parks in the state. The state's new Tourism Policy is actively promoting investment in this sector. The Government has decided to attract investment in tourism with a host of new plans including offering government land to entrepreneurs at 50 per cent of the market value to establish resorts.



Fig. 2.8: Tourism Map of Karnataka

CHAPTER 3

HAZARD, RISK AND VULNERABILITY ASSESSMENT

3.1 Introduction

Understanding of the risks and vulnerability of the community and likely extent of population and areas of concern based on past history of disasters is the first step in planning. This basically means carrying out a risk assessment and vulnerability analysis. This study is carried out in each district, resulting in identification of areas vulnerable to different disasters which can be indicated on the vulnerability maps. Risk and Vulnerability analysis should be done at the local levels by involving the local community. Map showing vulnerable areas to different disasters such as heavy rainfall, floods, landslides, drought, fire, industrial accidents, chemical accidents/mishaps, road accidents etc. need to be prepared and updated from time to time. Following information is required (a) areas of influence (b) frequency (c) intensity (d) impact

3.2 Levels of Disasters

Meaning of Disaster

The Disaster Management Act: 2005 defines disaster as “a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or manmade causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of, property, or damage to, or degradation of, environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area

L concept has been developed to define different levels of disasters in order to facilitate the responses and assistances to States and Districts.

L0 level denotes normal times which will be utilized for close monitoring, documentation, prevention and preparatory activities. Training on search and rescue, rehearsals, evaluation and inventory updation for response activities will be carried out during this time.

L1 level specifies disaster that can be managed at the District level, however, the State and Centre will remain in readiness to provide assistance if needed.

L2 level disaster situations are those, which require assistance and active participation of the State, mobilization of its resources for management of disasters.

L3 level disaster situation is in case of large scale disaster where the State and District authorities have been overwhelmed and require assistance from the Central Government for reinstating the State and District machinery as well as for rescue, relief, other response and recovery measures. In most cases, the scale and intensity of the disaster as determined by the concerned technical agency like IMD are sufficient for the declaration of L3 disaster.

3.3 Classification of Disasters

The High Power Committee on Disaster Management, constituted in 1999, has identified various disasters categorized into five major sub-groups which are;

I Water and climate related disasters

- a) Floods and drainage management
- b) Cyclones
- c) Tornadoes and hurricanes
- d) Hailstorm
- e) Cloud burst
- f) Heat wave and cold wave
- g) Snow avalanches
- h) Droughts
- i) Sea erosion
- j) Thunder and lightning
- k) Tsunami

- II Geological Related Disasters**
 - a) Landslides and mudflows
 - b) Earthquakes
 - c) Dam failures/ Dam bursts
 - d) Minor fires
- III Chemical, Industrial and Nuclear related disasters**
 - a) Chemical and industrial disasters
 - b) Nuclear disasters
 - c) Radiation related disasters
- IV Accident Related disasters**
 - a) Forest fires
 - b) Urban fires
 - c) Mine flooding
 - d) Oil spills
 - e) Major building collapse
 - f) Serial bomb blasts
 - g) Festival related disasters
 - h) Electrical disasters and fires
 - i) Air, road and rail accidents
 - j) Boat capsizing
 - k) Village fire
- V Biological Related Disasters**
 - a) Biological disasters and epidemics
 - b) Pest attacks
 - c) Cattle epidemics
 - d) Food poisoning
 - e) Agriculture related diseases etc.

3.4 Drought

The State has been experiencing successive droughts with many taluks going under dry spell for more than 3 consecutive weeks resulting in drought. The northern Karnataka has been adversely affected due to depleted ground water table, deficit rainfall, shortfall in drinking water quality & quantity. Reservoirs of Krishna basin falling in north interior Karnataka had been reporting less than 50% of their live storage. The levels at Ghataprabha, Malaprabha and Alamatti have reached below 15 years minimum levels.

More than 50% of the minor irrigation tanks have not received any water at all. The break monsoon condition, consecutive weeks of dry spell, moisture stress, poor storages in minor irrigation tanks and depleting groundwater table covering vast area of Karnataka has resulted in severe distress situation of rare severity. Table 3.1 shows the number of taluks affected by drought from 2001 to 2019.

Table: 3.1 Drought Scenario in Karnataka 2000-01 to 2018-19

Year	Actual Avg. Rainfall (MM) (Normal Annual Rainfall 1156 MM)	No. of taluks under Drought	Food Grains Production (Lakh Tonnes)
2000-01	1413	NIL	109.60
2001-02	1207	146	86.97
2002-03	867	157	66.64
2003-04	1024	162	65.62
2004-05	1273	103	104.91
2005-06	1609	NIL	115.35
2006-07	1086	128	93.29
2007-08	1466	NIL	120.49

2008-09	1050	84	111.34
2009-10	1342	86	108.04
2010-11	1325	NIL	137.91
2011-12	1078	123	117.38
2012-13	876	157	105.62
2013-14	1187	125	132.69
2014-15	1168	35	126.22
2015-16	989	137	96.44
2016-17	831	K-139, R-160	99.99
2017-18	1063	NIL	141.72
2018-19	1099 (as on 23.03.2019)	K-100, R-156	106.63 (As per 3 rd advance estimate)

Source: Department of Agriculture, Bangalore

Details of the district-wise taluks affected by drought are given in the Table -3.2. Year-wise rainfall, drought affected taluks and food grain production from 2001-2018 are shown in the table 3. It is seen from the table 3.1 that the years 2002, 2012, 2015, 2016, 2019 have received below normal rainfall. Even during normal rainfall drought has been rampant in the state due to factors such as continuous dry spell for more than three weeks and scanty rainfall.

Table: 3.2 Drought profile of Karnataka - 2015-19

Sl. No.	District Name	2015 Taluks	2016 Taluks	2017 Taluks	2018 Taluks (Upto March-2019)
1	Bengaluru Urban	Nil	4	Nil	4
2	Bengaluru Rural	3	4	Nil	4
3	Ramanagara	1	4	Nil	4
4	Kolar	5	5	Nil	5
5	Chikkaballapura	6	6	Nil	6
6	Tumakuru	9	10	Nil	10
7	Chitradurga	5	6	Nil	6
8	Davanagere	5	6	Nil	6
9	Chamarajanagara	3	4	Nil	4
10	Mysuru	5	7	Nil	2
11	Mandya	7	7	Nil	7
12	Ballari	7	7	Nil	7
13	Koppala	4	4	Nil	4
14	Raichur	5	5	Nil	5
15	Kalaburagi	7	7	Nil	7
16	Yadgir	3	3	Nil	3
17	Bidar	5	1	Nil	5
18	Belagavi	10	10	Nil	10
19	Bagalkote	6	6	Nil	6
20	Vijayapura	5	5	Nil	5
21	Gadag	5	5	Nil	5
22	Haveri	6	7	Nil	7
23	Dharwad	5	5	Nil	5
24	Shivamogga	1	7	Nil	7
25	Hassan	8	7	Nil	8
26	Chikkamagaluru	3	6	Nil	6
27	Kodagu	1	3	Nil	3
28	Dakshina Kannada	Nil	2	Nil	5
29	Udupi	Nil	3	Nil	3
30	Uttara Kannada	6	8	Nil	5
Total		136	164	0	164

Source: KSNDMC

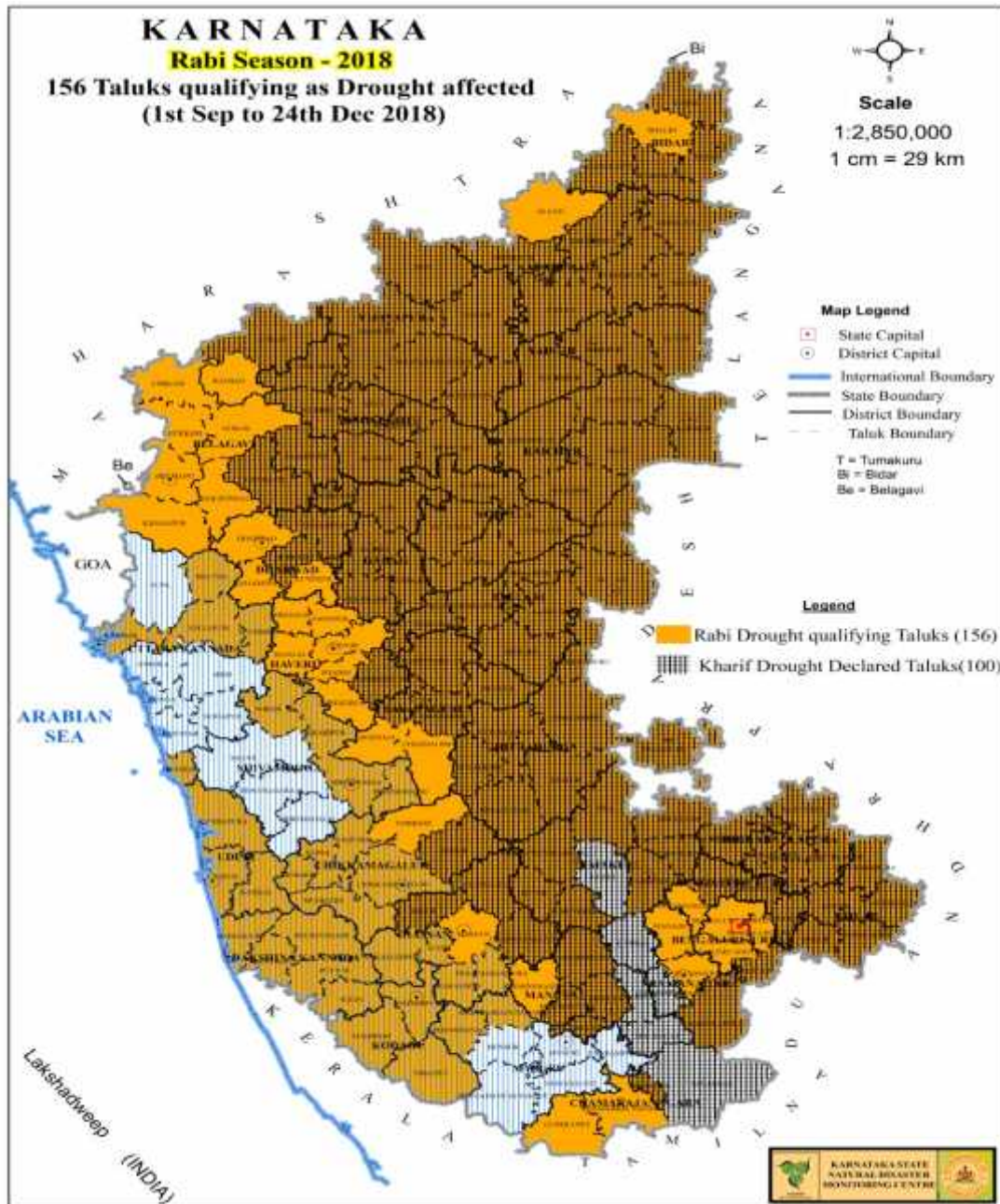
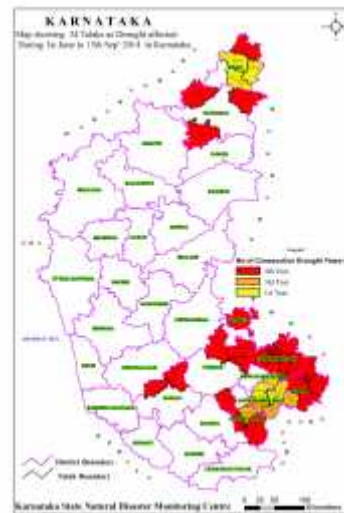
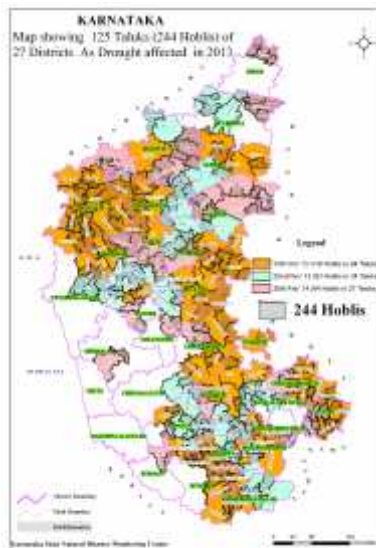
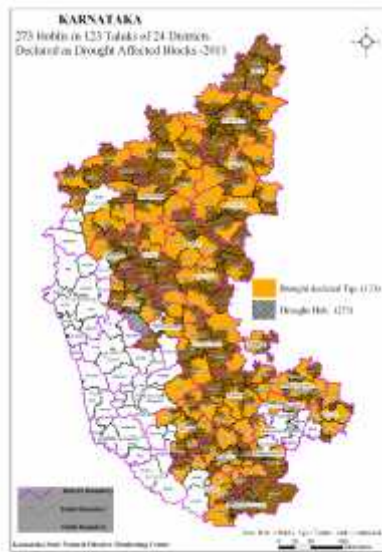


Fig. 3.1: Drought affected Map of Karnataka

Fig. 3.2: Maps show the drought vulnerability of different districts and taluks declared by government in the respective years. Drought vulnerability maps for years 2011 to 2018 are given.



3.5 Ground Water Status: In the last fifteen years from 2001 to 2019, the ground water has been over exploited and in some years it became critical due to continuous drought situation with over 50% of taluks severely affected. The map below explains the ground water status and quality of ground water in Karnataka. 8 taluks are reported as critical and 23 taluks semi critical

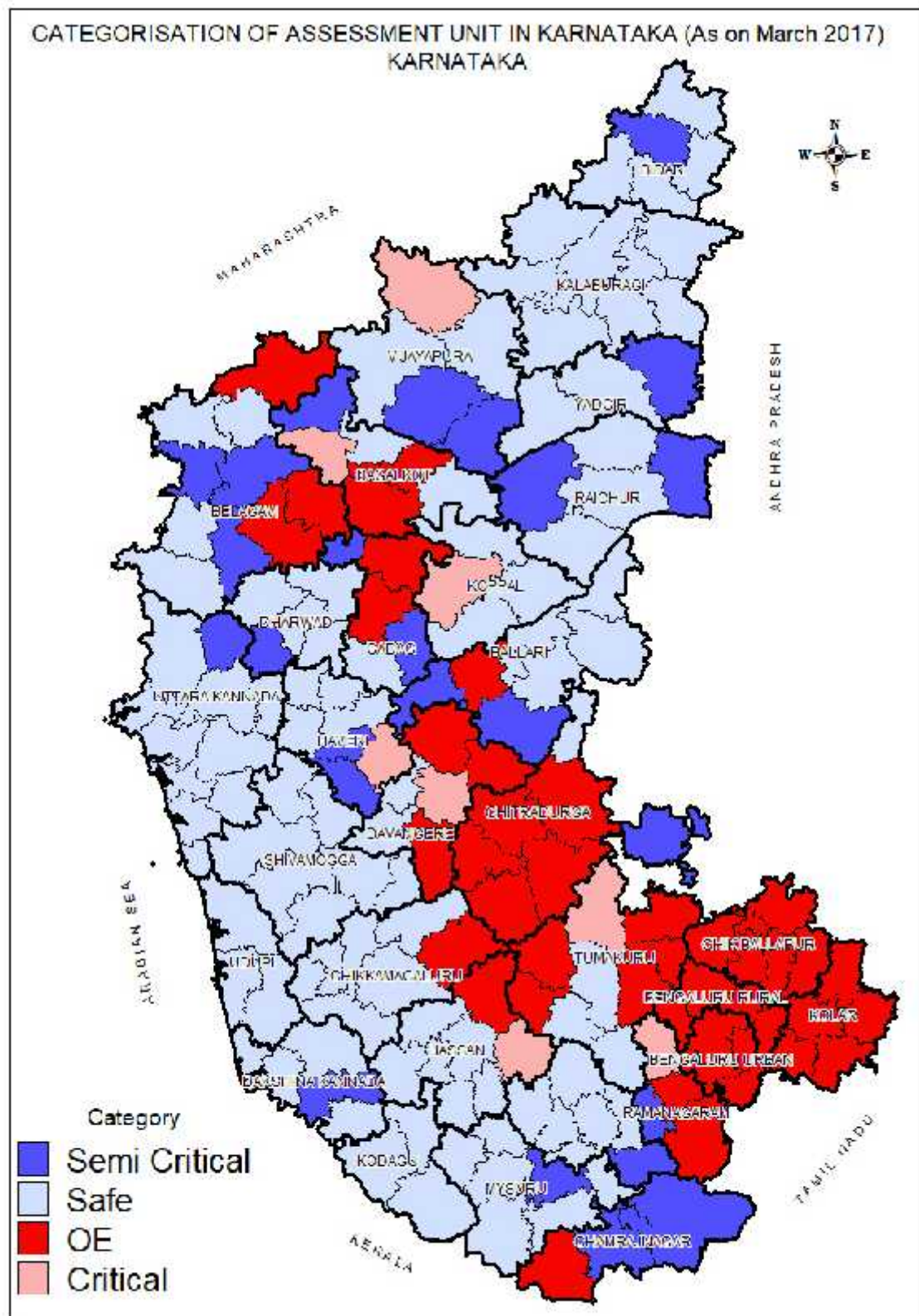


Fig. 3.3: Categorization of Assessment Unit in Karnataka

FIG 4.1: DISTRIBUTION OF EC IN KARNATAKA STATE

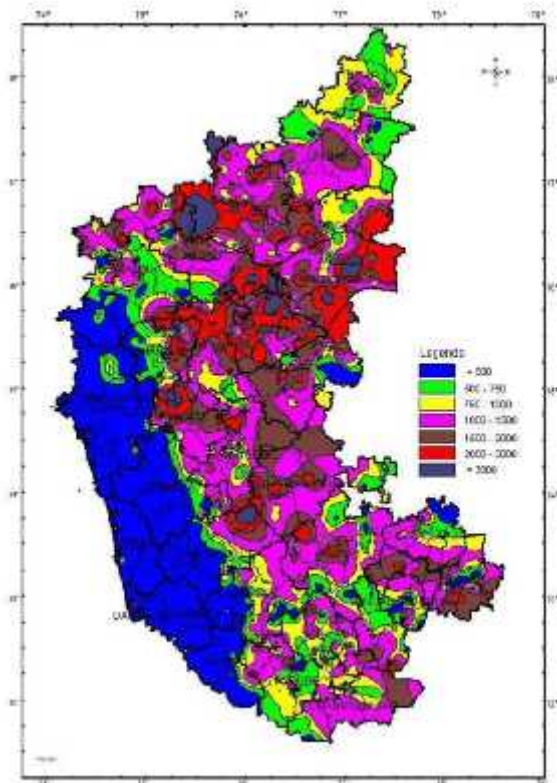


FIG 4.2: DISTRIBUTION OF CHLORIDE IN KARNATAKA

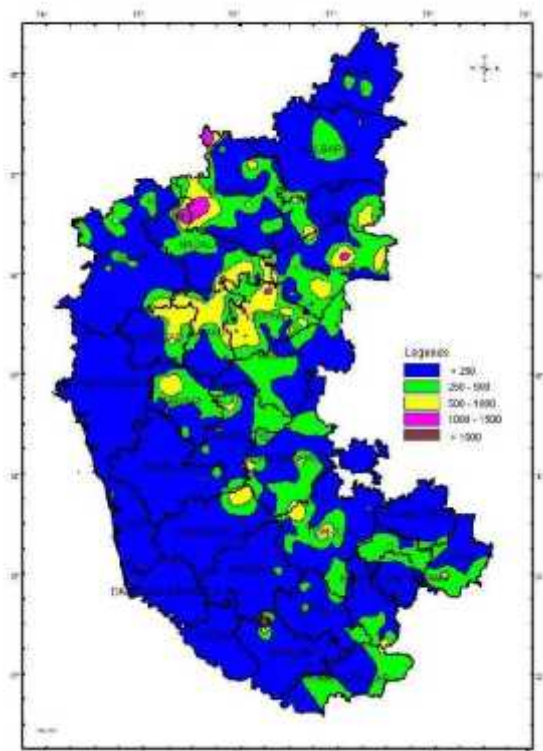


FIG 4.3: DISTRIBUTION OF NITRATE IN KARNATAKA

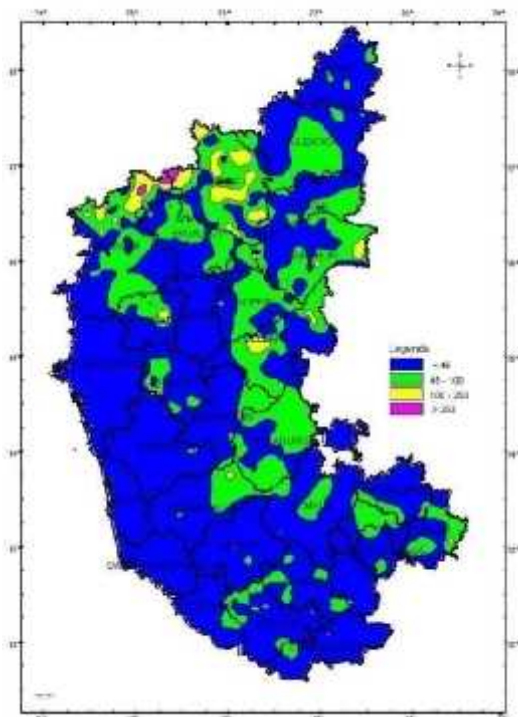
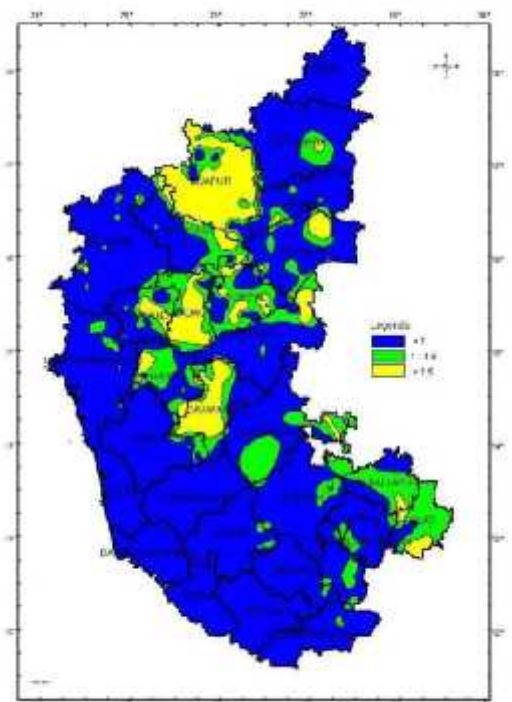


FIG 4.4: DISTRIBUTION OF FLUORIDE IN KARNATAKA



The above maps indicate the quality of groundwater in Karnataka

1. Brown shaded portion indicates more than the permissible range of chloride
2. Pink shaded portion indicates more than the permissible range of nitrate
3. Yellow shaded portion indicates more than the permissible range of fluoride resulting in people affected by fluorosis in those areas.

3.7 Cyclones, Winds and Coastal Erosion

Karnataka state has been confronting various natural hazards. The coastal districts namely Dakshina Kannada, Udupi, Uttara Kannada with a coastal line of 322 kms and coastal population of 43.64 Lakhs are under the direct threat of cyclones and severe cyclones originating in Arabian sea and indirect attack of cyclones originating along the eastern coastline. The high density of population along the coastline of Karnataka has made the population highly vulnerable to the storm surge and high speed wind accompanied with cyclone. Any severe cyclone along the eastern coastline causes heavy rainfall in the interior Karnataka region resulting in damages to crops, buildings, infrastructure services such as roads and often the impact would be severe disruption in the socio-economic life in these regions. It is important to note that infrastructure such as rail and road networks which are adjacent to the sea coast are constantly threatened by the erosion caused by giant sea waves particularly during storm surges and cyclones. The State has been placed under Category (II) A - Low Vulnerability along with other states of Maharashtra, Kerala and Tamil Nadu.

Out of total geographical area of 190.238 Lakh ha, about 44.92 lakh ha area covering 15 districts and 50 taluks is affected by winds and cyclones which is falling under moderate risk zone ($V_s=39\text{m/s}$) and remaining area falls under low damage risk zone (33m/s). The map below delineates the areas prone to moderate damage.

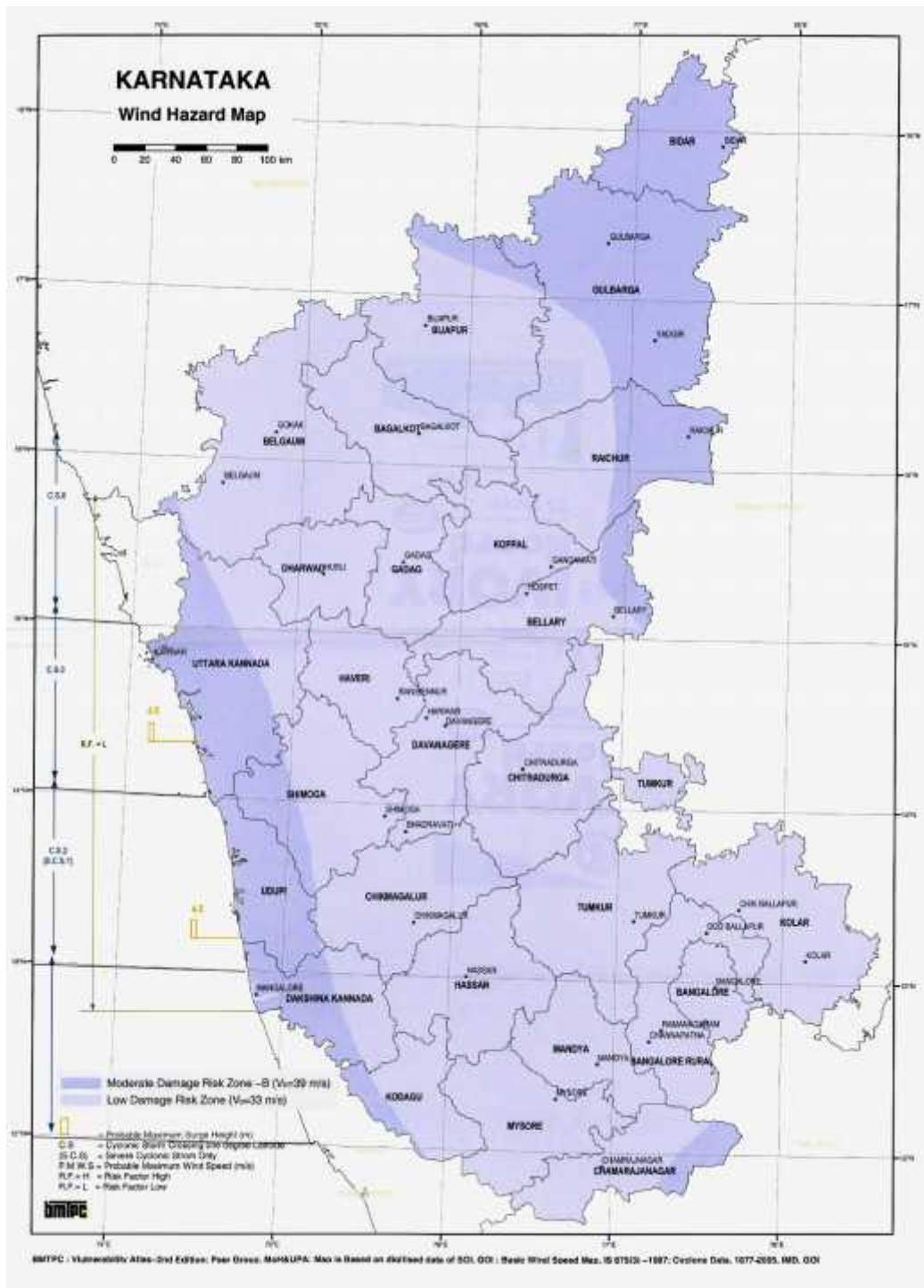


Fig. 3.4: Wind Hazard map of Karnataka

Apart from coastal erosion, the coastal areas often confront boat capsizing due to extreme weather conditions in the sea. The boat capsized on 29th May, 2006 at Malpe Port at Udupi and Oil spillages at Karwar Port are a few examples. The incident of Boat capsizing has led to a loss of property of Rs. 1.34 Crores and death of 6 fishermen.

3.7.1 Floods

The floods are quite common in Belagavi, Vijayapura, Bagalkote, Raichur, Kalburgi, Shivamogga, Chikkamagaluru, Udipi, Coorg, Ballary, Dakshina Kannada, Dharwad, Davanagere, Gadag, Hassan, Uttara Kannada, Koppal, Bidar, Bengaluru(R), Bengaluru(U), Kolar, Mandya, Mysuru,

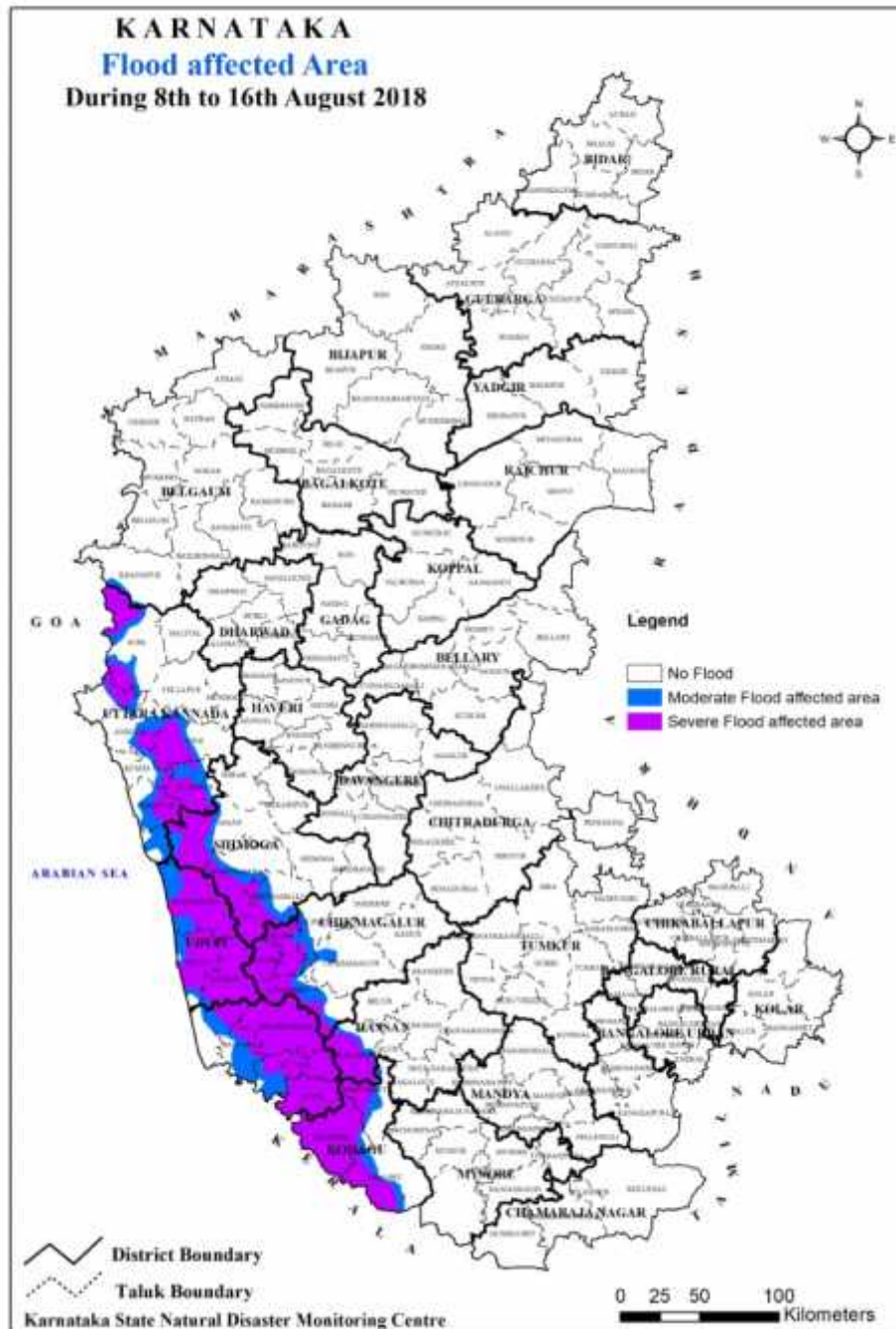


Fig. 3.5: Flood affected area of Karnataka

Chamarajanagar. In the North Karnataka region covering the Krishna and Godavari Basins, even when the state was suffering under drought like conditions, heavy discharges from Maharashtra caused floods.

3.7.2 Rainfall Forecasting

The rainfall data is monitored by Karnataka State Natural Disaster Monitoring Centre (KSNDMC), Bengaluru. There are 747 Telemetric Weather Stations and 5647 Telemetric Rain Gauge Stations spread across the State covering all Gram Panchayats and urban areas.

Alerts and Early Warning at Hobli level

- Heavy Rain -64.5 mm
- Very Heavy Rain -124.4 mm
- High Intensity Rain - 50 mm/hr

The KSNDMC and IMD provide the weather related Information, reports, advisories that are being made available through mobile phones, e-mail and web portal to DCs, CEOs, ACs, Tahsildars, JD(Agri), AD (Agri), Agri Officers, SP, Raitha Samparka Kendras, farmer facilitators under Bhoochethana Program, Krishi Vigyana Kendras (KVKs), Agriculture Universities, Civil Defense, Home guards, Print and Electronic Media.

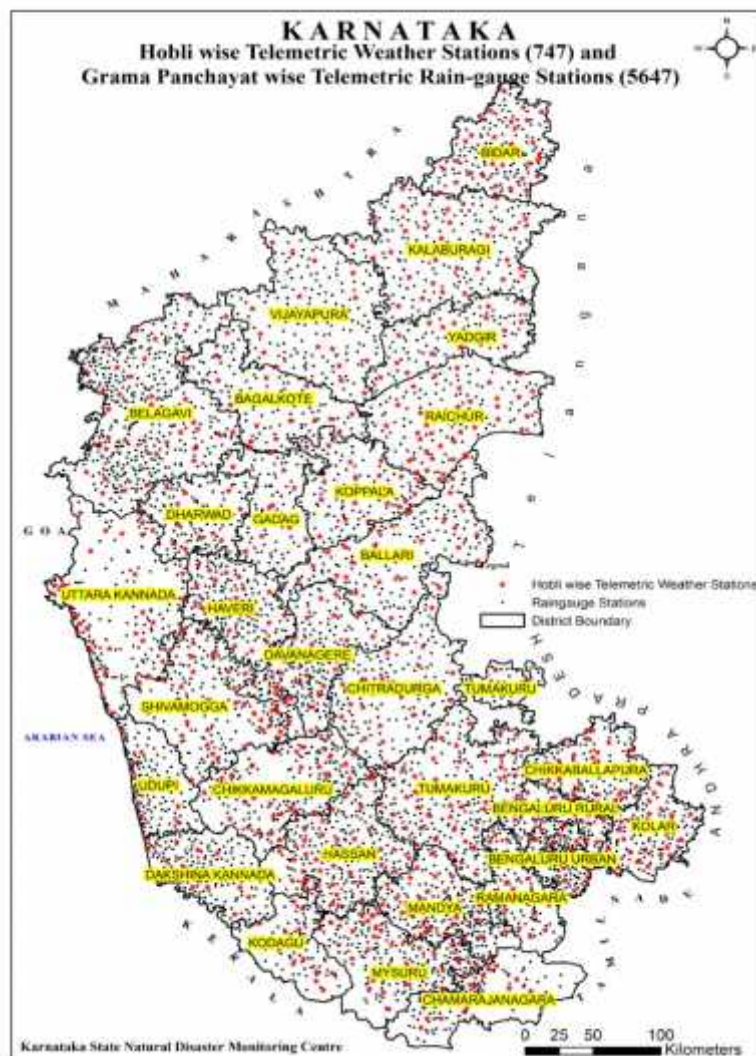


Fig. 3.6: Hobli and Gram-Panchayath wise Tele-metric Rain gauge stations of Karnataka

Loss and Damage in Kodagu Landslide and Flood - 2018

- 67 Human Deaths
- 294 persons are injured
- 240 cattle deaths
- Assistance for clothing and Utensils is provided to 2677 families.
- 92 relief camps opened sheltering 10087 people
- 8049 were evacuated using 31 boats
- 7865 houses are damaged.

Crop loss occurred due to flood

Agriculture Crop loss:

- 23,123 ha crops are affected.
- Estimated loss – Rs.313.52 crores.
- Silt Deposited in 369.30 ha of agriculture land.

Horticulture Crop loss:

- 72,709 ha crops are affected.
- Estimated loss – Rs.703.21 crores.

Coffee Crop loss:

- 2.26 lakh Ha.
- Estimated loss – Rs.654.11 crores.
- Totally, crop loss has occurred in 3.21 lakh with an Estimated loss of Rs. 1,670.84 crores.

Damaged occurred to infrastructure:

Sl.No.	Item	Quantity	Estimated Loss (crores)
1	Road damage	6604.54 Kms	1452.81
2	Damage to Bridges	670 nos	90.04
3	Irrigation schemes	680 works	135.89
4	Damages to Tanks	250 nos	23.29
5	Damages to Govt. Buildings	2919 nos	72.76
6	Drinking water Schemes	55 works	6.34
7	Damages to Electrical equipments		32.97
Total			1,814.10

3.7.3 Status of Minor Irrigation Tanks

The map below shows that more than 50% of minor irrigation tanks in 23 districts have been reported to be dried in the state, only 9% of the tanks had storages capacity of more than 50% of their respective capacity, 31% of the tanks with storages capacity of 30% to 50% of their respective capacity and remaining 61% of the tanks are dry.

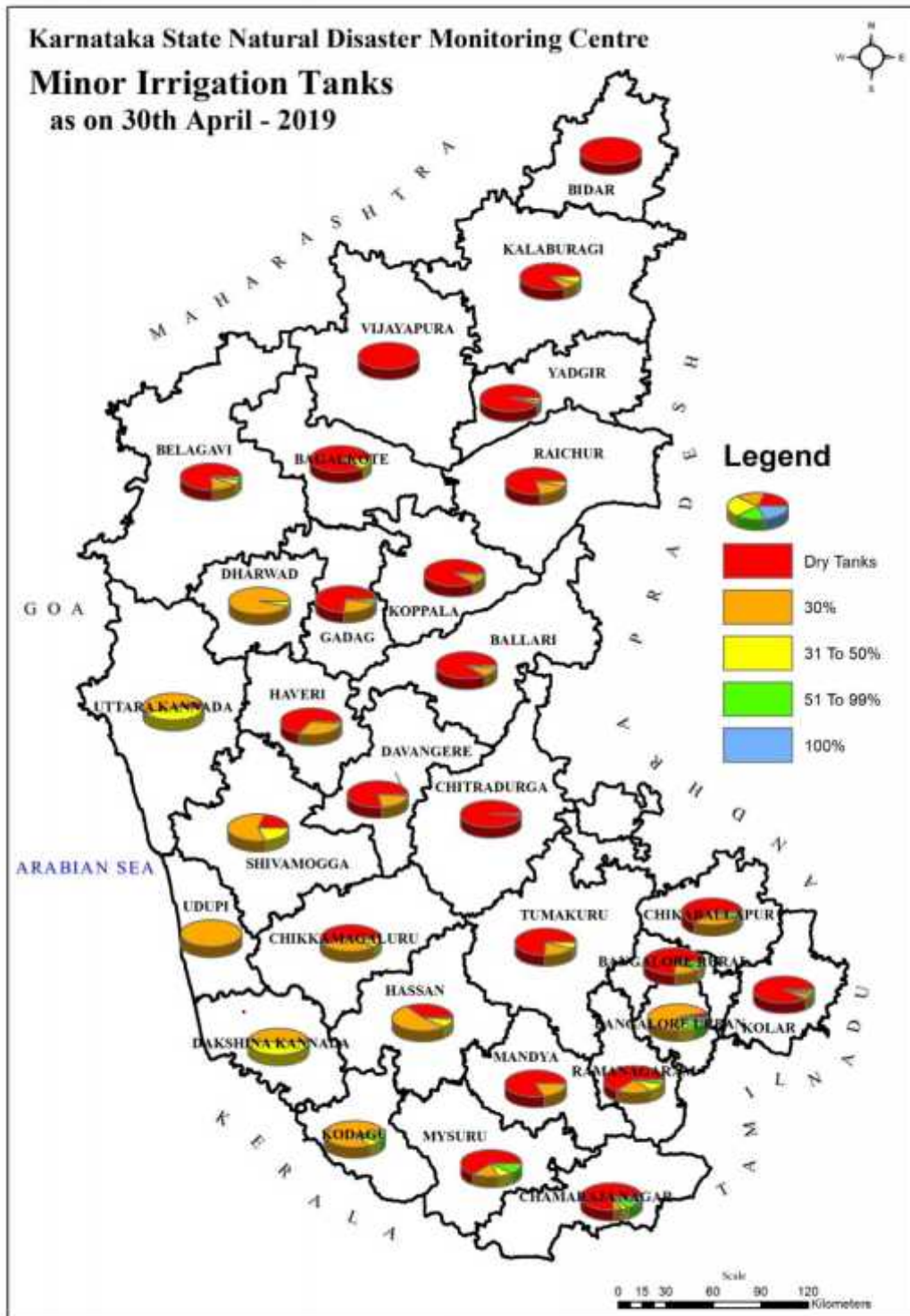


Fig. 3.7: Minor Irrigation of Karnataka

3.8 Earthquakes

As per the revised earthquake hazard mapping, 22.13% of the total geographical area is under moderate earthquake damage risk zone & remaining area of the state is under low damage risk zone. The state of Karnataka has reported more than 500 earthquake tremors in the last three decades with most of them having low magnitude. It is found that the weak zones around the northern Karnataka bordering Maharashtra could cause heavy damages in future. The areas of southern part of Karnataka

are also not free from frequent tremors. The Karnataka state is categorized as moderate to low seismic risk zone. The following Districts are falling in Zone III (Moderate Damage Risk Zone (MSK VII);

KSNDMC has established V-SAT enabled 14 Permanent Seismic Monitoring Stations Network (PSMS) for monitoring the seismic and tremor activity due to quarrying and mining activities around the network. There is a report from KSNDMC that in the recent years signatures of quarry blast are recorded.

Quarry related blast incidents

Sl. No	Date	Place	Loss of life/ Reason
1	01-05-2018	Hassan	3 Peoples died because illegal explosives used during quarrying also due to thunder-storm
2	15-08-2018	Hassan	No loss of life
3	25-09-2018	K R S dam within 10.5 Km radius	No loss of life. 2 signatures are recorded

Source: Mines and Geology, Bengaluru

Bidar, Gulbarga, Vijayapura, Bagalkot, Belagavi, Dharwad, Uttar Kannada, Shivamogga, Udupi, Dakshina Kannada, Kodagu. All other Districts are falling under Zone II(Low Damage Risk zone MSK VI). The chart shows the occurrence of earthquake activities in Karnataka.

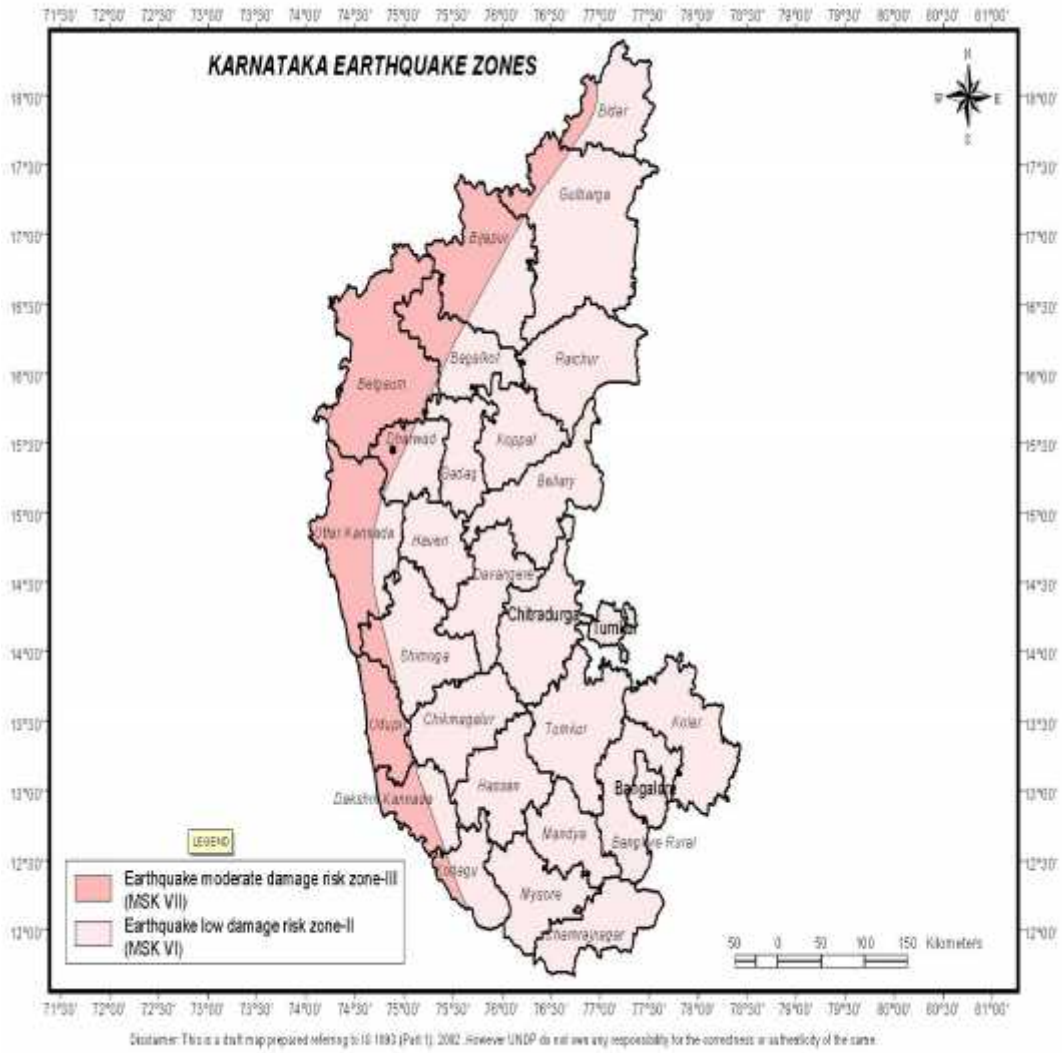


Fig. 3.8: Earthquake Vulnerability Map of Karnataka

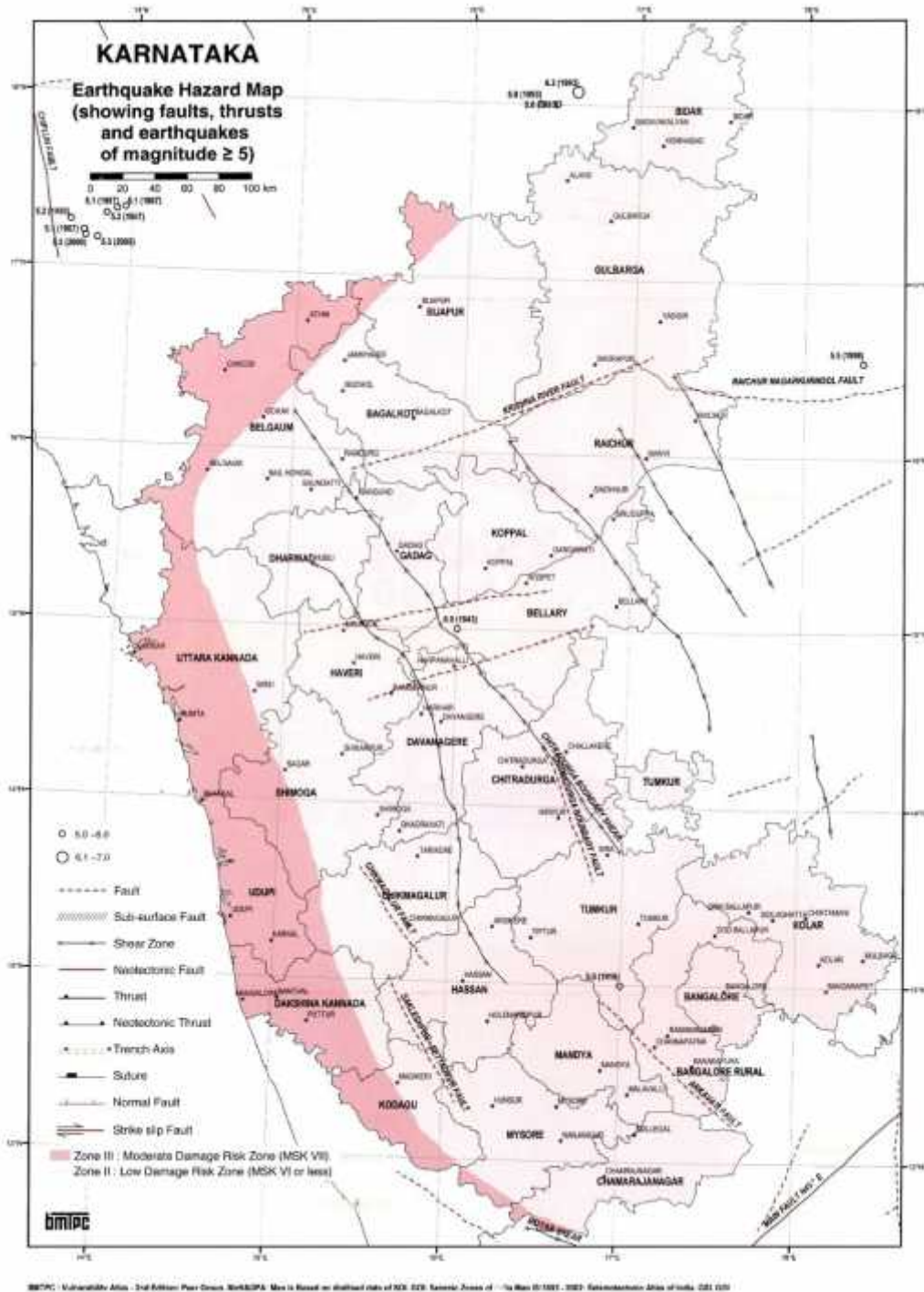


Fig. 3.9: Earthquake Hazard Map of Karnataka

3.8.1 Landslide

Very heavy slopes are covered by hilly regions of western ghats spread in the districts of Kodagu, Chikkamagalur, Hassan, Shivamogga, Dakshina Kannada and Uttara Kannada which record a very high normal rainfall of 2000mm to 4000mm. Landslides are common in these districts. During the rainy periods these hilly regions regularly experience displacement of rocks and soils causing widespread damage to property, infrastructure such as rails, roads and loss of human life. Map below shows the slopping pattern of the state.

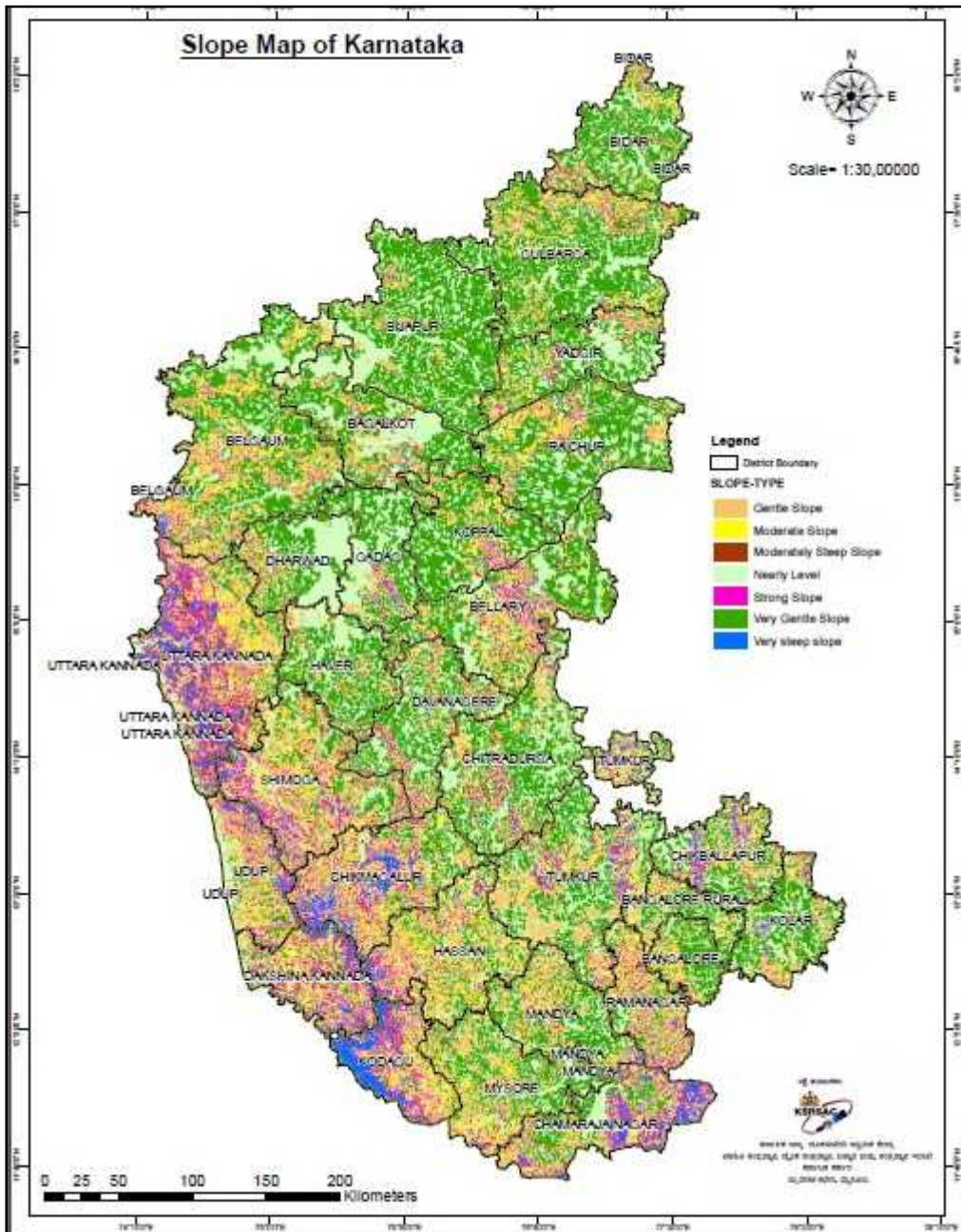
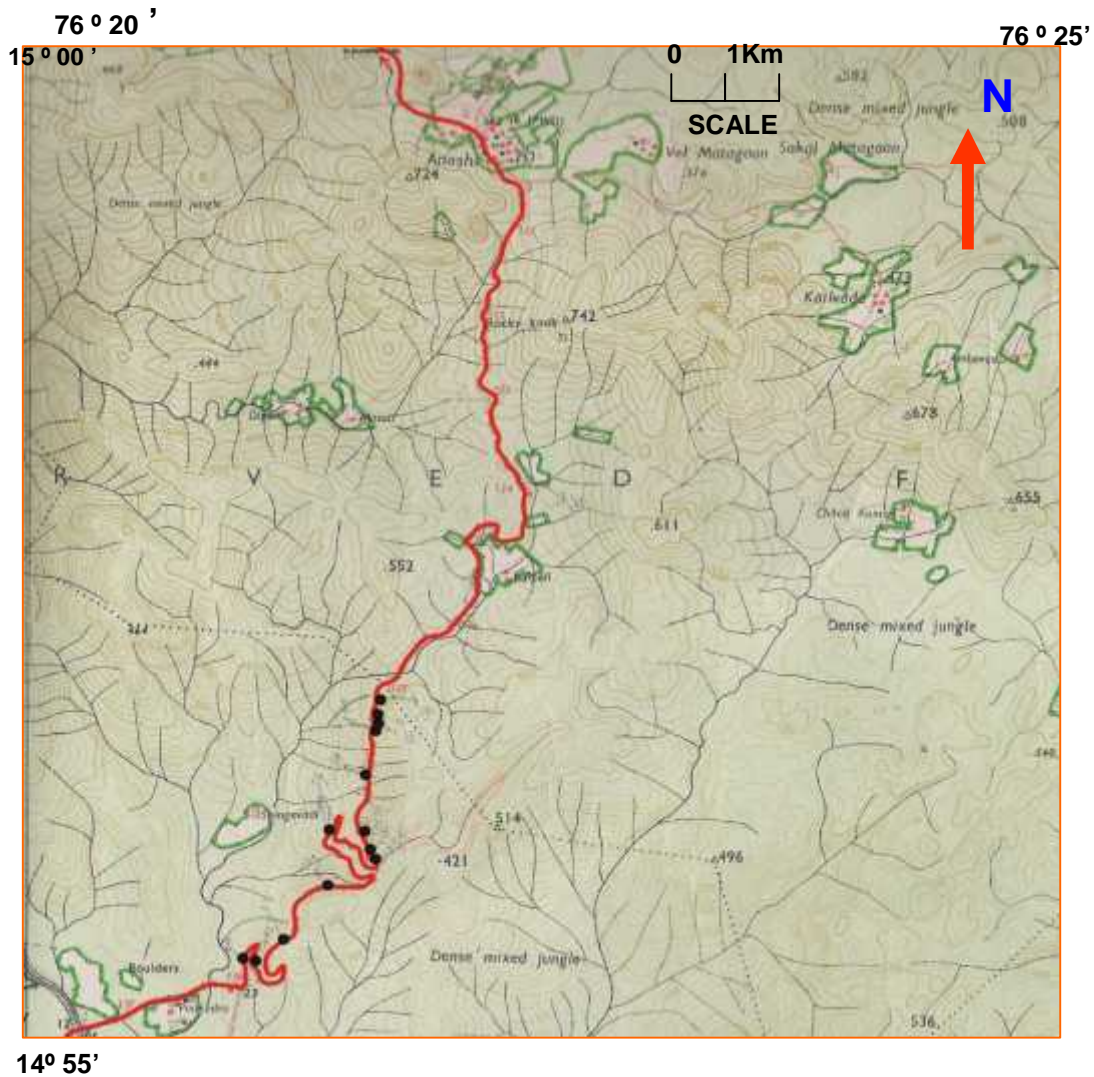


Fig. 3.10: Slope Map of Karnataka

LANDSLIDES ALONG SH-95 (ANSI GHAT), KARNATAKA



Source: Geological Survey of India

3.8.2 Landslide Profile of Western Ghat in Karnataka

Landslides recorded along NH-206 and SH-50 between Jog fall and Honavar: 37 Land slides

- 37 land slides are recorded in this ghat section in between nearly 60 km stretch.
- The majority of the slides were found to be debris slides
- The slides are shallow with less than 2m depth.
- The general slope angle varies from 25° to 35°
- The slopes are moderately vegetated.
- The overburden thickness varies from 1-5m and consists of soil and weathered rock.
- The cut slope angle is 70° to 80° with height varying from 2-15m.
- The cut slopes have failed due to heavy rain in the Ghat section during monsoon.
- Geologically the area comprises of weathered granite, gneisses and laterite.
- One rock slide with planner failure is observed in this section.

Landslides recorded along Shiradi Ghat, NH-48- 20 land slides

- The majority of the slides were found to be debris slides
- The slides are shallow with less than 2m depth.
- The general slope angle varies from 25° to 35°
- The slopes are moderately vegetated.
- The overburden thickness varies from 1-5m and consists of soil and weathered rock.

- The cut slope angle is 70° to 80° with height varying from 2-15m.
- The cut slopes have failed due to heavy rain in the Ghat section during monsoon.
- Geologically the area comprises of weathered gneisses and granulites.
- One rock slide with wedge failure is observed in this section

Landslides along SH 88-Madikere Mangaluru Road-24 Slides

- The majority of the slides were found to be debris slides
- The slides are shallow with less than 2m depth.
- The general slope angle varies from 25° to 30°
- The slopes are thickly vegetated.
- The overburden thickness varies from 1-5m and consists of soil and weathered rock.
- The cut slope angle is vertical with height varying from 2-15m.
- The cut slopes have failed due to heavy rain in the Ghat section during monsoon.
- Geologically the area comprises of weathered granite.
- Few rock slides with planner and wedge failures are observed in this section.

Landslides along SH 89-Madikere- Siddapura Road-5 Slides

- All are debris slides
- Triggered by heavy rainfall. The vertical cut slopes have failed due to toe cutting.

Landslides along SH 95-Karwar-Kumbarwada Road (Ansi Ghat)-14 Slides

- All are debris slides
- Triggered by heavy rainfall. The vertical cut slopes have failed due to toe Cutting.

3.8.3 Road Accidents

The state has a whole reported an average of 45000 cases of road accidents killing over 9-10 thousand and injuring about 50-60 thousand persons every year from 2009 to 2014. Bengaluru city accounts for over 3000 accidents. The statistics reveal a 2.2 per cent rise in road fatalities in the country in 2011, compared to 2010. Of these, 30,624 were riding two-wheelers, 26,061 were occupants of trucks/lorries, 13,380 were travelling in cars and 12,501 in buses. The number of pedestrians killed on the road by vehicles too was 12,501. Karnataka and Bangalore both stand third among the States and 53 megacities respectively in the country with regard to road deaths during 2011.

Table: 3.3 Road Accidents in Karnataka from 2015 to 2019

Year	Cases Reported	Persons Killed	Persons Injured	Vehicles Involved
2011	44731	8971	59591	49284
2012	44448	9448	58659	53955
2013	44020	10046	56781	50586
2014	43713	10452	56831	61560
2015	44011	10856	56971	54909
2016	44403	11133	54556	NA
2017	45542	10609	52961	NA
2018	41707	10990	51562	NA
2019 (Upto March)	10741	2703	13381	NA

Source: State Crime Record Bureau

3.8.4 Cyclone

Population in the Coastal Districts of Karnataka Vulnerable to Cyclone Risk

The table illustrates the no. of Taluks, GPs and population. The vulnerability of population living below the poverty line in coastal districts of Karnataka is very high.

Table 3.4: Population in the Coastal Districts of Karnataka Vulnerable to Cyclone Risk

District	No. of Taluks	No. of Grama Panchayats	BPL card holders	Slum Population
DK	7	230	126673	17309
Udupi	7	158	91138	17368
Uttara Kannada	12	231	123273	27473

3.8.5 Population in the Malnad Zone Districts of Karnataka Vulnerable to Cyclone Risk

The chart and table below indicate the details of cyclone vulnerable areas in Malnad region comprising the districts of DK, Udupi, Uttara Kannada, Kodagu, Shivamogga, Chikamagalur and Belagavi.

Table 3.5: Population in the Malnad Zone Districts of Karnataka Vulnerable to Cyclone Risk

As on 31.03.2017(In Nos)

District	No of Taluks	No. of Grama Panchayats	BPL card holders	Slum Population
DK	7	230	126673	17309
Udupi	7	158	91138	17368
Uttara Kannada	12	231	123273	27473
Kodagu	3	104	57660	3681
Shivamogga	7	271	272319	144419
Chikamagalur	7	227	66390	49997
Belagavi	12	505	399216	107943

3.8.6 Population in the Districts of Interior Karnataka Vulnerable to Cyclone Risk

The following chart and table provides the details of Districts, Talukas, GPs and the cyclone vulnerable population in the interior Karnataka

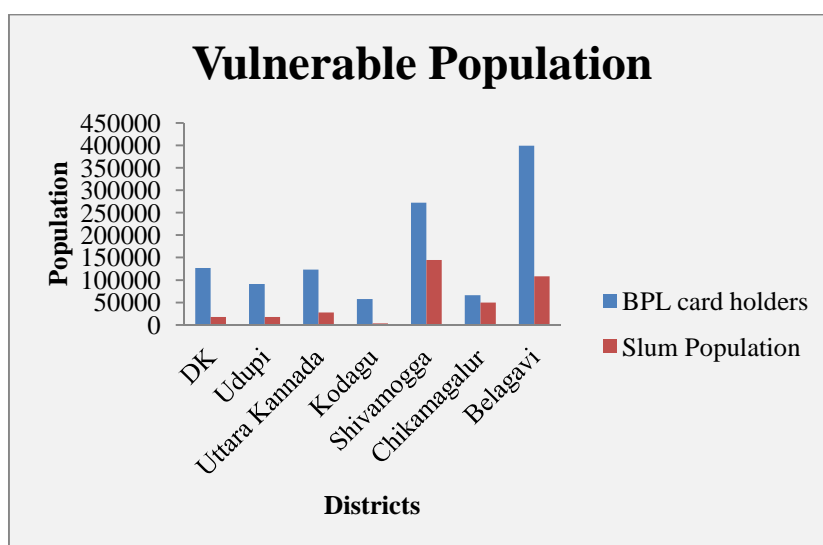


Table 3.6 : Population in the Districts of Interior Karnataka Vulnerable to Cyclone Risk

As on 31.03.2017(In Nos)

District	No of Taluks	No. of Grama Panchayats	BPL card holders	Slum Population
Vijayapura	12	213	148667	240520
Bidar	8	186	95253	76528
Gulbarga	11	264	157648	176207
Raichur	7	180	129736	101413
Bellary	10	200	192648	152318
Chamarajanagar	5	130	107610	41552

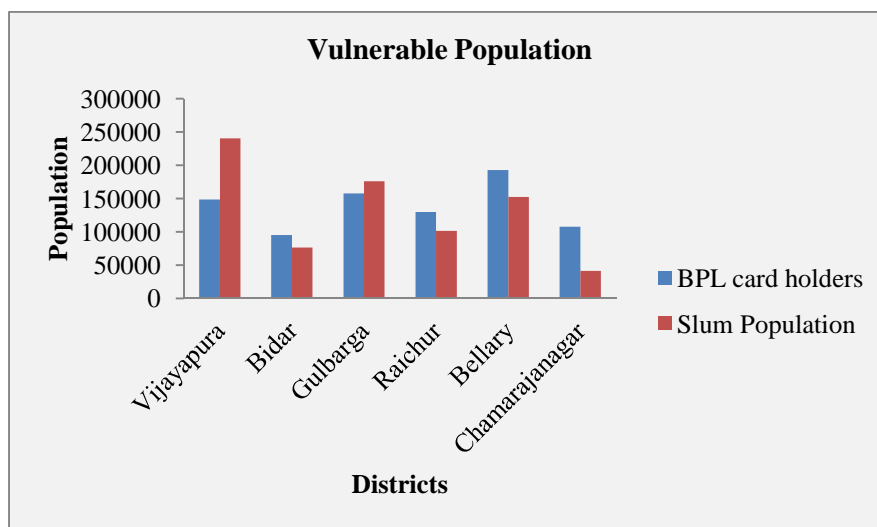


Fig. 3.11: Chart shows Vulnerable Population

3.8.7 Chemical and Industrial Hazards

All factories having manufacturing processes mentioned in the first schedule appended to the factories act, 1948 are termed as hazardous process factories. There are about 735 hazardous process factories in the state. All Factories having the chemicals stored, used and manufactured in excess of the threshold quantities specified under the CIMAH Rules, 1994 are categorised as Major Accident Hazard units (MAH). 59 MAH units are identified in the state, which are located in 17 districts. For all these 17 districts as per the said rules, District Crisis Groups have been constituted with the respective Deputy Commissioner of the district as the chairman and the representative of the Department of Factories and Boilers as the member Secretary. These groups also consists of district level officers from the departments viz., police, fire force, pollution control board, agriculture, health, education, transport, PWD and experts in the field of health and safety. The main function of the District Crisis Group is to oversee the safety systems in the MAH units located in the districts including the preparedness procedure in tackling the possible emergencies arising out of chemical accidents in addition to assisting the Deputy Commissioner in preparing a comprehensive off site emergency plan for the district obtaining information from the MAH units.

Table 3.7: District Wise Hazard Matrix of Major Chemical Accident Industries

Sl.No.	Name of the District	No. of MAH units		Hazards					
		Petroleum	chemical	Fire	Explosion	Toxic release	Poisoning	Spillage	Combination
1	Bengaluru Rural	15	-	-	-	-	-	-	-
2	Bengaluru Urban	2	-	-	-	-	-	-	-
3	Ramanagaram	3	-	-	-	-	-	-	-
4	Belagavi	4	1	-	-	-	-	-	-
5	Bellary	2	4	-	-	-	-	-	-
6	Dakshina Kannada	12	2	-	-	-	-	-	-
7	Dharwar	9	-	-	-	-	-	-	-
8	Haveri	-	1	-	-	1	-	-	-
9	Kolar	4	-	-	-	-	-	-	-
10	Koppal	-	1	-	-	-	-	-	-
11	Mandya	-	1	-	-	-	-	-	-
12	Mysuru	5	-	-	-	-	-	-	-
13	Raichur	-	-	-	-	1	-	-	-
14	Shivamogga	1	2	-	-	-	-	-	-
15	Tumkur	2	-	-	-	-	-	-	-
16	Uttar Kannada	2	1	-	-	1	-	-	-
17	Hassan	1	-	-	-	-	-	-	-
18	Vijayapura	1	-	-	-	-	-	-	-
19	Kalaburgi	1	-	-	-	-	-	-	-
20	Chikkaballapura	1	-	-	-	-	-	-	-
Total		65	13		-	3		-	-

Sources: Department of Factories, Boilers, Industries Safety and Health

Table 3.8: Industrial Accidents in the last Five Years (2010 – 20019) in Karnataka

Year	No. of fatal Accidents	No. of persons died in fatal accidents	No. of Serious accidents	No. of persons injured in non-fatal accidents	Total no. of Accidents	Total no. of persons died & injured
2010	87	93	39	96	126	189
2011	100	118	47	78	147	196
2012	84	90	53	100	137	190
2013	71	88	46	77	117	165
2014	65	70	46	56	111	126
2015	51	51	15	30	66	81
2016	35	35	51	24	86	59
2017	42	46	21	39	63	85
2018	51	61	21	46	72	107
2019	6	12	6	30	12	42
Total	592	664	345	576	937	1240

Sources: Department of Factories, Boilers, Industries Safety and Health

As seen from the table 3.8, about 664 person are died in 592 fatal industrial accidents and in total in the last 9 years from 2010-19 , 1240 injured and died in 937 accidents. The map below shows the vulnerable locations in 17 districts.

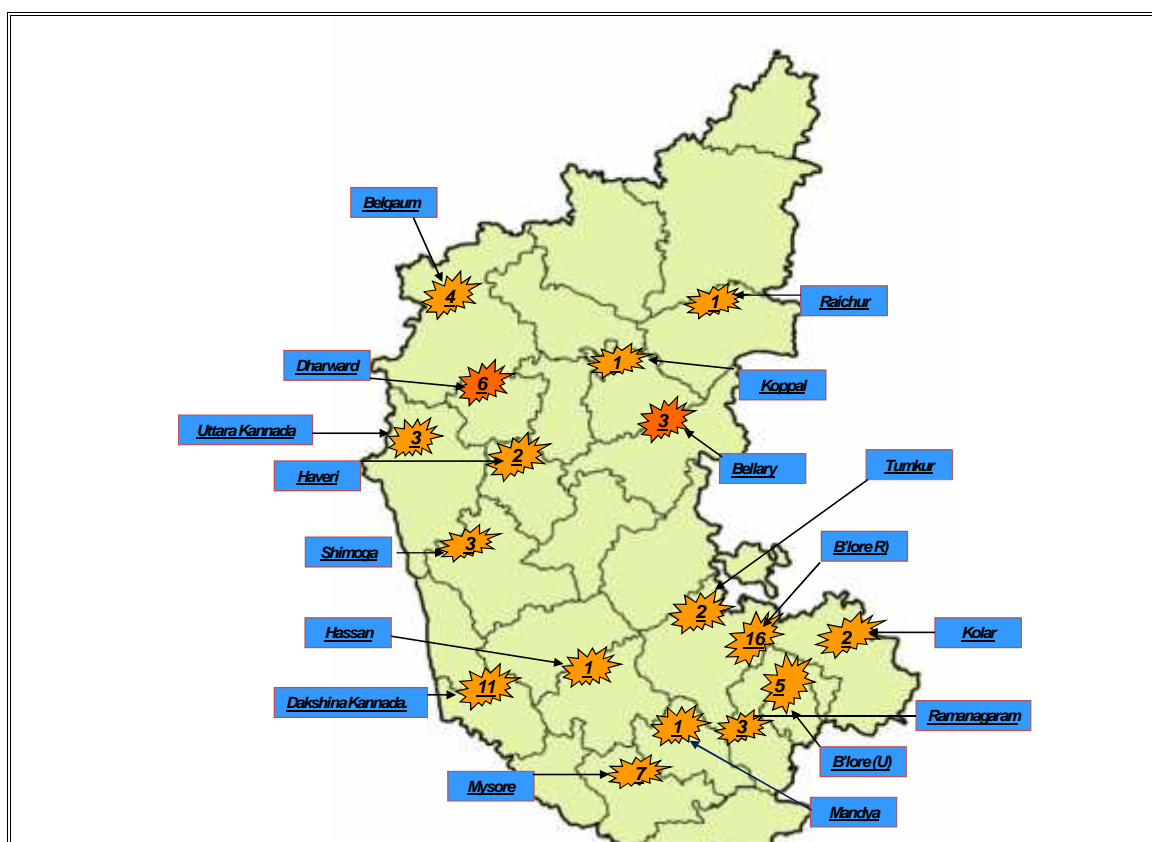


Table 3.9 : Hazardous Material Stored, Used and Handled in the State

Sl. No.	Particulars	Quantity	Main Hazard
1	LPG	52100 MT	Fire / Explosion
2	Petroleum Products	1109937 MT	Fire
3	Chlorine	1205 MT	Toxic and Corrosive
4	Liquid Oxygen	4591 MT	Cold burns, oxidizing
5	Carbon Di sulphide	200 MT	Toxic
6	Ammonia	10053 MT	Toxic and Corrosive
7	Liquid Nitrogen	720 MT	Cold burns
8	Corex Gas	100000nm ³	Toxic, Fire & Explosion
9	Hydrochloric acid	1185 MT	Corrosive
10	Sulphuric acid	3039 MT	Corrosive
11	Phosphoric acid	21000 MT	Corrosive
12	Blast furnace gas, producer gas	120000 nm ³	Toxic, Fire and Explosion

13	Other chemicals like Naptha, Solvent, Ethyl Mercaptan, Sulphur dioxide, Sodium Hydroxide, etc.	5402 MT	Toxic, Fire & Explosion
----	--	---------	-------------------------

3.8.8 Steps taken by the State Government

1. Before siting any factory, the clearance from the Department of Forest, Ecology, and Environment is essential;
2. Relevant information in detail about the process, chemicals used, hazards identified and also measures to overcome hazards shall be informed to the authorities, workers and the general public;
3. Safety and health policy shall be evolved prior to the commencement of the activities;
4. On site emergency plan/disaster management plan shall be prepared and submitted for approval.
5. Safety manual shall be prepared and issued to all the workmen;
6. Subject all the workmen for pre employment and periodical medical examination and maintain relevant records;
7. Ensure that the toxic chemicals and substances used in the factory are within the permissible threshold limits at the work environment committee comprising of workers representatives and the management shall be constituted and the same should function as per rules;
8. Provisions envisaged under the Control of Industrial Major Accident Hazard (Karnataka) Rules, 1994 shall be complied with;
9. Mock rehearsals in respect of handling the emergencies shall be conducted periodically;
10. Workers shall be trained and educated about the hazards, use of personal protective equipment, safety and health awareness and emergency preparedness;
11. Assist the district crisis group in evolving off site emergency plan, if the unit is coming under the MAH category;
12. Maintain occupational health Centre with all the facilities and required antidotes.
13. The factory should extend co-ordination and mutual aid to the neighbouring factories in case of exigencies.

As envisaged under the Environment (Protection) Act, 1986 and the Factories Act, 1948, every industry involved in hazardous process is required to draw up an on-site emergency plan detailing how emergencies are tackled in respective industries.

3.8.9 Fire Accidents

The number of fire accidents managed by the State Fire and Emergency Services(KSFES) depicting lives and value of property lost and saved from 2011 to 2015 are given in the table below. The fire incidents of Mangaluru air crash, Carlton tower and many small to severe fire incidents have exposed the vulnerability of the state to more such events in future. The KSFES must ensure availability of adequate state of art equipments and technology including skilled human resource to counter the fire accidents taking place both in rural and urban areas.

Table 3.10: Fire Incidents in Karnataka (2011 to 2019)

Year	Total Fire calls	Rescue Calls	No. of lives saved in Fire	No. of lives lost in Fire	No. of lives rescued in Fire	Value of property involved (Rs. In Cr.)	Value of property saved (Rs. In Cr.)	No. of Persons Injured	Mock Drills conducted
2011	1295	19220	1394	977	651	1660	874	626	964
2012	616	18464	1436	615	634	1340	1135	737	362
2013	15925	1521	673	380	291	797	576	746	44

2014	16441	1862	434	461	232	1067	833	840	100
2015	15308	1728	398	309	270	833	667	475	8
2016	18525	1924	295	113	2244	1447	916	212	955
2017	13427	2400	154	80	2545	627	408	497	606
2018	18693	2491	178	109	2729	587	401	172	1420
2019	12615	779	164	54	988	6517	420	103	684

Source: KSF&ES

3.8.10 Communicable Diseases

Despite overall improvements in health indicators, inter-district and regional disparities continue. The five districts of Gulbarga Division (Bidar, Koppal, Gulbarga, Raichur, Bellary), with Vijayapura and Bagalkot districts of Belagavi division continue to lag behind. Under-nutrition in under-five children and anemia in women continue to remain unacceptably high. Women's health, mental health and disability care are still relatively neglected. Certain preventable health problems remain more prevalent in geographical regions or among particular population groups. Structural reforms as suggested by the task force on Health have to be made and more effective management practices imbued with accountability have to be introduced to ensure swift and effective local responses to Health problems. The relatively low level of public confidence in public sector health services, particularly at primary health centers, is recognized. Lack of credibility of services adversely affects the functioning of all programmes. Underlying reasons for implementation gaps need to be understood and addressed.

3.9 Man-Animal Conflicts

In the recent years, the conflicts between man and wild animals are increasing with notable examples of human and animal deaths reported every year as shown in the table below. Attacks by wild elephants and a bear in Alur, Sakleshpur, Arkalgud, and Arsikere taluks, elephant camps had been set up in the Alur range to scare the rogue elephants that have created havoc in the area.



Table 3.11: Vulnerability due to man animal conflicts

Year	Crop compensation case registered	Elephant Electrocutation death	Human Death	Human Injury
2012-13	34,496	13	51	187
2013-14	19,137	04	47	168
2014-15	27,327	15	51	211
2015-16	21,150	08	42	167
2016-17	18,985	06	48	135
2017-18	27,525	10	35	208
2018-19	16,185	09	25	112

Source: Forest Department, Bengaluru

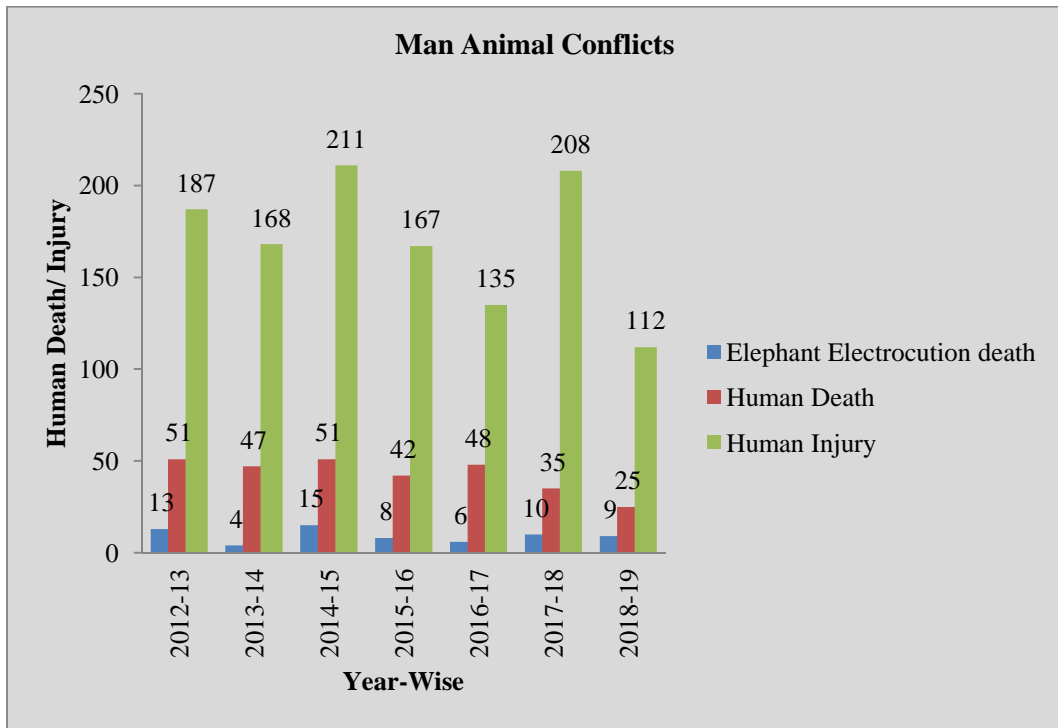


Fig. 3.11: Chart shows Man-Animal Conflicts in Karnataka

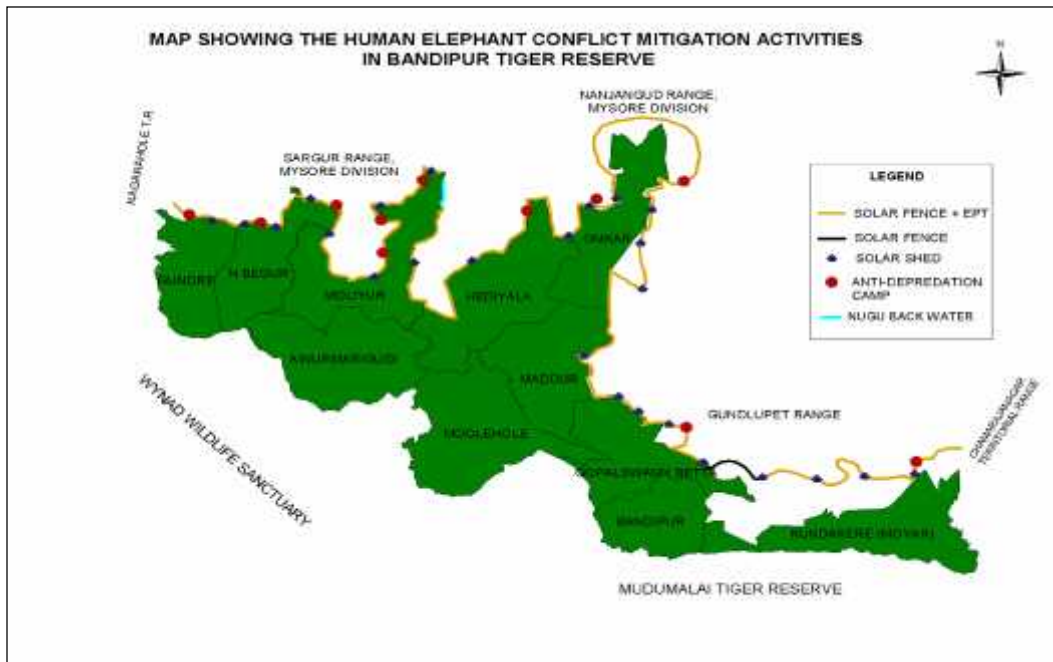


Fig. 3.12: Map shows Man-Animal Conflict Mitigation

Mitigation Measures:

Hassan, Kodagu, Tumkur, Kolar, Bangalore(R),Chikkamagalur, Shimoga, Chamarajanagar, Mysore, North Kanara and Belgaum Districts are facing elephant depredation.

Govt. has taken the following measures to mitigate the problem

1. To prevent elephant attacks, in sensitive areas excavation of Elephant Proof Trench and works of Erection of Solar Fencing have been taken up and the same is being maintained.
2. The sensitive areas where the elephants frequently enter the nearby farm lands are identified and the Anti-depredation camps are formed with a group of four members and in every group one local person along with forest staffs are deployed to drive back the elephants to the nearby forest area.
3. To drive back the elephants, the staffs are provided with Walkie-Talkie, gun and vehicle facilities.
4. The staffs are provided with crackers and other items to drive back the elephants.
5. In the sensitive areas where wild animal conflict is more, to control the conflict as per the requirement Anti-Depredation Camps & rapid Response Teams are formed.
6. 24 hours toll free No. 1926 is operational in the head quarters to provide the service in case of emergencies due to wild animals.
7. If necessity arises, the problematic elephants are identified and are translocated.
8. Creating awareness to the public regarding Do's and Don'ts during the wild animal attack by displaying through signages and also by conducting meetings with the villagers.
9. To prevent Human-elephant conflicts and other wild animals depredation, developmental works such as improving habitats, providing water facilities by desilting of tanks, construction of check-dams, Gully-plugs, Nala bunds and other essential works have been taken up in the Protected Areas.
10. The proposal for providing 50% assistance for erection of solar fencing to facilitate the farmers to prevent their crops from wild animals has already been submitted to Government and it is under process.

3.9.1 Special Tiger Protection Force (STPF)

The Special Tiger Protection Force (STPF) is being established in the Bandipur Tiger Reserve with 112 members contingent of young enthusiastic staff. STPF is an additional force established in the Bandipur and Nagarahole Tiger Reserves. It has been reconstituted as three battalions with 28 members each, trained both in conventional Forest Guard training and also Special Police Training. They are well trained in patrolling strategies, combat operations, use of arms and ammunition, mob management etc.

3.9.2: Forest Fire

Forest fires are increasing every year in the state due to summer heat, dried grass, attitude of revenge, negligent throwing of cigarettes. Forest department in coordination with Police, Fire Services, Home guards, Civil Defense, Volunteers, NGOs and local community have been taking preventive measures.

A massive forest fire broke out in Bandipur National Park. It was estimated by ISRO and NRSC through their satellite imageries that an area of 10,920 acres was destroyed between 21-25 February, 2019. Forest fire incidents from 2015- 2018 are given in the table

Incidents	2015	2016	2017	2018
Number of Forest Fires	589	913	925	985
Area Affected by Forest Fires (Hectares)	168.67	278.68	6976.85	-

Source: Forest Department, GoK.

3.10 District Specific Hazards & Vulnerability

3.10.1 Bengaluru Urban District

- Over 3000 road accidents every year
- December 2005, shooting at the Indian Institute of Science, Bangalore that killed one person and injured four was one of the first terrorist attacks in the state.

- In July 2008, a series of nine bombs exploded in Bangalore city, which killed two people and injured 20.
- February 2010, a massive fire in Carlton Towers in Bangalore kills three.
- April 2010, bomb blast outside Chinnaswamy stadium, Bangalore injures 6 people.
- under-construction building collapsing in Bangalore, at least five labourers were injured when the ground floor of a five-storeyed structure caved in at Someshwara Nagar in 2013
- School building collapse 2013, Two storey building collapse in Lingarajapuram in Oct 2014
- Bengaluru city has been facing severe floods every year. As against the annual average rainfall of 830.5 mm in Bengaluru Urban district, 568.5 mm, which is 75% of the average annual rainfall occurred in a period of two months in September and October, 2005 :3 persons died, 7491 houses collapsed and 10,000 houses were inundated. Bengaluru flood is caused by
 - Silting and choking of most of Primary and Secondary Storm water drains.
 - Unawareness of Community.
 - Non availability of drains at tank bed areas.
 - Inadequate cross drainages.
 - Inadequate drain width
- Air Crash in Residential Area during Aero-Show.
- Car Park Fire, which destroyed over 300 Cars during Aero Show.
- Large gathering crowd management plan.
- Better Fire Fighting Plan for Forest Fire.
- Coordination mechanism with Ministry of Defence to seek Aircraft /Helicopter assistance.
- Plan for better utilisation of Fire Fighting Facilities from Private Resource.

3.10.2 Gulbarga District

Gulbarga has a long history of drought and almost all taluks are experiencing drought. Gulbarga has experienced the effects of an earthquake during the earthquake of Latur. Areas such as Aland and Afzalpur taluks have reported damages. Severe shocks were reported in almost all the taluks of Gulbarga. Recently two villages in Chincholi taluka namely Hasargundagi and Gurrampalli have experienced minor earthquakes. Gulbarga district has five principal rivers Krishna, Bheema, Amraja, Kagina, Bennethora, Kamalawathi and Mulamari

Following were flood affected villages in Gulbarga District;

Chittapur -20 villages
 Shorapur- 3 villages
 Jewargi- 24 villages
 Afzalpur-26 villages
 Gulbarga-12 villages
 Shahapur-4 villages
 Sedam-18 villages

3.10.3 Dakshina Kannada District

Dakshina Kannada district is one of the highly vulnerable districts in the state prone to coastal erosion, cyclones, tsunami, floods, storm surges, wind and storm, communal violence,

Following hazards are identified in the district;

- Floods – Mangaluru, Surathkal, Gurupura, Mulki, Bantwal, Belthangady, Puttur, Sullia.
- Landslide- Shiradi in Belthangadi taluka along NH-48
- Industrial Disasters: 12 MAH units and 6 Hazardous units around Panambur (Ammonia and Chlorine)
- Fire
- Road Tanker Accidents – NH17, NH13, NH 48
- Rail Accidents: Carrying LPG

3.10.4 Udupi District

Due to the presence of a number of estuaries with several rivers both big and small flowing through them, the Coastal region is facing Beach erosion, migration of river mouths and silting of fishing harbours etc.

The high tides during monsoon coupled with storm surges over flow and flooding of line back shore lands all along the coast and causes considerable loss of property

Parts of Uppuru, Kalyanapura, Mudukudru, Padukudru, and Thimmanna kudru area, due to floods in Bannadi hole some parts of Kota Giliyaru area, and due to floods in Seetha nadi some parts of Matapady, Handady, Kumragodu area are badly affected once or twice a year. The flooding normally takes place for 24 to 48 hours.

In Kundapura taluk due to floods in Sowparnika river some parts of Nada, Hadavu, Navunda area are badly affected once or twice a year. The flooding normally takes place for 24 to 48 hours.

3.10.5 Bagalkote District

Drought is a common occurrence in the District every year. In the year 2005-06, 146 villages of Bagalkot district were affected due to sudden release of water from Koina and Ujoni Dams, which caused flood in Krishna river. Also release of water from Hidkal Dam caused flood in Ghataprabha river and water discharged from Navilthiratha Dam caused flood in Malaprabha river. Due to floods in Krishna, Malaprabha, and Ghataprabha rivers a total of 146 villages were affected in Bagalkot District as shown below.

Table: 3.12 Flood affected taluks

Sl No	Name of the Taluka	No villages affected
1	Bagalkot	20
2	Hunagund	20
3	Badami	20
4	Jamkhandi	35
5	Mudhol	40
6	Bilagi	11

Due to release of water from Koina Dam and Flood in rivers. Vedaganga, Doodganga, and Panchaganga 36 villages of Jamkhandi taluk were affected. And also 40 villages of Mudhol taluka were affected due release of water in Ghataprabha river from Hidakal Dam and Markandeya Barriage. 28 villages of Hunagund Taluka and 20 villages in Bagalkot Taluka were affected due to the excess release of water from Almatti Dam and Back water of Narayanpur Dam. In Badami Taluk 12 Villages were affected due to floods in Malaprbha River. Flood in Ghatprbha affected 40 Villages in Mudhol Taluka and flood in Malaprbha River affected 21 villages in Hunagund Taluka and 22 Villages in Badami Taluka.

3.10.6 Uttara Kannada District

The Uttara Kannada coast stretches along the Arabian Sea from Majali in the north to Gorate in the south extending to about 144 Kms covering 5 taluka namely, Karwar, Ankola, Kumta, Honnavar and Bhatkal from North to south. About 24 kms from Baithkol in karwar taluk to Belikeri in Ankola taluk is under the control of Naval Base. The entire coast is known for rich fauna and floral diversity. In view of the rich resources, the entire coast has high degree of development and high density of population.

Following vulnerabilities are reported:

Coastal erosion:

The coastal erosion occurs mostly during the early part of the monsoon. The movement of sand on the beach is caused by waves and they are of two types, onshore-offshore movement and along the shore movement. Strom waves which are short period waves rip open the beaches, taking the material away into deep water, while long period waves push this material back onto the beach. A series of local storms of long duration may cause beach erosion leading to damage to the backshore area. As this is an annual phenomenon, it is necessary to plan ways and means to prevent this hazard on the permanent basis.

The harbour: The district has one all weather port in Karwar. From this port goods are exported or imported. During the process accidents are a possibility. Recently one cargo vessel 'ocean seraya' collided with the oyster rocks in the harbour region, leading to oil spill and environmental hazard. It is necessary that a proper disaster management setup to combat such a situation be established in Karwar in view of consistent increase in traffic.

Fishing harbours and fishermen: The fishing occurs round the year in the sea and estuary. Accidents occur due to several reasons such as heavy wind, sudden change in weather, cyclone, engine failure etc. many times there has been loss of life of fishermen in such accidents every year. It is necessary to setup communication network and rescue in every fishing harbor.

Flood: The district in view of Western Ghats gets very good rainfall during southwest monsoon. As the draining area is short and narrow, most frequently the district witnesses floods. Also, two rivers Kali and Sharavati have dams constructed for storage of water for hydroelectric purposes. When the reservoirs are full during heavy rains, all the crest gates are opened during heavy rains thus increasing the flood rate that some times submerges number of villages along the banks and island in the down stream. The regularly affected villages are 34.

Landslides: Landslides occur during monsoon in view of slope, loose soil, deforestation, excavation, road construction etc. Many encroachments and tribal residents reach the hill slope where landslides occur. Also, removal of soil, quarrying, blasting for stones disturb the soil textures and loosening that slides during monsoon on the roads, railway tracts thus endangering the lives of commuters. A task force to combat such accidents is required.

3.10.7 Hassan District

Drought: The Government has classified six taluks as prone to drought namely Hassan, Arasikere, Belur, Arkalgud, Holenarasipura.

Floods: The Major rivers flowing through the district are Cauvery, Yagachi and Hemavathi. In addition there are major and minor tanks in the district. These tanks are of varying ages and the bunds are also of indifferent strength. Tank breaches are a strong possibility in villages whenever there is high rainfall which would have an impact on the downstream fields and villages. With the construction of the dams across the Hemavathi and Yagachi, the possibility of floods are remote. For example the discharge capacity of Hemavathi is 167400 cusecs while the highest flood discharge in the river was 88000 cusecs.

Landslides: The NH-48 which connects Bengaluru to the port city of Mangaluru passes through the Shiradhighat adjacent to Sakleshpur. Around 15 high landslides have occurred in the past 25 yrs. Low landslides occur almost every year and mainly during the rainy season. With the increased movement of traffic coupled with the transport of petroleum products specially the movement of bullet carriers carrying LPG alerted the administration to be always ready for an emergency.

Earthquakes: The district has reported 21 cases of earthquake tremors in around Hassan since 1983.

Dam failures/Dam bursts: There are 2 big dams Hemavathi and Yagachi and 2 small dams Vatehole and Sriram Devara Katte. The chances of disaster in these projects are limited though the chance of sabotage to destroy the dam wall exists. In such a case the villages downstream of the dam in the talukas of CR Patna, H N Pura would be affected.

Mine fires: There are 3 major mines in the district namely Kalyadi, Byrapura and Tagadur. The major ore is manganese. Mine fires have not been reported in the district. Incidents so far have not been reported.

3.10.8 Dharwad District

Floods: Dharwad District receives average annual rainfall of 776 mm. However, during September 2007 the entire district faced unprecedented heavy rainfall, continuously and unabated. Dharwad Taluka received 230 mm. (monthly average of 107.5 mm for September) and Navalgund Taluka received 187.6 mm. (average rainfall for September is 130 mm). Hence, in a matter of 2–3 days, the district received rainfall measuring upto the whole month. The intensity and period of rainfall was so severe that it caused extensive flooding in many parts of the District. The excessive rain and resultant overflowing of rivulets caused following major loss;

- 1) Building collapse in 2019
- 2) Inundation of low lying villages;
- 3) Extensive damage to standing crops;
- 4) House Collapse;
- 5) Death of livestock;
- 6) Disruption of Communication – Damage to Roads & Bridges;
- 7) Extensive loss to private property

Due to this more than 40 Villages covering Kundgol taluk, 41 villages in Navalgund taluk and 8 villages in Hubli taluks were badly affected.

3.10.9 Haveri District

Floods: There is history of occurrence of Flash Floods in the district. Vulnerable areas and potential impacts are identified. In the year 1991 about 520 out of total 694 villages were badly hit by flood. Likewise in the 2007 about 53 villages were affected by flood. Floods do occur due to heavy rains in some part of the district during July to September, resulting in damage of houses and infrastructure. Drought is common in Haveri district every year

3.10.10 Belagavi District

Floods: Belagavi District has witnessed severe flood during the year 2005, 2006, 2009 due to heavy rainfall and release of excess water from neighboring state Maharashtra to the river Krishna and its tributaries. During 2005 and 2006 flood, Belagavi District witnessed heavy loss of life and property. Athani, Chikodi and Raibag were severely affected from flood in river Krishna, Gokak from Ghataprabha River and Ramdurga from Malaprabha River.

3.10.11 Gadag District

Floods: In 1992, the villages on the Bank of Malaprabha and Tungabhadra river in Nargund, Ron and Mundargi taluka have faced the flood situation. In September 2007, due to heavy rain within 3 days, water level reached above flood level and led to submergence of some villages in Nargund and Ron taluka and also caused the heavy damages to the public and private property.

3.10.12 Mandya District

Past history reveals that Mandya district is less prone to natural disasters. There are instances of many man-made disaster such as strikes and incidents of fire and burning of buses and vehicles during Cauvery river dispute. Road accidents are common. A few rail accidents have taken place. KRS Dam could be potential threat to surrounding habitation. During rainy season, the Cauvery River and its tributaries in the district may pose threat of floods. Things get worse as the flood devastates the crops in the affected area and is also a source of epidemics.

3.10.13 Mysuru District

Floods: Mysuru district is traversed by two major rivers Kaveri and Kabini and their tributaries like Lakshmana Thirtha, Nugu and Taraka. Most of the distance traversed by the two rivers is downstream

of the respective dams at Krishnarajasagar for kaveri and Beechanahalli for Kabini. The problem of flood is most severe at the confluence of the two rivers Cauvery and Kabini in T. Narasipur Taluk due to the release of excess water from these rivers. In 2018 Nanjangud, Shivarampet in the Mysuru city were affected by major flood. In 1986-89, high flood rate from the Kapila River was recorded. In 2007 and 2008, flood event were recorded and several villages and agricultural crops got effected.

3.10.14 Shivamogga District

Floods: Shivamogga district has received incessant rains during 2007 and 2008 causing flood situations Shivamogga, Bhadravathi, Thirthahalli, Sagar and Hosanagar taluks and also various reservoirs of Linganamakki, Bhadra, Tunga etc., have raised water levels. The district has suffered heavy loss of life and property in the low-lying areas of Shivamogga city. Water entered the areas of Imambada, Kumbargundi, Venkateshnagar, Channel area near Lakshmi Talkies and RML nagar and nearly 275 families have been shifted form their houses. In Mandagadde area of Thirthahalli taluka water has been raised upto four feet along the NH 13 disrupting the traffic for few days and also 60 families have been shifted to higher reaches.

Cattle Epidemics: In this district we have come across bacterial diseases like Haemorrhagic septicaemia black quarters disease and Anthrax and viral disease like foot and mouth. Considerable mortality has been encountered in these bacterial diseases. Whenever outbreaks of these diseases have been reported vaccinations to control the disease were undertaken. Food and mouth disease occurs throughout the year its chances of spread are more in cattle fairs.

Chemical and Industrial Disasters

The District has 9 large and medium industries of which 6 are functioning. The major industries are sugar, petroleum mining Machinery coffee and milk.

Road Accidents

Since the district is having NH-48 through Channarayana, Hassan and Sakaleshpur Taluk and NH-204 at Arasikere taluk accidents are common in the highways as well as in the state roads. There are about 672 death cases reported.

Forest Fires

The district has 58164 hect of land under forest cover. The bisle ghat is also famous for its diversity of flora and fauna. The changes in weather pattern over the last decade have resulted in the forest fires.

Urban Fires

Six cases of fire accidents have been reported since 10 years in saw mill, cloth shops, foot wear shops.

Rail Accidents

There were 14 train accidents since 1993-94. Arasikere, Hassan, Sakaleshapur and Holenarasipura taluk are having railway lines. Around Rs.15 lakhs worth of railway property has been damaged in the accidents.

3.10.15 Yadgir District

It is predominantly an agricultural district divided into two agro climatic zones namely eastern transition and north eastern dry zone. The zones indicate the predominance of rain dependent dry land agricultural area. The normal rainfall of the district is 777 mms. The climate of Yadagir District is generally dry and healthy. The net sown area in the district is 85.1 per cent of the total cultivable land area, which is 13821.94 square kilometers. The major crops grown in the district are jowar, red gram, sunflower and groundnut. In terms of productivity the yields of principal crops is lesser than the state average. The variation in rainfall and endemic pest attack has affected productivity of tur (red gram). Agriculture in the district mainly depends upon the rainfall and the net area irrigated to net area sown is 14%, which is below the state average of 24%. Krishna, Bhima rivers flow in the district. The medium irrigation projects in the district are Hattikuni and Soudha ghar.. There are 36 lift irrigation schemes and 445 minor irrigation tanks in the district. Cattle,

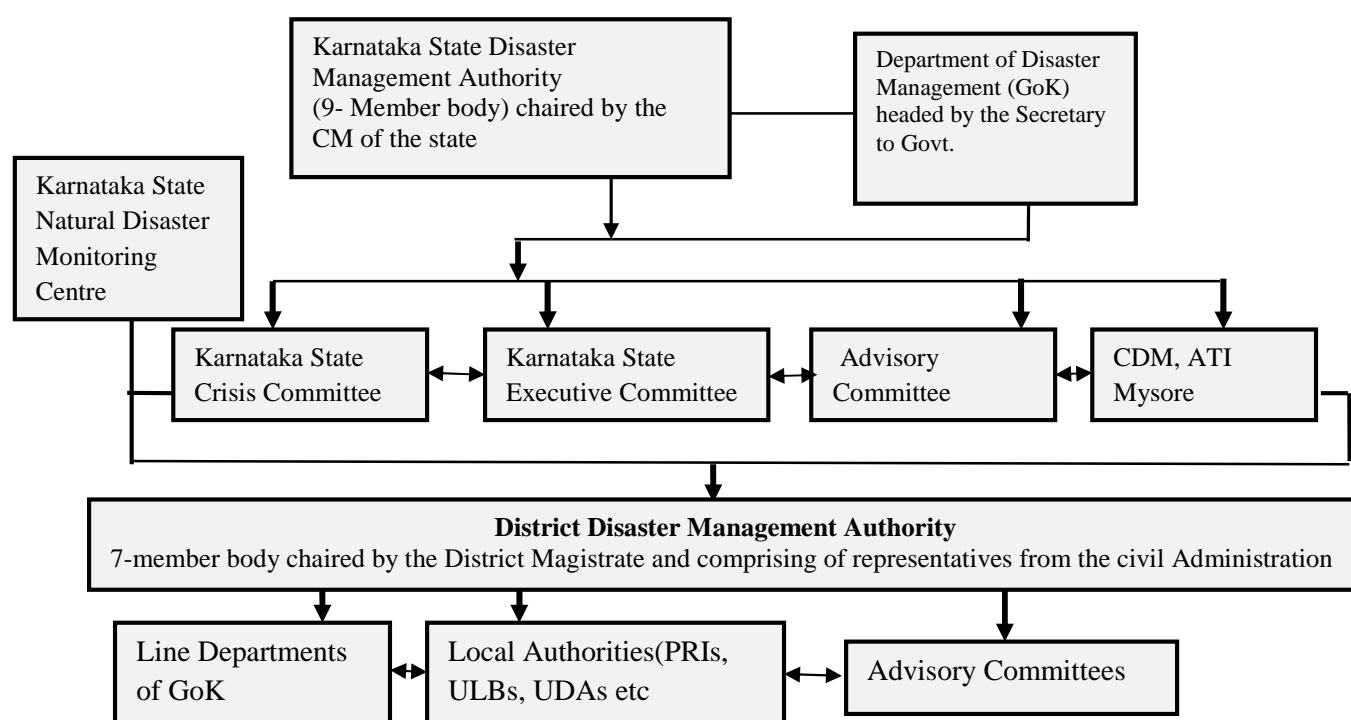
Poultry, Sheep, Goats and Buffaloes constitute the major livestock of the district. It is to be noted that poultry and goat-rearing activities will increase the burden of work for children. Almost every year the district has been facing drought, flood, communicable diseases etc.

CHAPTER 4

PREPAREDNESS MEASURES AND INSTITUTIONAL FRAMEWORK

The State Government in line with National Disaster Management Act, 2005, has constituted State Disaster Management Authority (GO No. RD 28 ETC 2006 dated 16.05.2008) and its composition reconstituted as per (GO No. RD 49 ETC 2010 dated 27.05.2010). The state has also constituted the State Executive committee (GO No. RD 28 ETC 2006 dated 16.05.2008). It has constituted the District Disaster Management Authority laying down the roles and responsibilities for the state and district authorities. The State Crisis Management Committee has also been constituted.

4.1 Organisational Structure for Disaster Management in Karnataka



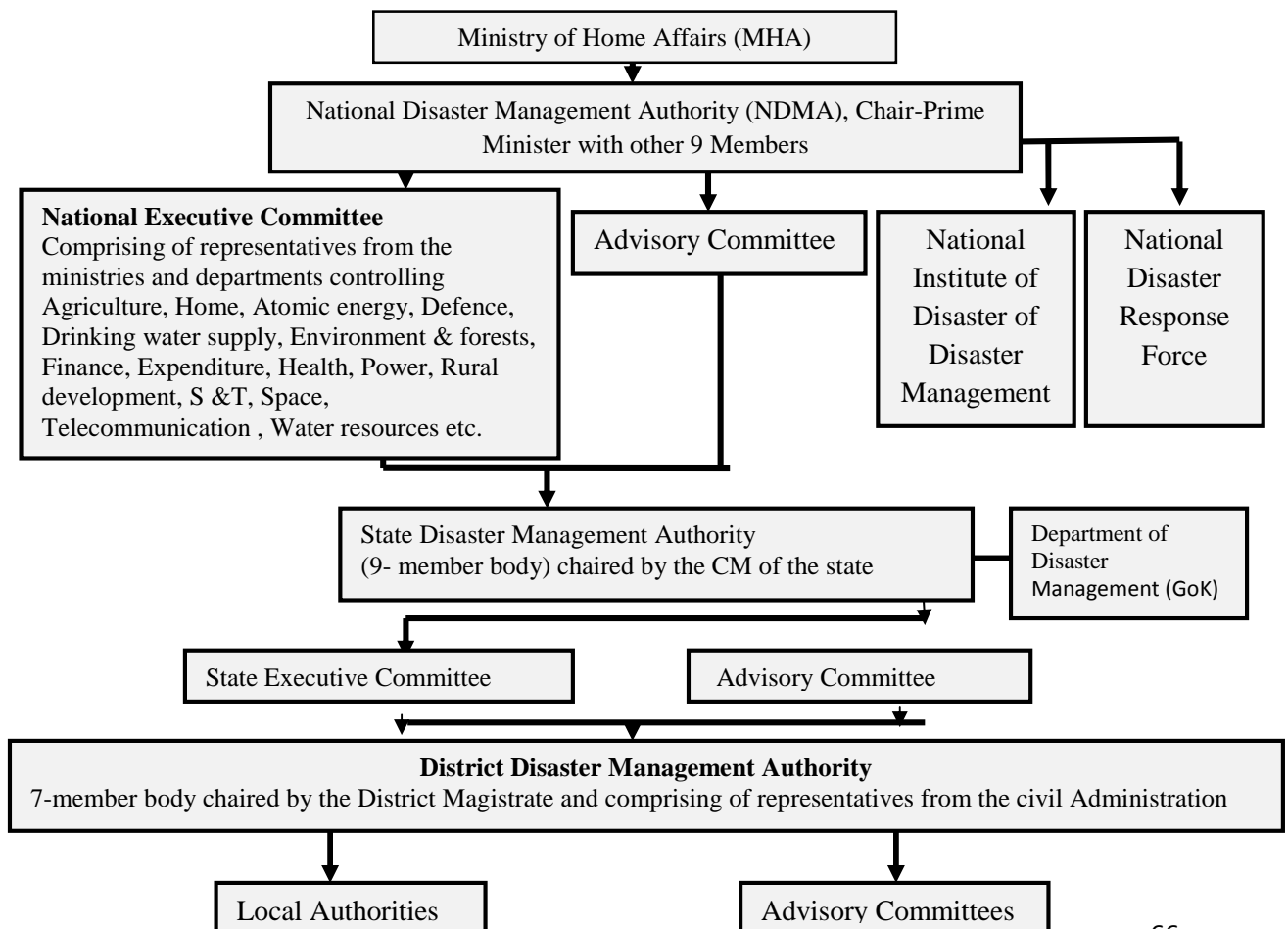
Important Preparedness Measures and Capacity Development in the State

- Formation of Task Forces, Advisory Committees, Response Teams for Disaster Management keeping specific disaster needs and training these members
- Micro-hazard zonation for each hazard
- Display of warning boards for general public in sensitive area.
- Inventory of human and material resources available with Government, Private and Civil Society.
- Training, Capacity Building of the Search and Rescue Task Forces, IRTs, Department designated ROs and Officers being deployed for disaster management tasks.
- Training, Capacity Building of the First Aid Task Forces
- Training and capacity building of Civil police, Fire Brigades, NCC, NSS, CBOs and NGOs and Panchayat members and officials
- Medical Preparedness- nominate/ designate hospitals, doctors and paramedics to cover emergency health management , first aid and mass casualty management
- State, District, Taluk & Village level mock drills and rehearsals.
- Public awareness generation and community evacuation training.
- Community based disaster management (CBDM).

- GP, Taluk and Districts develop and maintain disaster management plans.
- Inventory of lifeline buildings such as of schools, hospitals, public buildings and assess their safety and take measures for improving safety.
- Use of Best Practices
- Create communication network
- Budgetary allocations

The state and district administration shall identify sites for establishment of various facilities as mentioned in the IRS guidelines such as Incident Command Post, relief camp, base, staging area, camp, and helipad, for providing various services during the response. The state and local administration must widely disseminate and publicise information about these arrangements as mandated in the SDMP and DDMP. Since disaster response operations are multifaceted, time-sensitive, extremely fast-moving, and mostly unpredictable, it requires rapid assessment, close coordination among several departments, quick decision-making, fast deployment of human resources and machinery as well as close monitoring. In order to prevent delays and to eliminate ambiguities with regard to chain of command, the SDMP and DDMP must clearly spell out the response organisation as per IRS. These plans clearly identify the personnel to be deputed for various responsibilities in the IRT at various levels of administration along with proper responsibility and accountability framework. Provision for implementation of unified command in case of involvement of multiple agencies such as Army, NDRF, CAPF, and International Urban Teams. Search and Rescue must be spelt out in the SDMP. From time to time, the DM plan must be tested and rehearsed by carrying out mock exercises.

4.2 Hierarchy of Organizations from National to State Level



4.3 Karnataka State Disaster Management Authority (KSDMA)

The State Disaster Management Authority (SDMA) shall function as the apex decision making body headed by the Chief Minister. It shall facilitate, co-ordinate, review and monitor all disaster related activities in the state including capacity building. The Authority shall lay down the State Disaster Management policy and guidelines to be followed by the government departments and approve the State Disaster Management Plan and Departmental plans in accordance with the guidelines laid down by the National Disaster Management Authority (NDMA). The SDMA shall be provided with statutory powers to facilitate, coordinate and monitor the activities related to disaster management utilizing the resources and expertise of relevant Government departments, district administration, local authorities, non-governmental organizations, the public sector, international development agencies, donors and the community. It shall also exercise the powers and functions as laid down in the National Disaster Management Act, 2005. Following is the structure of the KSDMA.

4.4 Structure of Karnataka State Disaster Management Authority (KSDMA)

SL. NO	SDMA Members	Designation
1	Chief Minister of Karnataka	Chairperson, <i>Ex-officio</i>
2	Minister of Revenue	Vice-Chairperson
3	Minister of Home	Member
4	Minister of Rural Development and Panchayat Raj	Member
5	Minister for Health and Family Welfare	Member
6	Minister for Agriculture	Member
7	Minister for Public Works	Member
8	Minister for Animal Husbandry	Member
9	Minister for Housing, Information, ITBT and BWSSB	Member
10	Minister for Energy	Permanent Invitee
11	Chairperson of the State Executive Committee (The Chief Secretary to the Government of Karnataka)	Chief Executive Officer
12	Secretary, Disaster Management and Relief Commissioner	Member Secretary

The KSDMA has been constituted as per GO No. RD 28 ETC 2006 dated 16.05. 2008 and its composition reconstituted as per GO No. RD 49 ETC 2010 dated 27.05.2010

Functions of KSDMA

- Implementation of national Policy/Plan and State plan.
- Vulnerability profile of state and measures.
- Lay down guidelines for DM Plans for all the state depts and district authorities.
- Evaluate preparedness measures.
- Co-ordinate response in the event of disaster.
- Give directions to depts., any statutory bodies etc., regarding actions to be taken in the event of disaster.
- Promote general education, awareness and training.
- Implementation of bye-laws for disaster safety by the local bodies/any agency/public.
- Preparation and review of state and district plans periodically.

In respect of drought and floods, a Cabinet Sub Committee on Natural Calamities has been created under the Chairmanship of Hon'ble Revenue Minister with the following Members:

1	Revenue Minister	Chairman
2	Minister of Animal Husbandary, Law and Parlimentary affairs	Member
3	Minister for Rural Development and Panchayath Raj	Member
4	Minister for Horticulture and Agriculture Marketing	Member
5	Co-operation Minister	Member
6	Minister for Minor Irrigation	Member
7	Minister of State for Agriculture	Member

The Cabinet Sub Committee has been meeting regularly to discuss the preparedness and also to review action taken by different authorities. Cabinet Sub Committee has met 6 times during 2014 and 10 times during 2015. The Cabinet Sub Committee has been meeting regularly to discuss the preparedness and also to review action taken by different authorities. Cabinet Sub Committee has met 6 times during 2014 and 10 times during 2015.

The following action has been taken.

1. Reviewed seasonal conditions.
2. Declared taluks as drought affected
3. Release of funds to districts
4. Review of Drought relief and flood relief activities in the state.
5. Review of Release and Expenditure of funds from SDRF / NDRF

4.4.1 Periodicity of Meeting of KSDMA

Periodicity of Meeting		Objective of Meeting
Non-Crisis time	As often as necessary, but at least once in six months	<ul style="list-style-type: none"> - Review the development and implementation of plans - Guide funding for prevention and mitigation
During crisis	As often as necessary, till crisis managed (meetings convened by the CM)	<ul style="list-style-type: none"> - Review the crisis situation; provide guidance to SEC, SCMC, and DDMA as required. - Decide on inter-state assistance and cooperation

4.5 Karnataka State Executive Committee (KSEC)

The SEC assists the KSDMA. The State Executive Committee established under under Section 20 of the DM Act, is headed by the Chief Secretary of the state Government with other Principal Secretaries of such departments. The Pricipal Secretary Revenue Department (DM) is the Member Secretary. It has the responsibility for coordinating and monitoring the implementation of the National Policy, the National Plan and the State Plan as provided under section 22 of the Act. It has the following structure.

4.5.1 Structure of Karnataka State Executive Committee for DM

SL No	SEC Members	Designation
1	Chief Secretary to the Government of Karnataka	Chairperson, Ex-Officio
2	Addl. Chief Secretary/Development Commissioner	Member
3	Principal Secretary, Finance	Member
4	Principal Secretary, Energy	Member
5	Principal Secretary, Agriculture	Member
6	Principal Secretary, RDPR	Member
7	Principal Secretary/ Secretary, Home	Member
8	Secretary Revenue (DM)	Member Secretary

The State Executive Committee has been reconstituted vide Govt. Notification RD 22 TSY 2012 dated 19-4-2013

Powers and Functions of Karnataka State Executive Committee	
<ul style="list-style-type: none"> • Control and Restrict Vehicular traffic in the affected area • Remove debris, search and rescue operations • Provide shelter, food and all the services as per standards prescribed in the national authority and State authority • Give directions to the concerned department and district authority or other authority to take steps for rescue, evacuation, or providing immediate relief saving lives or property • Direction to departments make available resources for emergency response, rescue and relief. • Require consultants and experts • Construct temporary structures or bridges or demolish unsafe structures which are hazardous to public • Ensure NGO activities • Disseminate information to public 	

4.5.2 Operations of Karnataka State Executive Committee

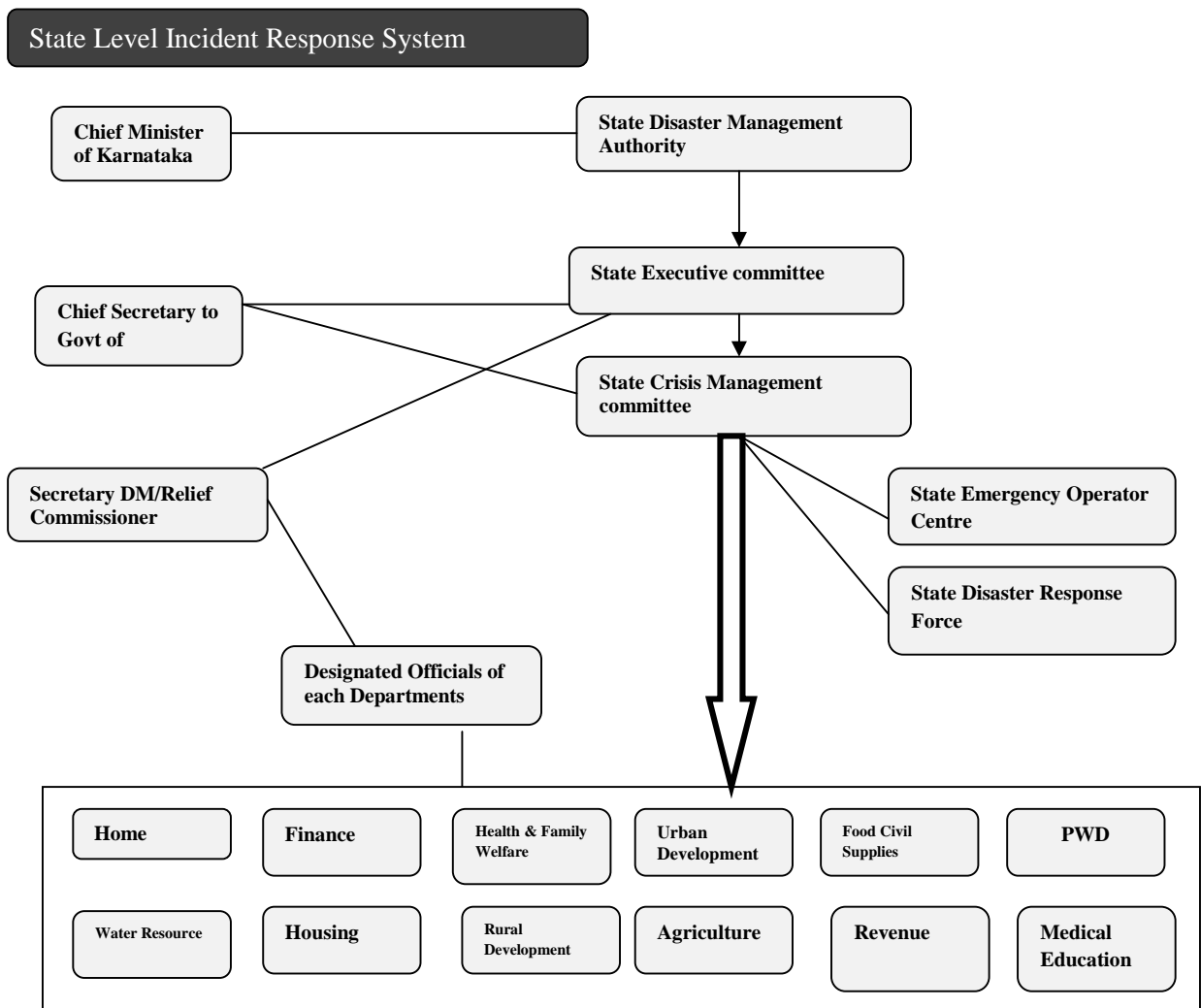
Periodicity of Meeting		Objective of Meeting
Non-Crisis time	As often as necessary, but at least once in three months	<ul style="list-style-type: none"> - Review progress of planning and approve plans - Review progress of prevention, mitigation and preparedness activities as per the state plans - Draw up actions for further prevention, mitigation and preparedness activities
During crisis	As often as necessary till crisis managed	<ul style="list-style-type: none"> - Monitor the status of response - Guide, support direct early response activities - Review resource availability and plan for getting resources if situation warrants - Provide a state for support if required

4.6 Karnataka State Crisis Management Committee

The Chief Secretary of the state is the Chairperson of the State Crisis Management Committee. The SCMC gets activated in the event of a crisis. The Chief Secretary is the Incident Commander at the state level and will formulate the response teams/Crisis Management Groups as per the type and severity of the crisis

State Crisis Management Committee Functions:
<ul style="list-style-type: none"> • Coordinate with activities of the concerned departments during a crisis situation; • Review the contingency plans of each Department and assess the efficiency of the contingency plans of the departments; • Guide and direct the Crisis Management Groups of each administrative departments as and when necessary; • Assess the severity of the crisis and recommend for relief; • Give directions to the concerned administrative departments when the crisis required to be attended by more than one department; • Inter-departmental Coordination during crisis management; • Give specific directions to Department to take immediate measures during crisis when it is severe in nature; • To call for meetings as and when required

4.6.1 Organization Structure of State Level Incident Response



4.6.2 State Crisis Management Committee

The SCMC gets activated in the event of a crisis. The Chief Secretary is the Incident Commander at the state level and will formulate the response teams/Crisis Management Groups as per the type and severity of the crisis. (Refer para 4.9)

4.7 Institutional Framework for Metropolitan Cities

In the larger cities (say, with population exceeding 2.5 million), the recommendation of the second Administrative Reforms Commission has suggested that the Mayor, assisted by the Commissioner of the Municipal Corporation and the Police Commissioner to be directly responsible for Crisis Management. It has now been accepted by the Government

4.8 District Disaster Management Authority (DDMA)

The District Disaster Management Authority (DDMA), headed by the District Commissioner, with the elected president of the local authority (ZP) as the Co-Chairperson shall act as the planning, coordinating and implementing body for DM at District level and take all necessary measures for the purposes of DM in accordance with the guidelines laid down by the NDMA and SDMA. It shall, inter alia prepare the District DM plan for the district and monitor the implementation of the State policy, the State Plan and the District Plan. DDMA shall also ensure that the guidelines for prevention, mitigation, preparedness and response measures laid down by the NDMA and the SDMA are followed by all Departments of the State Government at the District level and the local authorities in

the district. It may set up the following for effective management of natural and man-made disasters in every district.

Ñ Advisory Groups

Ñ Expert Committees/Task Forces

DDMA Structure for the Districts having City Corporation in the District Head Qtr

SL No	Members	Designation
1	Deputy Commissioner of the District	Chairperson
2	President of the Zilla Panchayat	Co-chairperson
3	Commissioner of City Corporation	Member
4	Chief Executive Officer of the Zilla Panchayat	Member
5	Superintendent of Police of the district	Member
6	District Health Officer of the District	Member
7	Executive Engineer of the Zilla Panchayat of the District	Permanent Invitee
8	Joint Director of Agriculture	Permanent Invitee
9	Addl. Deputy Commissioner of the District	Member Secretary

This structure of the DDMA has been constituted vide Govt. Notification No. RD. 156 ETC 2010 dated 08-01-2013

DDMA Structure in the remaining Districts

SL No	Members	Designation
1	Deputy Commissioner of the District	Chairperson
2	President of the Zilla Panchayat	Co-chairperson
3	Chief Executive Officer of the Zilla Panchayat	Member
4	Superintendent of Police of the district	Member
5	District Health Officer of the District	Member
6	Executive Engineer of the Zilla Panchayat of the District	Member
7	Joint Director of Agriculture	Member
8	Addl. Deputy Commissioner of the District	Member Secretary

Powers and Functions DDMA

- Prepare Disaster Management Plan including Response plan
- Implementation of national/state policy and district plans
- Ensure prevention, mitigation and preparedness measures undertaken by the departments and bodies
- Give directions different authorities at district level to take measures for prevention of disasters
- Lay down guidelines
- Monitor and implement disaster management plans prepared by the departments at district level.
- Lay down guidelines for departments for integration of measures in the development plans and projects
- Review of capacity building plans and training
- Community training
- Update the district disaster and response plan
- Set up early warning systems
- Provide technical assistance
- Ensure building bye-laws for safety
- Provide information to state authority
- Encourage NGOs
- Establish stockpiles of rescue materials at shorter notice

4.9 State Crisis Management Committee

SCMC Members	Designation
Chief Secretary of Government of Karnataka	Chairman
Additional Chief Secretary and Development Commissioner of Government of Karnataka	Member
Principal Secretary to Government, Home Department	Member
Principal Secretary to Government, Finance Department	Member
Principal Secretary to Government, Medical Education Department	Member
Principal Secretary to Government, Agriculture Department	Member
Principal Secretary to Government, Food and Civil Supplies Department	Member
Principal Secretary to Government, Revenue Department	Member
Principal Secretary to Government, Water Resources Department	Member
Principal Secretary to Government, Housing Department	Member
Principal Secretary to Government, Rural Development and Panchayat Raj Department	Member
Principal Secretary to Government, Urban Development Department	Member
Principal Secretary to Government, Health Department	Member
Principal Secretary to Government, PWD	Member
Director General & Inspector General of Police	Member
Director General of Police Fire & Emergency Services	Member
Commissioner, Agriculture Department	Member
Commissioner Food & Civil Supplies Department	Member
Director, Municipal Administration	Member
Director, Medical Education Department	Member
Director Health & Family Welfare Service Department	Member
Chief Engineer (Communication & Building) North/South (depending upon Jurisdiction)	Member
Chief Engineer Water Resources Development Organization (WRDO)	Member
Commander K&K Sub area	Member
Director, Karnataka State Disaster Management Centre, Bangalore	Member
Director, Factories & Boilers	Member
Director, India Meteorological Department, Bangalore	Member
Secretary, Revenue Department (Disaster Management)	Member Secretary

4.10. District Crisis Management Committee

The members of District Crisis Management Group are as follows:

1. Deputy Commissioner	Chairman
2. Head Quarters Assistant to Deputy Commissioner	Emergency Officer
3. Superintendent of Police	Member
4. District Commandant, Home guards and Civil Defense	Member
5. Regional Fire Officer	Member
6. District Health Officer	Member
7. Deputy Chief Controller of Explosives	Member
8. Regional Environmental Officer	Member
9. Commissioner, CMC	Member
10. Regional transport Officer	Member
11. Executive Engineer, Public Health Engg. Dept	Member
12. Information and Publicity Officer	Member
13. Joint Director of Agriculture	Member

14.	Trade Union Leader	Member
15.	Deputy Director, Animal Husbandry & Veterinary Services	Member
16.	Executive Engineer	Member
17.	Chief Engineer	Member
18.	Assistant Commissioner	Member
19.	Senior Inspector of Factories	Member Secretary

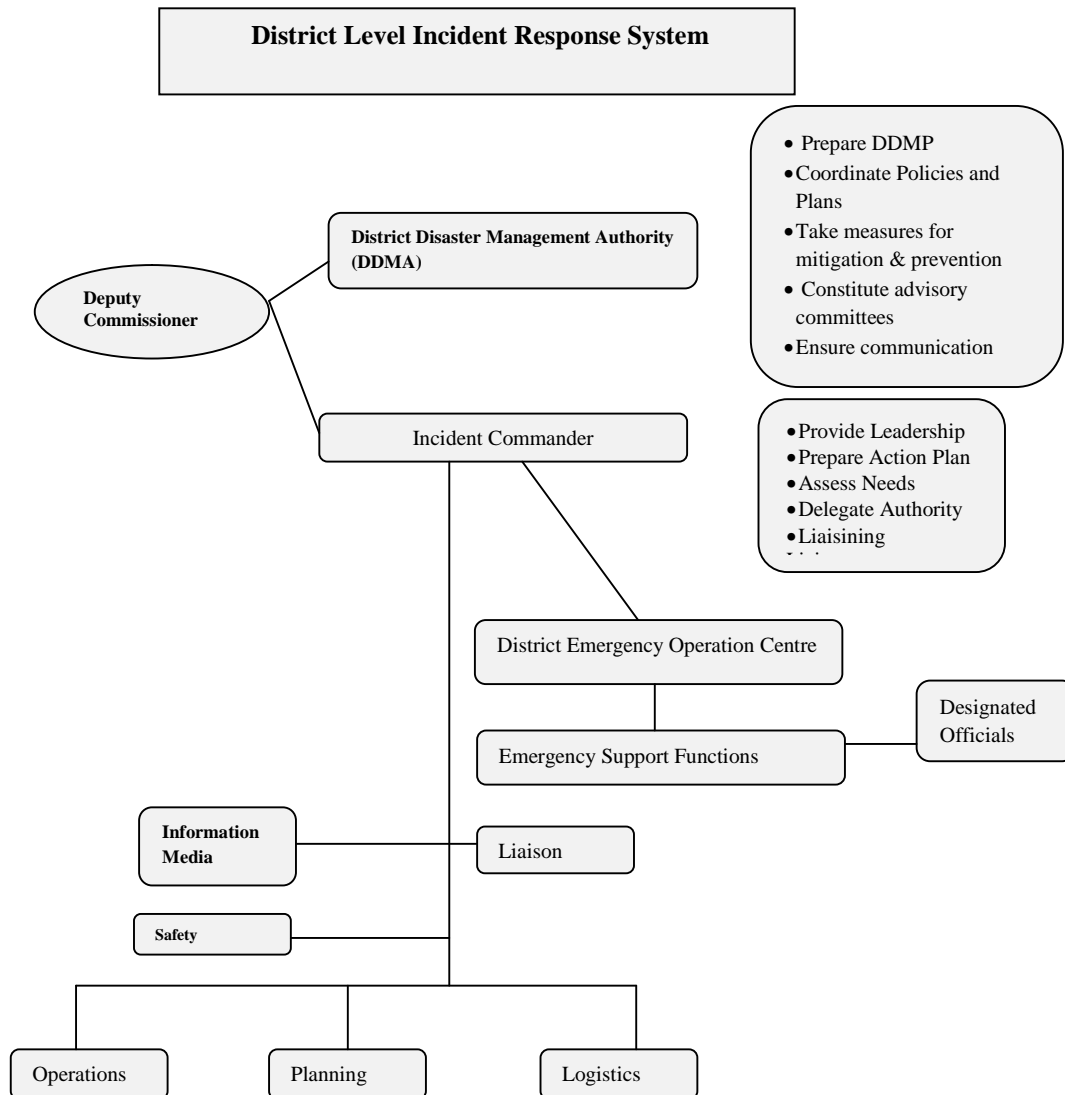
In addition to the above the following authorities have been included as permanent invitees:

1. Assistant Commissioners of Sub Division
2. District Surgeon
3. Executive Engineer, National Highways
4. Superintendent Engineer PWD
5. Superintendent Engineer, MESCOM/CHESCOM
6. All the Tahasildars of the District.
7. All the Dy. SPs and CPIs in the District.
8. All the SI of Police Department

Powers and Functions of DDMA during Crisis/ Response

- Give directions different authorities at district level to take measures for prevention of disasters
- Lay down guidelines
- Monitor and implement disaster management plans prepared by the departments at district level.
- Lay down guidelines for departments for integration of measures in the development plans and projects
- Review of capacity building plans and training
- Community training
- Update the district disaster and response plan
- Set up early warning systems
- Provide technical assistance
- Ensure building bye-laws for safety
- Provide information to state authority
- Encourage NGOs

District Level Incident Response System



4.10.1 Local Authorities (PRIs, ULBs and Development Authorities etc.)

Local authorities are assigned an important role at every stage of Disaster Management at the local level. For the purpose of DM Act, local authorities would include Panchayat Raj Institutions (PRI), Municipalities, District and Cantonment Boards and Town Planning Authorities which control and manage civic services. These bodies shall ensure capacity building of their officers and employees for managing disasters, carrying out relief, rehabilitation and reconstruction activities in the affected areas and shall prepare DM Plans in consonance with guidelines of the NDMA, SDMAs and DDMA. Specific institutional framework for dealing with disaster management issues in mega cities will be put in place. These include Municipalities, PRIs and all other local Development authorities and Functions of the local authority.-(1) Subject to the directions of the District Authority, a local authority shall-

Functions of Local Authorities under DM Act 2005

- a) Ensure that its officers and employees are trained for disaster management;
- b) Ensure that resources relating to disaster management are so maintained as to be readily available for use in the event of any threatening disaster situation or disaster;
- c) Ensure all construction projects under it or within its jurisdiction conform to the standards and specifications laid down for prevention of disasters and mitigation by the National Authority, State Authority and the District Authority;
- d) Carry out relief, rehabilitation and reconstruction activities in the affected area in accordance with the State Plan and the District Plan (2) The local authority may take such other measures as may be necessary for the disaster management.

4.10.2 The State Disaster Response Force

As per the State Disaster Management Act 2005, National Disaster Response Force (NDRF) has been set up.

9 battalions are placed at different states depending on vulnerability. The State of Karnataka is being served by Guntur company based at Vishakhapatnam and Pune Team based on Pune. These response companies are in touch with the State Government. 2 acres of land has been granted at Yelahanka for positioning one battalion of NDRF at Bangalore. NDRF is in possession of the land, civil work is under progress. In addition, As per Disaster Management Act 2005, the State Disaster Response Force (SDRF) in lines with NDRF is being raised in the State. As per the G.O No. OE/183/KA.A.SE/2012 dated: 18-9-2013. 4 companies of SDRF are being raised sharing personnel from KSRP/KSISF and Fire and Emergency Services. The process of raising these companies is under progress and the training to these companies is provided by the NDRF and equipment will be provided under the SDRF funds.

Inter-action with the Armed Forces

The services of Armed Forces is necessary for the purpose of search, rescue, evacuation operations during the major disasters which cannot be handled by the district / state administration. The Revenue Department(DM) has attended the meeting called by Armed Forces for Civil Administration to ensure co-operation between civil administration and army. Action is being taken on the front.

4.10.3 Line Departments of the GoK

Following departments of GoK are identified for taking up the activities of preparedness, mitigation, response and rehabilitation.

- Department of Revenue(DM) & Department of Food and Civil Supplies
- Department of Rural Development and Panchayat raj and Urban Development
- Department of Education(Primary, Secondary and Technical Education)
- Department of Health & Family Welfare and Animal Husbandry and Veterinary Services
- Department of Home(including Fire and Emergency Services, Home Guard, Civil defence)
- Department of Industries and Commerce and Factories and Boilers
- Public Works Department and Irrigation Department
- Department of Animal Husbandry, Fisheries
- Departments of Port and Harbour
- Department of Social Welfare, Department of Backward Classes & Minorities, Department of Women and Child Development
- Department of Agriculture and Department of Horticulture
- Department of Forest, Ecology and Environment
- Department of Information and Publicity

These departments not only play the role at the department related disaster management but also at the district level .

Karnataka State Natural Disaster Monitoring Centre(KSNMDC)

KSNMDC has been set up under the Science and Technology Department Since Secretary Revenue Department (DM) is the nodal Officer with reference to the any disaster, calamities etc, decision is taken to attach the KSNMDC to the Revenue Department (DM) during 2014-15. This was set up for the following objectives:

- KSNMDC provides with regular monitoring of rainfall data
- Provides early warning during floods to the stake holders
- Under take a detailed study on remote sensing data and ground water status.
- KSNMDC is actively involved in the preparation of memorandum of loss and damages

4.10.4 Role of CDM, Administrative Training Institute (ATI)

The CDM at ATI Mysuru has been involved in organizing a series of training programmes, mock drills, TTX, DDMP and on different areas of disaster management and conducted specific action research studies and documentation. It is involved in preparing DDMP & SDMP. Four well experienced faculty members are working in the Centre. The institute has hostels with necessary infrastructural facilities and a well-equipped library. The institute also has Computer and Internet facilities. It has large network of institutions in the state and national level viz., IISc, NITK, NIMHANS, NIDM, NDMA, CFTRI etc.

4.10.5 Role of National Cadet Corps, National Service Scheme, and Nehru Yuva, Kendra Sanghatan

Among the community, the youth are best placed in the community to be involved in disaster management initiatives. Youth based organizations such as Nehru Yuva Kendra Sangathan (NYKS), the National Cadet Corps (NCC), the National Service Scheme (NSS) and other local youth clubs will be involved in community based disaster initiatives. GoK will support initiatives to build capacities of the youth to manage disasters in the communities.

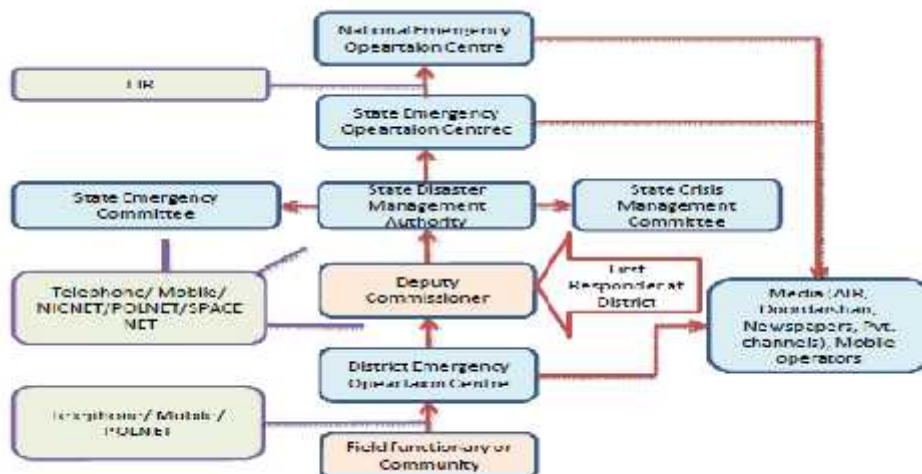
4.10.6 Non Government Organisations (NGOs)

NGOs including HAM Radio Network, Indian Red Cross Society, CARE, Home guards, Scouts and Guides, Sri Swami Vivekananda Youth Movement, Rotary Club, Trusts, Community Based Organisations including Community Structures set up under the Schemes such SJSRY, SGSY, Resident Associations, Lions club, Rotary club, NYKS, International and other NGO's, Self-help Groups etc.

4.10.7 Other Research, Technical and Educational Institutions

Karnataka state is known for housing specialised institutions such as CFTRI, DFRL, NITK, IISc, KSNDMC, IMD, ISRO, KRSRAC, GSI, Geographical Survey of India, SJCE, NIE, NIMHANS, VTU, MEG, Coast Guard, Engineering and Technical institutions, including private organisations, MAH units and Government departments. These institutions will be utilised for Research and Development activities in the area of disaster management.

4.11 Communication Structure for Disaster Management



4.11.1 Karnataka State Emergency Operation Centre (Free toll No. 1070)

State Emergency Operation Centre (SEOC)/Control Room shall be the nerve centre for coordination and management of disasters. They shall be the physical location from where coordination of response, relief and restoration will take place. They shall function 24x7 and shall be equipped with contemporary technologies, communication infrastructure facilities and adequate

human and material resources. Under the network, the KSEOC is directly connected with the NEOC/Control Room of MHA at the National level. The district EOCs/ Control Rooms are connected with the respective State EOCs/Control Room. Suitable personnel are selected and imparted training in the operation of Control Rooms will be posted to man these EOCs/Control Room and it does the following functions;

- (i) Transmitting information about the development of a crisis as a result of natural disaster on continued basis to the Chief Secretary and Principal Secretary Disaster Management Department, GoK .
- (ii) Receiving instructions and communicating them to appropriate agencies for immediate action.
- (iii) Collection and submission of information relating to implementation of relief measures by the Chief Secretary and Principal Secretary Disaster Management Department, GoK.
- (iv) Keeping the State level authorities apprised of the developments on a continuing basis.

4.11.2 Modernization of Emergency Operation center (EOC)

- The EOC will have to monitor continuously the preparedness and the response capacity of each district as per the details given in the DDMP. A constant review of the district situation will imply making provisions of such services and facilities, under the government as well as the private sponsorship, at the district level so that these can be mobilized at a very short notice.
- It will be difficult for the EOC to maintain an inventory of all the resources at the state level. Therefore, identification of agencies and institutions, for locating inventory items for specialized services becomes an important function of the EOC. EOC will also ensure the availability of the inventory items as and when required.
- For instance, speed boats/rescue ships for rescue operations can be located with Irrigation department, Navy, Coast guards at different locations. The EOC/District Control Room can press these boats from the nearest locations into relief operations during emergencies. It will be useful if the state agencies such as Irrigation Department in consultation with other agencies like Coast Guard have a special plan for locating these facilities.
- Similarly, civil hospitals can be equipped for trauma care with mobile trauma vans and CT scan facilities, so that each district will be in a position to handle such emergencies, and the mobile trauma vans can be mobilized from few adjoining districts at a short notice during disaster.

4.11.3 Coordination between EOC and District Control Room

The need for coordination in disaster management between different levels of government, is based on the necessity for having a unified command, and coordinated action by all the agencies. The objective is to ensure that state action is organized in a disaster situation to:

1. Effectively and efficiently meet needs
2. Avoid waste and-duplication of effort
3. Ensure that resources are distributed equitably and to areas of need.

Priorities must be clearly defined and understood by all agencies. This is mainly done at the state level, while preparing the standard operating procedures for each department, during the disaster cycle. Effective coordination is largely dependent upon an effective data collection, processing and reporting machinery.

The link of the District Control Room with the EOC will be through:

- Hotlines, VSAT, Telephones, fax, NICNET.

The flow of information between EOC and DCR may be described under two scenarios viz., During Disaster and under Normal Conditions. Flow of Information between EOC, DCR during normal conditions

- Emergency Operations Centre (EOC)

- Regional Commissioner
- District Control Room (DCR)

Operations Room: The room where all DM operations are planned, managed and executed. The Ops room should be equipped with the following facilities:

Analysis Room and Data Centre: Analyses information received from other EOCs by the GIS experts, statisticians and data analysts to consistently revise the DM plan as more information arrives from the disaster site and the needs and ground situation changes. The Planning Chief manages the analysis of data

Emergency Information Centre (EIC): Collects and disseminates disaster related information to the media and general public. It is equipped with a few computers and display systems. The EIC updates the Call Centre Staff manning the help lines.

Facility Centre: Has equipment for documentation, photocopy, scanning, faxing

Communication Area: Has radio communication on VHF, Low Band, HF and Amateur radio frequencies and all other communication equipment. Hotlines to SEOC, CM Office, Chief Secretary Office Help lines operate from this area. The SEOC will explore outsourcing the help lines to BSNL or Others.

Reference Library: Research material to support staff and personnel at EOC

Coordination Area: For contact with various centres of distribution of relief material such as back up transport, food and other material, shelters, medical aid centres, and list of hospitals and doctors At the Back end there are static/mobile communication access platforms to use the communication and IT equipment for inter/intra network connectivity

Currently in many districts:

- The DEOCs are set up and function only during the disasters.
- Communication facilities are available

The SEC will ensure the set-up and functioning of the DEOCs 24X7 in each district. This will include:

1. Identifying and filling the gaps in equipment/technology in each district DEOC
2. Staffing all the positions
3. Capacity building of key staff

4.11.4 Minimum Facilities in the EoC

SL No	Facility	Numbers
1	Multiple screen wall mounted display	1
2	Computer terminal	4
3	Laptop with encoding/streaming card	2
4	IP Phone	10
5	Hotline : VOIP (voice over IP) connected via satellite as CUG	1
6	Server (10 GB capacity)	2
7	LAN switch	1
8	Router	1
9	VSAT with equipment	1
10	INMARSAT SAT Phone	2
11	State/district maps	All
12	Bulletin and white boards	2

4.12. Mock Drills

Mock drills are conducted in order to prepare the departments and district administrations including the community to respond effectively during any disaster situation. Mock drills provide experiences and feedback for better learning to do search and rescue and safe evacuation of the people likely to be affected by the disasters.

All concerned line departments, private organisations, SDRF/NDRF and ATI together with IRTs comprising Police, Fire services, Home guards, Civil Defence, Medical etc., will conduct mock drills on various disaster situations annually. For floods/flash floods these will be carried before the monsoon period. For earthquakes, landslides etc., such drills will be done in the month of April/ May itself. Mock exercises will be carried out for assessing and evaluating preparedness machinery including manpower and equipment. These are conducted at the Industries, Major public buildings, high visibility and densely populated locations for the benefit of lessons.

Steps in Mock Drills (Refer NDMA guidelines for detailed SOPs)

- Organising a stake holder conference to decide the purpose of the Mock Drill. Stake holders could be the district administrations, line departments, Para-military forces, community, NGOs and those likely to be affected.
- Developing table top exercise that includes simulated scenario and roles and responsibilities of the responders and others.
- Functional mock exercise.
- Annual mock exercise.
- Post exercise actions.

These mock drills are organised at every level starting from schools, hospitals, public buildings, industries, dams, festivals and any events that may face disasters.

4. 13. Resource Inventory

CDM, ATI, Mysuru has prepared online DDMP templates where in almost all the resources required for disaster management are needed to be identified and updated. To facilitate this process we are completing the software in collaboration with NIC for continuous up-dation. Preparedness must start with inventory of all resources such as human power, machines, materials and funds. Important organisations in the state that would provide support in the form of any of these resources should be identified and a list of their addresses and contact details including the availability and accessibility to the defined resources in the respective organisations are documented and updated periodically by a team assigned for this purpose.

IDRN (India Disaster Resource Network) an initiative of the Government of India and NIDM/ NDMA should be updated by the districts so that the resources are identified well in advance for deploying during disaster. The district disaster management plans must be linked IDRN resources.

CHAPTER-5

LEVELS OF PLANNING FOR DISASTER MANAGEMENT AND MONITORING

5.1 Levels of DM Plan in the State

The Disaster Management Department (GoK) and KSDMA have been enforcing the Disaster Management planning at every level in accordance with the provisions of the Disaster Management Act-2005. In order to ensure that a DM plan exists at every level, the services of the Centre for Disaster Management (CDM), District Administrations, the Departments and other professional organizations are being dovetailed. Various levels of planning are listed below;

1. Karnataka State Disaster Management Plan
2. District Disaster Management Plan
3. Department Level DM Plan
4. Taluka/Hobli Level Disaster Management Plan
5. Town/City DM Plan
6. Village Level DM Plan
7. School DM Plan
8. Office/Organisational DM Plan
9. Hospital DM Plan
10. Onsite and Off-site DM Plan for MaH Industrial Units
11. Dam Safety Plans
12. Railway Disaster Management Plan.
13. Heritage Area Disaster Management Plan
14. DM plan for large congregations
15. Etc

5.2 Karnataka State Disaster Management Plan (KSDMP)

Strategy

The KSDMP has been updated and improved by appropriate addendums so as to make it more relevant and practical. The plan has evidently focussed more on the capacity enhancement which in turn has larger implication on preparedness, mitigation and response. Although, the State Government has been taking care of relief and response operations during disasters, greater attention and efforts are required for preparedness, mitigation and response. The following methodology is adopted to develop the plan;

- * Assimilating the lessons learnt from past disasters in the State, particularly, series of droughts and floods;
- * Reviewing the hazards and vulnerability of the State;
- * Reviewing the practices adopted in other countries trying to understand the various systems of preparedness, responses and recovery that have been implemented in various places;
- * Analysing and prioritizing the common elements of the preparedness, mitigation, response and recovery processes in order to have a well-thought and planned response and recovery mechanism for the State.

5.3 District Disaster Management Plan

Strategy

Prior to the preparation of plans, the district level officers were trained at ATI Mysore and a series of workshops were organised at every district to discuss the hazards, risks and vulnerability including the capacity. The Risk assessment tools were used. Expert groups were formed for each category of disaster. The CDM ATI Mysore based on the guidelines of DM Act-2005, NDMA and UNDP has prepared broad templates for Preparedness, Mitigation, Response plans of DDMP. These templates were modified based on the field needs for preparing the DDMP.

As provided under chapter-IV of the Disaster Management Act 2005, the District Disaster Management Authority headed by the District Magistrate/Deputy Commissioner has a crucial role in ensuring safety against natural and manmade disasters. This requires as a first step the preparation of disaster management plan focussing on prevention, preparedness, mitigation and response so that the risks are reduced and eliminated to the fullest extent. The Disaster Management Act 2005 therefore makes it mandatory for every district to have a foolproof District Disaster Management Plan which is constantly updated based on periodic rehearsal. The plan is a measure taken to ensure readiness of the district machinery to face any disaster situation with sufficient resources and capacity. Although every district may have different hazards and vulnerability, the plan has to take into account such variables. However, general steps and templates that are inclusive of all types of local variations are being followed while preparing the disaster management plan. (See annexure 5)

Plan for Preparedness includes the following tasks;

- Identification of Hazard, Risk and Vulnerable areas
- Setting up of Control Rooms and Warnings
- Inventory of resources such as safe zones, food, medical facilities, essential commodities, veterinary care, transport, drinking water, sanitation facilities etc.
- Funds
- Roles and responsibilities of Administration, Police, Health Officers, Fire services, Home-guards, army and all the line departments
- Community Preparedness

Mitigation plan includes the following;

- Structural Measures(Long-term and short-term)
- Non-structural measures
- Short term and long term measures

Plan for Response during the Disaster includes the following tasks;

- Search and Rescue
- Evacuation of affected to the safer places
- Providing Relief shelters and management of relief operations
- Monitoring and reporting
- Crowd control
- Media management: Co-ordination among the functionaries and media for collection and dissemination of authenticated information.
- Cleaning of debris etc.
- Disposal of dead bodies and carcasses
- Distribution of relief materials including compensation
- Psycho-social care, trauma counselling

Reconstruction Plan

- Closure of relief camps
- Restoration of infrastructure and livelihood to normalcy

5.4 DM Plan at Department and Organisation

Strategy

As per Disaster Management Act 2005, every Office/Institution/Department shall have a practical disaster management plan to protect the employees and people including the assets from loss or destruction. CDM ATI Mysore has been imparting training to all Group A and B Officers including PSUs to orient them on basic steps in DM. Following indicative templates are used while preparing the DM Plan.

The plan includes following areas:

Preparedness

- Hazard, Risk, Vulnerability, Analysis of each floor and every room inside the building and area outside the building.
- **Resource Mapping:** Resources within and outside the building are identified and mapped. The gap between required resources and existing resources will be worked out and an action plan will be prepared.
- Formation of DM committee
- **Creation of incident response system-**This includes safety officer control room, floor coordinator, First Aid team, Search and rescue team.
- **Evacuation** – This includes SoPs to be followed by teams and coordinators and the area to be used for evacuation. A rehearsal plan floor wise shall be practiced.
- **Emergency medical plan,** a record room for safety and security of office documents should be planned.
- For different disaster scenarios like fire, bomb threat, earthquake etc., the response mechanism should be worked out.

5.5 School/College DM Plan

Strategy

As per the Disaster Management Act-2005, it is mandatory for every school/college to have a disaster management plan. Disaster Reduction begins at School. Schools are the best places for building a culture of prevention and disaster resilience. The examples of school disasters in cities of India such as Kumbakonam, Delhi, Nainital, Bhuj etc., have exposed the large extent of vulnerability of schools.

The CDM ATI Mysore is providing awareness and training in collaboration with fire service and other Departments/organisations to the principals, HMs, NSS/NCC Officers and school teachers. It has been revealed by the teaching community that the infrastructure in schools and colleges including the structural condition of majority of the school and college buildings including Hostels is found to be simply inadequate to provide the life safety against natural and manmade disasters. The school community needs necessary capacity building in structural and non-structural mitigation. The capacity building initiatives could be training and non-training interventions.

The training on planning for disaster risk reduction, rehearsal, mitigation, response. Non-training activities could be ensuring basic infrastructure services such as appropriate building plan, bye-laws, stair case, exit gates, evacuation routes, first aid, drills, safety equipment and apparatus such as fire extinguisher, first aid kit, stretchers, robes etc., maintenance and repairs in these schools don't find priority among other activities. Therefore protection of school children and teachers is in dismal state.

The malfunctioning of fire extinguishers, absence of fire alarms, un-awareness regarding safe escape routes are other issues expressed by our teaching community. After interacting with over 400 school and college teachers comprising Principals/HMs/Teachers, NCC/NSS Officers etc., all them have explained multiple problems of schools and colleges. The problems start from unsafe location, poor construction, no compound walls, no gates with security, haphazard electrical connections, no registration of visitors at the entrance, no fire alarm bell, single exit, single staircase, poor maintenance and repair of buildings, vehicle/traffic movement around the school, over filled school bus/van/autos etc., It is an immediate necessity to prepare for disaster safety in schools and colleges.

5.6 Taluka/Hobli Level and Town/City Disaster Management Plan

Strategy

For the purpose of DM Act-2005, local authorities would include Panchayati Raj Institutions (PRI), Municipalities, District and Cantonment Boards and Town Planning Authorities which control and manage civic services. These bodies shall ensure capacity building of their officers and

employees for managing disasters, carrying out relief, rehabilitation and reconstruction activities in the affected areas and shall prepare DM Plans in consonance with guidelines of the KSDMAs and DDMAAs. Specific institutional framework for dealing with disaster management issues in mega cities must be put in place.

These include Municipalities, PRIs and all other local Development authorities and Functions of the local authority.-(1) Subject to the directions of the District Authority, a local authority shall-

- (a) Ensure that its officers and employees are trained for disaster management;
- (b) Ensure that resources relating to disaster management are so maintained as to be readily available for use in the event of any threatening disaster situation or disaster;
- (c) ensure all construction projects under it or within its jurisdiction conform to the standards and specifications laid down for prevention of disasters and mitigation by the National Authority, State Authority and the District Authority; (d) carry out relief, rehabilitation and reconstruction activities in the affected area in accordance with the State Plan and the District Plan (2) The local authority may take such other measures as may be necessary for the disaster management.

5.7 Village/Community Level DM Plan Strategy

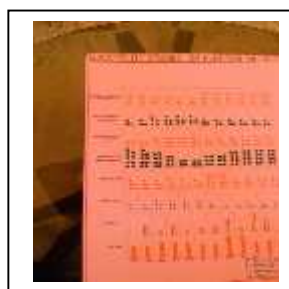
Local opportunities and constraints can be better understood by the local communities themselves who therefore need to be involved in the identification and resolution of disaster vulnerability issues. The Village and Block level disaster management plan shall be prepared by the Local Community facilitated by the concerned Officers of line departments such as Revenue, PRIs, Police, PWD, Irrigation, Industries, NGO, Community leaders, Local experts and senior citizens, youth groups etc. At the village level, it is crucial to enable the community, GP members, Youth, women SHGs, Sthree Shakthi Group, School Teachers/Anganawadi workers, Health workers etc., to be part of the members of the Disaster Management plan for preparedness, mitigation and Response. The steps in the preparation of Village/Block Plan would be similar to District Disaster Management Plan. The community members shall be associated with various DM teams such as Village DM Team, Evacuation Team/Relief Team/Rescue Team/First Aid Team, Mitigation Team, Mock Drill Team. The Officers of the Government at the Local/Block level and the community representatives need to be trained frequently twice in a year to perform the tasks of Disaster Management.

In the context of disaster risk management, a community can be defined as people living in one geographical area, who are exposed to common hazards due to their location. They may have common experience in responding to hazards and disasters. However, they may have different perceptions of and exposure to risk. Groups within the locality will have a stake in risk reduction measures. Following strategy is adopted;

1. Organising Local Community Members(Men, Women, Youth, SHG, Officials of TP/GP/ULB/Rev/PWD/Fire/Police/etc.)
2. Training the above members on Basic Disaster Management skills and Roles and Responsibilities before, during and after the disaster and Local Action Planning
3. Building the Appropriate Rapport, Coordination and Team spirit among the members
4. Hazard, Risk, Vulnerability of the Village/Block: Survey, Analysis and Mapping
5. Data on Past History of Disasters
6. Preparedness Plan: Teams and Task forces including readiness of the teams and resources
7. Mitigation Plan: Structural ((Housing Type, Irrigation channels/Tanks etc.) Non-structural (Community preparedness, Coordination, Capacity Building, Training etc)
8. Loss and Damage Assessment
9. Rescue, Relief and Rehabilitation

Following risk assessment tools are used

1. Hazard Identification and Seasonality
2. Frequency v/s Impact of Disaster
3. Past History
4. Hazard and Resource Map
5. Ranking
6. Transact
7. Ven diagram etc



5.8 Hospital DM Plan

Strategy

Every hospital shall have a onsite and offsite Medical Emergency Management Plan. The DHOs and Medical Officers of Health Department are undergoing training at CDM, ATI, Mysore. During the training, the medical officers and DHOs have expressed lack of facility and preparedness in almost all the hospitals. Therefore, the Departments of the Health and Family Welfare and Medical Education together should initiate adequate emergency medical care in all the hospitals. All Medical Officers and DHOs including para-medics should be trained in disaster management, specifically medical emergency planning. ATI has trained about 400 Medical Officers in the last 3 years whose expertise can be used for preparing hospital DM plan.

Hospital DM plan must include preparedness, mitigation, medical relief and rehabilitation. Focus should be on first-aid, mass casualty management, epidemic management. The plan shall enable the medical professionals to take any steps to minimise the loss of life by providing medical relief. Hospital disaster management plans must be audited and updated based on the feedback from public. Many district and taluk level hospitals do not have minimum facilities for mass casualty management and burn injuries. These gaps must be addressed through the implementation of plans.

5.9 Onsite and Off-site DM Plan for MaH Industrial Units

Strategy

The CDM in collaboration the Departments of Factories and Boilers and MaH Units and other expert organisation are involved in necessary training on Chemical/Industrial Disasters Management and making them to prepare both onsite and offsite Plans.

- Industries involved in the production or transportation of inflammable, hazardous and toxic materials should have a mandatory responsibility for preparing an off-site plan and communicating the same to district collector. Simulation exercises should be undertaken in the adjoining communities.
- Poison centres should be established in every civil hospital and in the hospitals near the industrial estates with facilities for detoxication.
- All transport of hazardous and toxic materials should be communicated to the RTO.
- All pipelines carrying hazardous and toxic materials should be equipped with devices to check any leakage or metal fatigue.
- Rehearsal plan shall be prepared by every MaH Unit

5.10 Dams- Emergency Action Plan

Strategy

Design, construction, financial, maintenance and inspection of dams are intended to minimize the risk of dam failures. Situations may develop sometimes leading to dam failures structural or operational – the central water commission facilitates dam safety practices that will help reduce the risk to lives and property from the consequences of potential dam failures. Dams fail catastrophically during extreme weather conditions, a phenomenon that affects the people, infrastructure and the environment. Concerted efforts are required from all departments to protect the lives and the property. Therefore emergency action plans (AP) for dams as per the guidelines of the CWC and those laid

down in the dam safety bill must be adhered to by the WRD and others who are responsible for dam safety.

Steps in EAP – Dam safety

- Identify and determine inundation area
- Prepare inundation maps and flood vulnerable areas
- Identify situations that could trigger emergency
- Evaluate warning time
- Activate DDMA, departments, local bodies and the people for assistance in EAP
- Communication system- internal and external
- List all the persons and entities in case of dam distress
- Conduct meetings and finalise EAP
- Submission of the plan to state
- Make necessary revisions and update annually

Status of Emergency Action Plan (EAP) of Dam Rehabilitation and Improvement Project (DRIP) Dams:

SL NO.	DAM	Tier-I Report Completed	Remarks
1	ALMATTI	Yes	EAP Report under preparation
2	NARAYANPURA	Yes	EAP Report resubmitted on dated 13.11.2018 to CWC after duly attending the Observations
3	BHADRA	Yes	EAP Report Sent back to MD along with CWC Observations on dated 19.02.2018.
4	HIDKAL	Yes	Received EAP Report after attending CWC Observations on dated 03.04.2018.
5	D.B. KERE	Yes	EAP Report under preparation
6	MALAPRABHA	Yes	EAP Report resubmitted on dated 13.11.2018 to CWC after duly attending the Observations
7	AMARJA	Yes	Tier-I Report Sent back to ACIWRM along with CWC Observations.
8	MASKINALA	Yes	EAP Report submitted to CWC on dated 21.03.2019.
9	HATTIKUNI	No	Tier-I Report under preparation
10	H.B. HALLI	Yes	EAP Sent to CWC after attending Observations.
11	UPPER MULLAMARI	No	Tier-I Report under preparation
12	LOWER MULLAMARI	No	Tier-I Report under preparation
13	KARANJA	Yes	Tier-I Report Sent back to CWC after attending the Observations on dated 16.03.2019.
14	BENNETHORA	Yes	Tier-I Report Sent back to ACIWRM along with CWC Observations on dated 25.09.2018.
15	CHANDRAMPALLI	No	Tier-I Report under preparation
16	HEMAVATHY	Yes	Tier-I Report submitted to CWC duly attending the observations made on dated 13.08.2018.
17	VOTEHOLE	Yes	EAP Report Sent back to MD along with CWC Observations on dated 28.07.2018.
18	MALAGHATTA	Yes	EAP Report under preparation
19	KRS	No	Tier-I Report under preparation
20	HARANGI	Yes	EAP Report under preparation
21	KABINI	Yes	EAP Report under preparation
22	CHIKKAHOLE	Yes	EAP Report under preparation

5.11 Railway Disaster Management Plan (RDMP)

Strategy

There is a constant increase in traffic density, number of trains with a large number of passengers, Poor management of railway crossings, poor safety in the railway stations, improper security for women and passengers in the trains etc., have led to increasing number of train/railway disasters.

Trains affected by floods, earthquakes, landslides, rains etc., are also increasing. Railways alone can not manage its disasters as disaster requires support from all stakeholders such as NDRF, SDRF, Civil Defence, KSFES, Ambulance service(108) etc., There should be good coordination with State

Governments/District authorities as well as other agencies while responding to disasters. The communication facilities between disaster sites and authorities/trains, hospitals etc. are also found to be inadequate. Railways at present are unable to access the disaster sites quickly within the shortest possible response time to provide rescue and relief during the 'Golden hour'- the first hour after the accident. Delayed arrival of relief equipments at the disaster sites also led to increased casualties, delayed restoration of rail traffic causing diversions and cancellation of trains. Railways may also be affected by other natural and manmade disasters such as flood, fire, earthquake etc. These disasters require huge support from the neighbouring administration namely from the district and sub-district levels in the vicinity of the accidents/disasters. Following steps may be followed for preparing railway disaster management plan at the divisional level.

- Objectives of Railway Disaster Management Plan
- Hazard Risk Vulnerability and Capacity Analysis of Railways
- Capacities/Resources for Railway Disaster Management
- Fire Fighting Facilities
- Medical Facilities
- Communication Facilities
- Passenger Information Display System (PIDS)
- Closed Circuit Television System

The mock drills shall be carried out in the following fields:

- i. Fire drills
- ii. Rescue of disabled persons
- iii. Detrainment of passengers between stations
- iv. Passenger evacuation from stations
- v. Use of rescue and relief train.

Mock drill shall be organized periodically. The aim is to make the staff fully conversant with all the equipments and emergency procedure. The frequency of mock drills will be once every month and participation of district administrations, KSFES, Civil Defence, Health, 108 Ambulance etc., should be ensured.

5.11.1 Railway Disaster Mitigation Plan

All vulnerable areas/locations/routes/trains/stations shall be identified. Suitable structural and non-structural mitigation measures should be undertaken. Examples: Vulnerable railway tracks shall be strengthened or repaired, vulnerable railway bridges should be strengthened/repaired. Non structural measures like training of personnel, communication system, early warning systems, IEC materials for passengers and personnel, etc., shall be ensured. The guidelines to educate the passengers about the precautionary measures to be taken at the time of accidents shall be provided in every train and station.

5.11.2 Railway Disaster Response Plan

Response mechanism must act rapidly and save the lives within the shortest response time(1 hr). Railway shall tie up with local administration, army, paramilitary, Civil defense, Homeguards, police, State Government Departments like transport, KSRTC, Medical, Hospitals etc. Latest Communication facility be ensured. Response teams shall be trained and mockdrills are conducted every month. To improve the response time, Accident Relief Trains (ARTs) and Accident Relief Medical Vans (ARMVs) could be stationed at close intervals (100 kilometers each).

5.12 Heritage Area Disaster Management Plan

The CDM ATI Mysore in consultation with HWHAMA and the State Archaeological Department prepared heritage area disaster management plan for Hampi and other heritage areas for protection and conservation of monuments.

5.13 DM plan for Large Congregations & Crowds

There is increasing incidence of stampedes in the places of worship, festivals, congregations & crowds. The CDM, ATI, Mysore is conducting training to all the officers of the departments to prepare crowd management plan for preventing the stampedes and other losses. The procedure and guidelines are given in the Annexure XIV

5.14 Environment and Disasters

The impacts of disasters, whether natural or man-made, not only have human dimensions, but environmental ones as well. Environmental conditions may exacerbate the impact of a disaster, and vice versa, disasters have an impact on the environment. Deforestation, forest management practices, agriculture systems etc. can exacerbate the negative environmental impacts of a storm or typhoon, leading to landslides, flooding, silting and ground/surface water contamination.

5.15 Climate Change and Disaster Risks

Climate change is frequently cited as one of the most serious environmental problems confronting human development. The Anthropogenic climate change is a consequence of industrialization. Climate change resulting from rising greenhouse gas emissions is expected to lead to increasing temperatures and changing rainfall patterns over the century that is, among other things, significantly affecting human livelihoods. Climate change itself is not a disaster but shall be leading to disasters by increasing the abrupt changes in climatic patterns, and increasing the frequency and intensity of natural disasters like floods, drought, cyclone, cloudburst, thunderstorms, etc. India is to suffer the rapid melting of Himalayan glaciers due to rise in temperature, resulting in abnormal flooding, etc.

5.16 Gender Concerns in Disasters

Women, children, old age and disabled are the most vulnerable flock during disasters such as tsunami, fire, earthquake, flood or any disaster as seen from the previous experiences. Participation of these groups in disaster management plan is crucial to prepare a gender sensitive and resilient plan. These groups need awareness and training. The plan shall take into account their needs. The image of the suffering woman and child during a disaster is a popular one in the media. Women are disproportionately affected by natural disasters, usually as a result of their gendered status in society. What the media does not show, however is that women are a vital part of disaster mitigation and response efforts, whether acting within their traditional gender roles, or transcending them.

5.17 Cyber Crime Management

The Home Department, GoK has notified that the Office of the Superintendent of Police/Deputy Superintendent of Police, Corps of Detective Head Quarters, Carlton House Bangalore as Cyber Crime Police Stations covering jurisdiction of whole of Karnataka to deal with the offences committed under the Information Technology Act-2000 and laws relating to Intellectual property rights and other related offences under any law for the time being in force vide notification No. HD 173 POP 99 Bangalore dated 13th September 2001. The Cyber Crime Cell started at Criminal Investigation Department (CID) Headquarters, Bangalore, on 21-10-1999 and it was declared as Cyber Crime Police Station on 13th September 2001 and become operational from 22nd October 2001 with jurisdiction over State of Karnataka. Functioning of Cyber Crime Police Station is supervised by Superintendent of Police, Deputy Inspector General of Police (Economic Offences) CID, Inspector General of Police (Economic Offences) CID under the overall supervision of Director General of Police, Criminal Investigation Department, Training, Special units and Economic Offences, Bangalore.

5.18 Animal Care Management During Disasters

During an emergency or disaster, taking care of large animals requires advance planning and workers that know how to handle and move animals to safety. Some of the advanced countries have separate Department of Animal Care to provide a rescue plan during emergencies.

Animals are left behind and their owners are desperate to save them. Many take their own lives in their hands to rescue their pets or evacuate their livestock, making response operations every more difficult for emergency management and responders.

Keeping view of this, the state and local governments need to include animal rescue and evacuation operations in their disaster planning. We need to update our emergency operations plans to include policies and procedures for rescuing animals in disasters or emergencies. We may identify some agencies that should be involved and who needed to be contacted, including a call-down list of veterinarians that work with large animals. A separate training programme on animal care and rescue are needed for emergency teams/volunteers to learn about equipment needed to extricate animals from precarious situations, medications that can be utilized to calm traumatized animals and generally how to behave around animals in distress.

5.19 Psychosocial Care in Disasters

CDM, ATI, Mysuru in collaboration with NIMHANS, Bengaluru has been organising workshops and training programmes on Psycho-social care during and after disaster to all the officers and staff.

Psycho-social care is a process that deals with a broad range of psychosocial problems and promotes the restoration of the social cohesion and infrastructure as well as the independence and dignity of individual and groups. It serves to prevent pathologic developments and further social dislocations. From the international disaster literature the following broad principles of Mental Health care has been identified.

- No one who experiences the event or witnesses the event is untouched by the event.
- Disasters result in two types of trauma, namely the individual and the collective trauma.
- Most people pull together and function during and after a disaster but their effectiveness is diminished.
- Disaster stress and grief reactions are normal responses to an abnormal situation.
- Many emotional reactions of disaster survivors stem from problems of living caused by the disaster.
- Disaster mental health services must be uniquely tailored to the community they serve.
- Survivors respond to active interest and concern.
- Interventions must be appropriate to the phase of the disaster.
- Support systems are crucial for recovery.

5.20 Monitoring

Monitoring is required throughout the phases of disaster management - from preparedness to receipt of early warning, to post-disaster activities in order to:

- Ensure preparedness
- Assess the requirements for relief
- Ensure transparency and accountability in provision of relief

The challenges of monitoring in a disaster situation are large because of the frequently changing field situations and needs.

5.20.1 Overview of Monitoring tools

Report	Purpose	Periodicity	Prepared by	Sent to
Dept. Preparedness report	<ul style="list-style-type: none"> • To inform about the preparedness actions undertaken by the department • To details support 	As per the departmental SOPs	Each District Level Department	DEOC and State Level department

	required from district/state			
Action taken report	<ul style="list-style-type: none"> To provide information on action following early warning 	Daily until warning withdrawing or disaster strikes	DC Chief Secretary	SEC NEC
First Information Reports	<ul style="list-style-type: none"> To provide state authorities information on situation and actions following disaster To provide support required by districts 	Once 24 hours following disaster	DC	SEC
Daily Situation Reports	<ul style="list-style-type: none"> To update on actions taken and support required 	6 hrs for first 3 days and daily till situation normalise	DC	SEC
Annual report	<ul style="list-style-type: none"> To appraise the state government of the functioning of the legislature 	Once a year	SDMA	

5.20.2 Departmental preparedness reports

- As a part of the preparedness phase, each department will develop their preparedness report structures.
- These reports will be sent by the department heads at the district to their state counterparts and the DEOC
- Based on these reports the Secretary (DM) or Departmental heads may confer with departments for support provided from the state
- These reports will identify periodicity of reporting
- All reports are submitted as per operating procedure to the DEOC

5.20.3 Action taken report

- Action taken report is meant to provide the state administration of the actions being taken on early warning – when the level of warning warrants action. The state also informs SEC during red alerts
- ATR covers :
 - Status of evacuation
 - Transit facilities
 - Supplies
- ATR is updated daily
- Based on the ATR the district administration will assess the need for support

Refer to the monitoring section of the SOP for report structure

5.20.4 First Information Report

DEOC sends First Information Report immediately to SEOC, NEOC, MHA and all designated authorities/agencies. FIR shall invariably give an account of the severity of the disaster, damage, and loss caused, locally available capacities, priority. The FIR will briefly summarize, Severity of the disaster

- a) Actions being taken locally
- b) Local coping capacities (including locally available resources)
- c) Immediate priorities for external relief required and approximate
- d) Quantities for the same
- e) Best logistic means for delivering relief
- f) Forecast of possible future development including new risks.

The First Information Report on occurrence of natural calamity shall be sent within maximum 24 hours of occurrence of calamity
Refer to the monitoring section of the SOP for report structure

5.20.5 Daily Situation report

A standardized form for reporting of situation report on daily basis has been prepared for the District, State and Notational levels by the NDMA. This format will be used by the Districts and States.

The District Administration submits the situation report to the State Government on six hourly basis during first three days thereafter daily till the situation come to normal. This reports is sent by the State Government to the Central Government in the same periodicity.

Refer to the monitoring section of the SOP for report structure

5.20.6 Annual Report

The purpose of the annual report is to appraise the State Government of the work of the State Authority

It is prepared by the SDMA and tabled at each house of Legislature

Contents :

- a) A statement of aims and objectives and vision of the State Authority
- b) The role and function of the State Authority
- c) The activities of the State Authority during the previous year

5.21 Disaster Scenario – Strategy for L3 Type Disaster

A large scale disaster of a flood in North Karnataka due to heavy rainfall and release of water from Maharashtra resulting into large scale loss and damage property, crop, houses, roads, rail, power supply, buildings, livestock and human loss.

Classification: L3 High Risk: In such event, the district or the state may not have the capacity to respond adequately and require the assistance from Central Government.

Early warning: Mechanism exist with IMD, CWC which flows to the State and District

Area affected: Several Villages, Several Taluks, Several Districts and States

Losses: High level of losses to all sectors and loss of livelihood

Population affected: Large population

Response: State Chief Secretary and Central level Secretary is the incident commander. SEOC & DEOC are activated

Resources: All departments and agencies including NGOs, Private firms and community

Relief activities : Assessment, Action Plan, SaR, Relief Camps, First Aid, Medical Aid essential services, food, sanitation, water, cloth, mental health, orphans and children and NGO support etc.

Note : L1 and L2 type of disasters which effect smaller area up-to district boundary, the disaster is considered as low to moderate risk. This is managed by the sub divisional or district level functionaries and resources. Normally DC will be the incident commander and may not require the assistance of the Centre.

CHAPTER 6

PREVENTION AND MITIGATION

6.1 Introduction

A hazard becomes a disaster only when it affects human settlements and causes loss of life and damage to property. In order to reduce the impact of such events through mitigation efforts, it is necessary to understand how such hazards become disasters. The extent of vulnerability of the area, people and property to a hazard or the probability of its occurrence defines the extent of risk. Vulnerability analysis and risk assessment therefore are essential forerunners for evolving appropriate preventive measures and mitigation strategies. Preparedness and mitigation plans, therefore, will have to be evolved locally to reduce the impact of the disasters.

The social and economic backwardness of the people both in rural and urban area force them to live in low lying areas, slums, illegal and unsafe buildings, flood zones. The recent building collapse in Mumbai where poor people lived is an example. Preparedness and mitigation strategies will have to be oriented, in such a situation, to higher degrees of community involvement and participation. In rural and urban areas the mitigation strategy shall be integrated with development, government programmes and projects

The key tasks in risk reduction before the disaster are

- Identifying the vulnerable areas
- Preventing development/construction along the flood zones/hazard locations
- avoiding habitation in hazardous areas;
- developing structures resistant to the onslaughts of hazards
- constructing flood, earthquake, fire and cyclone resistant housing
- constructing barriers to prevent coastal erosion
- developing the ability to rapidly evacuate hazardous areas or to shift residents to hazard-resistant structures
- regulating techno-legal regime

6.2 Disaster Mitigation

Structural measures such as the construction of protective works or alterations designed to diminish the vulnerability of the elements at risk, and non-structural measures, such as regulating land use and building codes and bye-laws, incorporating preventive aspects into development planning, and equipping line departments for damage reduction, can all reduce the impact of a disaster on a region or a population. Everything that is done to reduce or prevent the damages that a disaster may cause is called “mitigation of risks.” Such mitigation measures can be integrated with normal development activities. Mitigation is not, in fact, a cost. In the long run it pays for itself. And it does so in lives saved and in real money.

Planning Assumptions

- Risk reduction measures ensure long-term economic success for the community as whole rather than short-term benefits for special interests.
- Mitigation supports the building (or rebuilding) of communities as models of sustainable development, so that they are likely to recover more quickly from the economic impacts of disasters and the people are disaster survivors, not disaster victims.
- Risk reduction measures for one disaster must be compatible with risk reduction measures for other disasters.
- Risk reduction measures must be evaluated to achieve the best mix for a given location.
- All mitigation is local.
- Disaster costs and the impacts of hazards can be reduced by emphasizing pro-active mitigation before emergency response, i.e. both pre-disaster and post-disaster mitigation.
- Hazard identification and risk assessment are the cornerstones of mitigation.
- Building new Centre-State-local partnerships and public-private partnerships are the most effective means of implementing measures to reduce the impacts of hazards.

The main steps in mitigation strategy therefore, are:

- Risk Assessment and Vulnerability Analysis
- Applied Research and Technology Transfer
- Public Awareness and Training
- Institutional Mechanisms
- Incentives and Resources for Mitigation
- Land Use Planning and Regulations
- Use of RS, GIS, GPS

A mitigation strategy however, cannot be successful unless it has the backing and support of all concerned – the administrative machinery, the research institutions, the non-officials and the community. So, it also becomes imperative to have built-in institutional arrangements and/or legislative backing to oversee the mitigation strategy over a period of time.

6.3.1 Benefits of Mitigation

Benefit of saving lives in a house by constructing a earthquake resistant house by spending a little extra money cannot be weighed against any other benefit or expenditure. Hence, mitigation measures both structural and non-structural, short term and long term are crucial. The underlying assumption of mitigation is that in the long-term analysis, the expenditure on mitigation measures will prove to be cost-effective in terms of the savings generated via reduced losses and reduced deaths. The difference between the cost of mitigation and the cost of expected loss is a tangible financial benefit. A cost benefit analysis of any proposed mitigation measure is therefore essential to analyse the extent of loss-reduction.

6.3.2 Training Needs Assessment

One of the most critical components of the Mitigation Strategy is the training to be imparted to the officials and staff of the various departments involved at the state and the district level. Through the training inputs it is visualized that both information and methodology will be shared with the concerned actors. The training activity will be undertaken both at state level through ATI and at the district level through DTIs NGOs, government training institutions and institutions affiliated to universities and research centers.

The efforts of ATI & CDM, Mysore would include

1. Up gradation of training technology.
2. Refining the methodologies for Training Needs Assessment and Community Needs Assessment.
3. Updating Risk Analysis and Vulnerability Assessment.
4. Development of training materials and preparation of training modules.
5. Refining the methodologies for training and simulation both at the Centre as well as at the community level.
6. Undertaking training programmes and simulation exercises. Simulation exercises can be carried out once every year under both real time and compressed time conditions.
7. Introduction of GIS/GPS/RS at district levels.

6.3.3 NGOs, Private Sector

The Non-Governmental organizations play an important role in disaster management and provide valuable resources and expert manpower. NGOs generally work on well-defined problems and issues and hence, the resources are generally earmarked for specific activities and programmes. Particularly, in the mitigation efforts, it may therefore, be necessary that special efforts are made towards capacity building of NGOs to enable them to carry out disaster management activities.

6.3.4 Community Efforts at Mitigation

Local governments, NGOs, private sector organizations, businesses, and individuals each have important roles to play in mitigating the impacts of hazards. A conscious effort therefore, on the part of community level actors i.e. the LSGs, CBOs, NGOs including private sector, to adopt community based mitigation strategies, will strengthen and stabilize the efforts of development administration to evolve a comprehensive mitigation strategy. Since most mitigation occurs at the local level, partnerships must be formed among all levels of government and the private sector to develop consensus on mitigation issues. The review and updating of District Disaster Management Action Plan should include continuous review and planning of all such community mitigation efforts.

6.3.5 Community Level Training and Public Awareness Activities

CDM, ATI, Mysuru in collaboration with DTIs, DIETs, District Health and Family Welfare Training Center, District Agriculture Training Center will be organizing training on community based disaster management. For instance SHGs members will be trained on first aid, relief etc., similarly elected representatives of PRIs and ULBs will be trained. ANSIRD will be used for conducting community based disaster management training for elected members and others through SATCOM.SIUD will be used for training the councilors of ULBs.

6.3.6 Mobilizing Community Efforts for Mitigation Measures

The following activities are a suggestive list of mitigation efforts which need to be promoted, by encouraging local communities to undertake either at individual, household or community level to avoid loss of life, damage to property and crop.

1. Assist in disposal of properties located in disaster-prone areas e.g. flooding areas, landslides prone areas etc., and purchase of safe sites in return.
2. Technical guidance to rebuild or retrofit houses that can sustain the shaking of an earthquake or high winds and ensuring availability of appropriate materials through local government, hardware dealer or private building contractors.
3. Encourage households to undertake not only corrective repairs, but also preventive repairs.
4. Explain options for flood - proofing houses, like elevation, drainage etc.
5. Encourage compliance in construction with local building codes that pertain to seismic, flood, fire and wind hazards. Encourage compliance by the contractors and inspection by local authorities. Organise community level training with respect to these.
6. Determine ways to prevent hazards such as securing light fixtures, moving heavy or breakable objects to low shelves, etc.
7. Provide information specific to the community and encourage community exercises for Community Needs Assessment (CNA) and analysis of vulnerability and risk. Make source documents such as local disaster management plan, zoning and building norms, DDMAP available to local communities.
8. Promote appropriate climate for disaster insurance for life, property and crop.

6.3.7 Demonstration Houses:

At vantage points in villages or blocks, demonstration of housing units indicating the various technology features and options should be built by the Government/NGOs/Community. Put them into use in all the community buildings of public importance. This can be done in buildings like village offices, primary health centres, community centre, Anganwadi, Balwadi, etc. That way these buildings of high visibility and frequent local use would themselves be the medium for demonstrating the right level of strengthening features needed. At the same time, it would also emphasize the importance of having essential installations, such as schools where children are most vulnerable, protected.

6.4 Institutional Mechanisms

6.4.1 Disaster mitigation: Strengthening institutional frameworks

DM Act-2005 defines role and responsibilities of local authorities and the district administration to regulate and enforce the multi hazard building bye-laws and zoning regulations for safety against all types of disasters. Perhaps the most important need at the State level is to strengthen or develop capacity to undertake disaster mitigation strategies. After assessing and mapping natural hazards experienced in the past, and analyzing possible future risks and their potential social and economic effects, the adequacy of the existing disaster reduction measures can be evaluated. Therefore, it becomes essential for a permanent administrative structure which will monitor the developmental activities across departments, providing suggestions for incorporating necessary mitigation measures..

6.4.2 Incentives and Resources

State Government has created mitigation and response funds. The continued development and application of hazard mitigation measures will depend largely on the existence of stable funding sources and effective incentives that encourage mitigation in both the public and private sectors. More emphasis is needed on pre-event planning, action and on the development of state funding mechanisms.

6.4.3 Insurance

Ongoing insurance schemes such as Pradhan Manthri Fasal BimaYojana, yield and weather based insurance schemes under implementation need to disseminated to the farming community. The State Agriculture Insurance Company has been set up at Bangalore for facilitating for Agriculture Insurance for different crops when the crops fail due to drought, flood or any disaster. There are different schemes by GoI and GoK. Insurance is a mechanism for spreading the cost of losses both over time and over a relatively large number of similarly exposed risks. The introduction of disaster linked insurance should be actively pursued and insurance cover should be available not just for life but also for household goods, cattle, structures and crops. One of the difficulties in promoting disaster insurance is that those who are at highest risk have the least capacity to pay the premiums. Possibilities of group/community insurance should also be available, particularly for the marginalized communities.

6.5 Siting and Safety

Building safely begins by choosing a safe site. A lot of protection can be gained by careful location. For some hazards, like floods or land instability, siting is the most important protection measure. For other hazards, like earthquakes or cyclones, where a building is sited is less critical than how well it is built, but location can still be important in determining how strongly the hazard is experienced and the potential for follow-on hazards causing damage.

In locating a new town, village or housing estate, the hazard content is only one of the many factors that should be taken into account to make a successful settlement. It should therefore be considered at an early stage of site selection. The penalties of siting on ground with possible hazard problems should be balanced against the advantages of locating these for other reasons. When a large site is needed, it is possible that some areas within the land chosen will be safer than others. Therefore, sensitivity to the use of land within the settlement will be important

6.6 Role of Media in Mitigation

The media acts as the link between the common man and technical information about the risk and the hazards. They absorb and transform technical information provided by either experts or mediators and relay the information to the public in a simple manner. CDM ATI Mysuru imparts training to the officers of the Department of Information of Public Relations and media professionals on the role of media in disaster management.

The capabilities of communications, data-gathering, and data-management technology have leaped forward with our increasing knowledge about the origins and behavior of disasters, and the mitigation of their effects. Mass communication is inextricably entwined with disasters and hazard mitigation. The electronic and print media, reflecting great public interest and concern, provide extensive coverage of disasters. The print media, too, have benefited from advanced technology.

6.7 Structural Alterations for Buildings

Many of the public buildings are probably vulnerable to damage from earthquakes, cyclones, winds, or other hazards. PWD, ULBs, DAs etc., are the main agencies/departments responsible for construction and maintenance of all public buildings and installations. As a part of mitigation strategy, these agencies will have to consider both the structural and material standards so as to ensure that these structures and installation are sufficiently protected from the disaster impact.

Apart from adopting the building codes, the conceptual design should take into account the following:

- Location of the building
- Zoning and building codes requirements
- Functional relations between various sections
- Geometry, shape or composition of the building
- Structural system
- Building materials
- Vulnerability to specific disasters
- Possible impact of disasters on occupants
- Type of beneficiaries or users
- Special needs of beneficiaries or users
- Nature of occupancy by beneficiaries and users – residential, non-residential.

At the same time, it is possible to reduce the vulnerability of existing buildings through minor adaptation or alteration, thereby enhancing the safety of these facilities and installations. The usual methods for retrofitting existing structures generally include the insertion of the following elements:

- Walls on the outside of the building
- Buttresses
- Walls in the interior of the building
- Portico fill-in walls
- Specially anchored frames
- Covering of columns and beams
- Construction of a new frame system.

6.8 Drought Mitigation Measures for Karnataka

Soil Moisture Conservation	Cropping System	Nutrient Management	Soil Management	Crop Management
1. Ponds 2. Tanks 3. Agave barrier 4. Stone wall 5. Compartment bunding 6. Open Wells 7. Bench terrace 8. Gravel Mulch 9. Crop residue mulching	1 Akkadi 2. Strip cropping 3. Integrated farming 4. Agri-Horti	1 Penning 2. Green leaf manuring 3. Organic matter application 4. Tank silt application	1 Profile mixing 2. Deep ploughing	1 Seed hardening 2. Higher / Lower seed rate 3. Maize stalk cutting Blade cutting in ragi

Basic principles of moisture conservation

- To prevent soil erosion, as soil is the medium of storage
- To increase in situ moisture conservation
- To facilitate smooth disposal of surplus water to avoid the ill effects of water stagnation

Techniques encouraging in situ moisture in take by facilitating infiltration opportunity time

- Compartment bunding
- Tied ridging
- Deep tillage
- Broad furrow and ridges
- Gravel sand mulch
- Pebble mulch
- Retention of crop residues on the soil surface
- Green manuring
- Vertical mulching
- Run off and run of concept
- Scooping outpour cultivation
- Dead furrows

Crop Management

Length of Growing Period – choice of cropping system

Length of Growing Period	Cropping system
< 75 days	Grasses, shrubs, silviculture, Mono-cropping of short duration pulses
75 – 140 days	Mono-cropping
140 – 180 days	Intercropping
180 - 240 days	Double cropping
> 240 days	Multiple cropping

LGP is the period in days during a year or season when precipitation (P) exceeds half of the potential Evapo-transpiration (PET) during vegetative phase till soil moisture storage meets 25% of PET during maturity/harvesting stage of the crop.

Suitable cropping systems based on rainfall and water availability period

Rainfall (mm)	Soils	Water availability (Weeks)	Potential cropping system
350-600	Alfisols & shallow Vertisols	20	Single Kharif cropping
350-600	Aridisols & Entisols	20	Single cropping either in Kharif or rabi
350-600	Deep Vertisols	20	Single rabi cropping
600-750	Alfisols, Vertisols & Entisols	20-30	Intercropping
750-900	Entisols, Deep Vertisols, Alfisols & Inceptisols	>30	Double cropping with monitoring
>900	Entisols, Deep Vertisols, Alfisols & Inceptisols	>30	Assured double cropping

Contingent Crop Plan for aberrant weather situations

When the rains are delayed

- Use short duration varieties
- Sow sunflower, cowpea or horse-gram instead of finger-millet.
- Transplant seedlings instead of direct seeding

- Dry seeding when the land is ready but dry at normal sowing seasons.
- Increase the seed rate to get more population as late sown ones do not makes much growth.

If rain stops after germination

- Intercultivate to remove weeds
- Remove week seedlings and reduce population
- Irrigate from farm pond water
- Gaps fill after rains revive and top dress with nitrogenous fertilizers.

If rain stops before stipulated time

- Irrigate from farm ponds
- Intercultivate to reduce evaporation
- Mulching with organic residues, including removed weeds from the fields

Crops and Cropping Systems for dryland areas

Red soil areas

Double cropping systems

Cowpea (May) – ragi (August), sesamum (May) – horsegram (September)/Transplanted ragi, groundnut (May) – Transplanted ragi (September), jowar (April) – ragi/horsegram.

Intercropping systems

Pigeonpea (2 rows) + ragi (10 rows), maize + pigeonpea (1:1), pigeonpea (2 rows) + groundnut (8 rows), pigeonpea (1 row) + jowar (2 rows), pigeonpea (2 rows) + sesamum (10 rows), castor (1 row) + groundnut (8 rows).

Black soils

Double cropping systems

Sunflower (*Kharif*) – safflower (*Rabi*), bunch groundnut (*Kharif*) – *Rabi* jowar, green gram/black gram (*Kharif*) – *Rabi* jowar/safflower, setaria – cotton.

Intercropping systems:

***Kharif* season:** Hyd. Bajra + Pigeonpea (2:1), Groundnut + Pigeonpea (3:1).

***Rabi* season:** Safflower + Bengal gram (2:4), *Rabi* Jowar + Bengal gram (2:1).

Nutrient management under drought condition

- 🌱 Band placement of fertilizer preferably seed-cum-fertilizer drill
- 🌱 Application of N in splits
- 🌱 Fertilizer composition should be balanced to suit the crop requirement
- 🌱 Organics like FYM, Compost, Crop residue, Green manures etc. should be liberally applied
- 🌱 Where ever possible, bio-fertilizer is to be used like P-solubilizers (PSB)
- 🌱 *In-situ* moisture conservation helps to increase the nutrient use efficiency

Green leaf manuring to mitigate drought

Advantages

- ❖ Good yields compared to crops grown with only chemical fertilizer(including more fodder yield)
- ❖ Better quality grain and fodder
- ❖ Benefits to following crops
- ❖ Less irrigation water is required as the soil structure improves
- ❖ Ploughing is made easier as the soil is loosened Reduced weeding, and disease and pest problems

Disadvantages

- ❖ Need labour and access to green leaves and water needed or space to grow them, many farmers do not have such trees on therein land, and cannot get the labour to collect and incorporate leaves.

Short-term/Immediate measures

- Execution of labour-oriented schemes for employment generation and implementation of relief and development works – National Rural Employment Guarantee Act (NREGA) programme
- Good weather code – encashing production from good rainfall regions and managing low rainfall regions through transport of food grains from high production areas
- Establishment of Fodder/Seed/Grain banks
- Establishment of Cattle camps near water points

Long-term measures

- Long-range forecasting of rains (2-4 months in advance)
- Regional analysis of rainfall patterns
- Crop weather watch programs
- Value-added Agro-Advisories
- Integrated watershed development
- Land use diversification
- Water harvesting
- In-situ moisture conservation

Risk Management and Crop Insurance

- Government sponsored National Agricultural Insurance Scheme (NAIS) in operation since Rabi 1999-2000.
- Insurance linked to crop loan
- Varsha Bima Yojana (Rainfall Insurance) being implemented by some insurance companies like ICICI- Lombard, IFFCO-Tokio, AIC on Pilot basis.

Weather Index Insurance – Rainfall**Advantages**

- Indemnity based on rainfall not on an individual
- Applicable to several crops
- Speedy settlement and transparency
- Weather indices could be deficit or excessive rainfall

Disadvantage

- Recurring droughts would make it more expensive

6.9 Coastal Mitigation Measures**(Coastal Districts) Dakshina Kannada, Uttara Kannada and Udupi**

Most of the erosion commences at the beginning of monsoon and extends up to about 1 month. Regular sea wall construction, dropping of boulders, packing of sandbags is carried out as and when such incidence occurs. Quasi-natural methods such as beach nourishment, or artificial sand dune building, are often used, to attempt to restore an eroding beach, as well as protect development. However, these methods provide only temporary solutions, to chronic long-term erosion caused by the diminishing supply of sediment in the littoral system. They also require periodic renourishing during their 15 to 50 year life span.

Mitigation Measures for Coastal Erosion

Structures like seawalls, bulkheads, and revetments protect development, but are not intended to renourish or widen the beach. Erosion can occur in front of them because the natural movement of the shoreline gets affected. Such structures as breakwaters and jetties, which are designed, to protect

harbours and navigation channels from wave action or to stabilise inlets, can also cause erosion on the down drift side, if they do not include a sand bypassing system.

- Shelterbelt plantation
- Sea wall construction
- Strengthening of bunds along the estuary and backwaters

6.10 Flood Mitigation

Modifying susceptibility to flood damage and disruption is the floodplain management strategy of avoiding dangerous, uneconomic, undesirable, or unwise use of the floodplain. The tools used to implement this strategy are regulations, development and redevelopment policies, flood proofing and elevation.

6.10.1 Illustration- Flood Scenario in Bangalore and Other Urban Areas

Since 2005, flooding had worsened by unauthorized developments along three lakes. Choked drains led to residential areas being inundated, and traffic was severely affected. Thousands of office-goers were stranded on the city's waterlogged roads. Schools in the city were closed and several apartment complexes were flooded. Water entered some office buildings, including one of the offices of India's third largest software exporter, WIPRO. The flood left hundreds of people homeless and ailing due to various health problems and environmental challenges. Natural water tanks were breached.

Short term Measures

- Drain desilting & Vegetation removal at vulnerable locations
- Reconstruction of collapsed walls.
- Removal of encroachments in water ways, widening & regrading of drain bed to increase the carrying capacity.
- Modification / rerouting of drain alignments to establish connectivity between drains where necessary in tank bed areas.
- Construction of Kacha earthen drains to drain out water from low lying areas.
- Providing chain link fence to prevent dumping of debris/garbage into SWD and also any accidents.
- Formation of emergency squads equipped with mobile pumps and equipments round the clock etc.

Mitigation Measures

- Remodeling of drain cross section to cater for 5 year return period design requirements.
- Construction of bypass/cut off drains to prevent upstream water entering into low lying areas.
- Remodeling of inadequate vent size culvert/bridges that are obstructing the flow.
- Relocation of service lines that are laid inside the water way.
- Desilting & Development of existing water bodies
- Construction of new detention ponds.
- Identification & Development of flood plains.
- Providing chain link fencing to prevent dumping of debris / garbage into SWD.
- Formation of service roads on either side of drains to facilitate for routine maintenance, laying service lines, construction of buildings inside water ways etc.

Emergency and Contingency Measures

- Desilting work on priority basis.
- Existing dilapidated walls reconstruction on emergent basis.
- Strict instruction for proper safety measures at work spots.
- Contingency plan at vulnerable locations formulated and requisite permissions given to zones for taking up emergent works.
- Culverts/bridges with inadequate vent way taken up for remodeling on emergent basis.
- SWD project monitoring & supervision wing strengthened.
- Penal action against non performing contracting agencies.

- Pre cast element structures to be adopted for faster execution of culverts/bridges & drains.
- Well equipped control rooms have been set up and made functional round the clock at each zonal level

Regulations

This would include

- Not permitting unrestricted new development in the hazard prone areas
- Anchoring and flood proofing structures to be built in known floodprone areas
- Built-in safeguards for new water and sewage systems and utility lines from flooding
- Enforcing risk zone, base flood elevation, and floodway requirements
- Prohibition on development in wetlands
- Prescribing standards for different flood zones on flood maps.

To meet these requirements, local governments will have to adopt specific floodplain management or storm water management regulations into zoning and subdivision regulations, housing and building codes, and resource protection regulations.

Safe siting in flood hazard areas

In low-lying areas, close to the coast, and on flat land in river valleys, there may be a potential for coastal or river flooding. In geologically younger river valleys, in mountains, and foothills there may be a potential for flash-flooding.

It is important to check the history of flooding in the area. Wherever possible

- Map the extent of land covered by past floodwaters
- Get an indication of the depth of past floodwaters
- Find out about the severity of past floods; how much damage they have caused, how fast they flowed and how much debris they left behind and
- Find out how often flooding has happened, over at least the past 20 years.

Land morphology is the main factor in determining how safe a site is against floodwaters.

Flood proofing and Elevation

Flood proofing is the use of permanent, contingent, or emergency techniques to either prevent flood waters from entering buildings or to minimize the damages from water that does get in. Some of the techniques involve using water-tight seals, closures or barriers, using water-resistant materials, and temporarily relocating the contents of a building. Elevating a structure means raising it on fill, piers, or pilings so that it is above expected flood levels. Most new floodplain structures should be designed to incorporate flood proofing and/or elevation. Flood proofing could be applied retroactively (“retrofitted”) to existing structures.

6.11 Watershed Management

Watershed Management measures reduce overland run-off from agricultural lands to streams or other waters by improving infiltration of rainfall into the soil, slowing and minimising run-off, and reducing the sedimentation that can clog stream channels or storage reservoirs. These techniques are most commonly, used in agricultural areas. They include maintaining trees, shrubbery and vegetative cover, terracing, slope stabilisation, using grass waterways, contour plowing, conservation tillage, and strip farming. Some measures involve building structures to retain or redirect run-off. Several land treatment measures involve little additional costs to the farmer, and some, such as no till or minimum tillage, actually reduce costs. Technical and financial assistance is provided through government and international development organisations. Although the impact of an individual measure is limited, extensive watershed management programs can effectively reduce flooding in small headwater areas.

6.12 Earthquake Mitigation Measures

Both rural buildings shall be constructed using earthquake resistant methods. For simple masonry buildings, proper foundation, plinth & lintel beams, proper location of door and windows, corner reinforcement are the important measures. In multistoried RCC buildings, planning and designing as per BIS codes shall be undertaken.

Safe siting in earthquake areas

- Build structures on rock or stiff soil.
- The most important element of safe siting in earthquake prone areas is to avoid being affected by land instabilities.

6.13 Cyclones

Safe siting in cyclones prone areas

- Certain factors can make some sites more exposed than others.
- 320 Kms of Karnataka Coastal belt is particularly prone. Cyclones originate out at sea and become hazardous when they come ashore. They also drive the sea level up to cause coastal flooding.
- Estuaries and river deltas will flood during heavy rainfall associated with the cyclone.
- Exposed sites on the tops of hills or cliff tops. Winds can be up to 15 % stronger on elevated sites.
- Valley necks or open-ended valleys, through which winds may be channeled.
- When siting in areas that suffer from high winds:
- Select a sheltered site. Use any topographical effects or natural defences that may protect the building or settlement from the prevailing wind.
- Consider the orientation of the site. Shelter behind hills from prevailing wind directions.
- Create wind breaks by planting trees or making strong bush fences. Settlements with many trees experience lower wind speeds.
- The layout of the building on the site can also influence the way winds affect them. Generally, settlements that are built in close clusters are known to suffer more damage than those that have reasonable spacing between buildings. Large buildings can be used to shelter smaller buildings.

A guide to safer layout would include

- Site buildings some distance from adjacent structures (at least three times the plan dimension of the building).
- Site buildings in staggered formations rather than straight lines.
- Keep buildings away from tall trees that might fall down.
- Maximise street widths. Where possible they should be wider than 6m.
- In cyclone prone areas it is also important to site to minimise damage from floods, and landslides.

Shelter options for Cyclone Resistance

In addition to the various measures that can be covered under pre-disaster activity, another major initiative that can be taken is to ensure that least amount of damages are caused at the time of occurrence of a cyclone. This can be done by providing appropriate strengthening and construction resistant features in housing and building programmes to be taken up in different vulnerable areas.

The country is divided into various wind pressure zones, and the coastal areas with the frequent visitation of high velocity cyclones are specially identified, and there are specific design codes to provide the needed wind protection and cyclonic effects. The ABC of cyclone protection housing are:

- A – Anchorage
- B – Bracing
- C - Connection

There are several considerations to be made while designing a house in its three dimensional form, which are related to shape, orientation, height and positioning of openings in a building, for ensuring the least extent of damage during cyclonic storms. (Such details can be obtained from CBRI, IITs, HUDCO, NBO, BMTPC and other research institutions). The cyclone resistant shelters can be built at individual level or at community level.

Safe shelter

At a community level, the local administration has to provide temporary cyclone/mult-hazard resistant shelter. At the time of cyclone to the nearby villages. These shelters, with built-in safety against high wind velocity and heavy rainfall, should be at specially selected sites and within easy reach of the people most affected. It should have an all weather access. Educational buildings or places of worship may also be designed as safe shelters, for evacuation and temporary occupation.

The relief shelters can take care of populations ranging from 50 to 300 people (men, women and children). These are provided as multipurpose community facility spaces to be used as adult education, primary health centres, primary schools, vocational training centres, and community centres. These will be at elevated areas to be protected from floods and also with proviso for community kitchens, ensuring water supply, sanitation, battery operated electric supply and in some cases helipad landing facility on roof for relief supply etc. Initiative can also be taken to develop a low cost, anti-cyclone core unit, designed to provide safe secure deposit of personal belongings during cyclones, to each family in the existing villages. This would help to resume economic activity soon on return.

6.14 Epidemics

The Department of Health and Family Welfare and Municipalities in Cities together are the nodal agencies responsible for monitoring and control of epidemics. Local governments and municipal authorities also have a responsibility for taking appropriate steps in this context. Therefore, success of mitigation strategy for control of epidemics will depend on the type of coordination that exists between the Department and local authorities.

Mitigation efforts for control of epidemics would include

1. Surveillance and warning
2. Preventive and Promotive measures
3. Strengthening institutional infrastructure.

Surveillance and Warning

Karnataka has a unique system of surveillance and warning as far as rainfall, flood, drought, cyclones and lightening disasters. IMD and KSNDMC provide up-to-date information to the district administrations. Mitigation and prevention requires the following steps:

- Identification of areas endemic to certain epidemics must be routinely updated to access field requirements
- Identification of appropriate locations for testing laboratories
- Ensuring continuous flow of field data from both government establishments and private medical personnel
- Collating and analysing the data at regular intervals to assess epidemiological monitoring requirements.

Preventive and Promotive Measures

All departments in Karnataka including local bodies will prepare mitigation plans with fund requirements and seek approval from the respective heads of the department. In order to mitigate the possibilities of the outbreak of epidemics, the health and family welfare department shall encourage the local authorities and the communities to undertake certain preventive measures. The mitigation strategy would include:

- Building safety and Retrofitting of schools and life line structures
- Piped drinking water supply and water quality monitoring
- Vector Control programmes as a part of overall community sanitation activities
- Promotion of personal and community latrines
- Introduction of sewage and drainage systems
- Solid waste management systems
- Surveillance of water bodies and canal distribution network for control of malaria

Strengthening Institutional Infrastructure

- Promoting and strengthening community hospitals with adequate network of para-medical professionals will improve the capacity of the Health Department for surveillance and control of epidemics.
- Establishing testing laboratories at appropriate locations in different divisions within the state will reduce the time taken for diagnosis and subsequent warning.
- Establishing procedures and methods of coordination between Health Dept and local authorities.

6.15 Road Accidents

Unlike in the case of railways, road accidents are not investigated into. Findings of accident investigations will provide useful guidelines for evolving mitigation measures and developing safety standards appropriate to the ever-changing road traffic scenario.

Mitigation Measures

If the current provision of Motor Vehicle Act and other related legislations and regulations, including regulations on transport of hazardous and toxic materials, are strictly enforced, the incidence of road accidents will reduce drastically. The mitigation strategy therefore assumes that enforcement of such regulations will precede the measures suggested.

Strengthening Institutional Capability

- Strengthening the enforcement wing in Transport Commissionerate.
- Creation of adequate highway/traffic aid posts. At every major intersection on the highway, traffic aid posts should be set-up.
- Trauma care centers should be established at every 100 kilometers on the national and state highways.
- Every traffic aid post should have a hotline telephone connection with the nearest trauma care centers.
- Modern technology including speed monitoring equipments and computerisation of movement of vehicles with adequate checkpoints on the national highways should be introduced.
- Black spots should be identified and accidents to be reduced by mitigation
- Equipments for removal of accident vehicles from the highways should be easily accessible to the RTO, and the police.
- Considerable confusion exists because of multiple authorities and agencies involved in the regulation and monitoring of movement of vehicles on all roads. It is necessary to coordinate the roles of all such agencies through a single agency.
- Identify and designate routes for transportation of hazardous chemicals. Such routes should not pass through highly populated areas.

Strengthening Road Infrastructure

- Parking of vehicles on national highways and even on state highways should be strictly prohibited.
- Excavations on roads must be protected well, particularly in the night, with barricades, fluorescent signs and red lights.
- Special bays for parking of vehicles on trunk routes should be provided at strategic points with provision for food and other facilities.
- Public works department should concentrate on removal of bottlenecks on national and state highways in particular. Bridges should be widened before roads are widened.
- Efforts should be made to provide road dividers on all national and state highways on a priority basis.
- Efforts should be made to light up all national highways carrying excessive vehicle load.
- All unmanned railway crossings should be manned with signal facilities.
- All ghat roads should have adequate embankments on the valley side.
- The speed breakers and tipplers must have standard designs.
- Provision of laybys for all bus stops must be made mandatory with authority given to RTO to clear them off all encroachments.
- Information sign-boards should be provided giving the location of the nearest village, police station, hospital, ghat traffic position, petrol pump etc. at every traffic aid post.

Improving Regulations

- Insurance claims should be linked with compliance of all regulations related to vehicles and transport restrictions.
- All two wheeler drivers, including pillion riders must, always wear the right kind of protective head-gear.
- As the inter-state transport of goods has been increasing over the years, there should be a uniform national regulation on permissible loads.
- All vehicles carrying school children must be registered and provided with flashlights signs and designated halts. Regulations for overtaking such vehicles when they are stationary should be introduced.
- Vehicles with break-down on the highway must display a plate on a stand with a danger sign painted thereon in the front and rear. Every goods vehicle must have such plates with the stands and should be inspected either at the octroi points or by the RTOs.
- Simulation aided training should be adopted for drivers carrying hazardous and toxic materials.
- Every vehicle must be provided with hazard lights (blinking lights) which would warn drivers of other vehicles of the stationary vehicle. Reflectors and tail lamps should be made compulsory for handcarts, cattle driven carts, tractors,
- tractor and jeep trolleys, cycles, cycle-rickshaws and such other non-motorised vehicles not falling under Motor Vehicles Act
- Simplify the procedure under Section 140 of the Motor Vehicles Act for compensation to accident victims.

6.16 Fires

Quick Response Teams (QRT) formed by the Civil Defense, Fire Services, Home Guards, Police and Municipalities including Private and NGOs should be activated during fire incidents. Resources such as Fire Engines, Hazmat Vans, Rescue Vans, Ambulances, Hospitals in the private sectors, Industries, Health Department should be made available

quickly during fire incidents. These resources must be updated in the district IDRN and District Plans every year to ensure real time accessibility.

As a part of mitigation strategy, efforts should be made to

- Make fire fighting services available to rural areas outside the local municipal limits.
- Assisting municipal authorities not having fire brigade to establish such a service.
- Encourage agricultural marketing committees and cooperatives in rural areas to establish their fire services.
- Evolving methods of coordination between municipal fire services and industrial safety departments.
- Undertake community education and preparedness for fire fighting in areas where fire services will not easily available.
- In industrial towns, fire services should be equipped with protective clothing and fire fighting devices including masks, gloves etc. for dealing with chemicals and toxic materials.
- Special burns wards should be established in every civil hospital and in the hospitals near the industrial estates.
- Equipping fire services with communication facilities like wireless etc. and wherever such facilities exist, these should be upgraded.
- Computerized data management system should be introduced to keep the record of all fires including frequency, extent, fatality, economic losses etc.
- The roles and responsibilities of district administration, police, fire services and medical services should be clearly laid down.

6.17 Industrial and Chemical Accidents

Due to the statutory provisions, the industry is obliged to provide appropriate information to the community living in the vicinity of a hazardous plant/installation.

- Communication with the public is a joint responsibility of government, industry and the community. Rapport between them creates tremendous goodwill for industry.
- It is important to realise that a well-informed community is an asset to both the industry and local authorities as it would offer willing cooperation not only during an emergency but also in other development programmes.
- Need-based-The information provided should be need-based relating to HAZCHEM handled and the type of accidents/emergencies encountered in the industrial area to which the community belongs. Too much detail should be avoided.
- Regularity • An on-off approach must be avoided
- A regular system should be in place so that the community can seek information on its own as and when required. Further, a visible difference can only be ensured if awareness/education activities are undertaken regularly.
- Community Information Representative (CIR) A suitable nodal person may be designated by the LCG to function as a CIR and made known in the industrial area.

State Government in the Department of factories and Boilers must implement the following:

- Should have on-site and off-site management plans
- Industries involved in the production or transportation of inflammable, hazardous and toxic materials should have a mandatory responsibility for preparing an off-site plan and

communicating the same to deputy commissioner of the district. Simulation exercises should be undertaken in the adjoining communities.

- Poison centers should be established in every civil hospital and in the hospitals near the industrial estates with facilities for detoxication.
- All transport of hazardous and toxic materials should be communicated to the RTO.
- All pipelines carrying hazardous and toxic materials should be equipped with devices to check any leakage or metal fatigue.
- Small scale industries releasing toxic waste in water should be encouraged to set up common effluent treatment facility.
- A common format for chemical data sheets should be devised to collect information from all industries in the state and the same should be available with both fire brigade and police.
- Use experiences and resources of Oil companies such as MRPL, BPCL, IOCL, ONGC, HPCL and Private Oil companies.

Implementation of the Mitigation Strategy Document

The state Disaster Management Action Plan and the district disaster management action plans outline some of the preparedness and mitigation measures intended to respond to immediate requirements of the situation. However, a long-term planning exercise has to integrate these mitigation strategies with concrete mitigation plans for districts based on a cost-benefit ratios of the technical options.

The following issues need to be addressed

Policy Issues

- Administrative and legislative measures
- Mitigation regulations
- Incentives and resources for mitigation
- Conditions for relief

Administrative Issues

- Institutional and technical capabilities
- Enforcement
- Public information

Private Sector Issues

- Financing mitigation investment
- Insurance
- Safety standards

Research Issues

- Hazard mapping
- Efficient and effective technical measures
- Cost benefit analysis

Partnership Issues

- Community participation
- LSG and NGOs' role
- Training

Operating Procedure Guidelines for Warning

Loss of life and property is significantly reduced because of preparedness measures and appropriate warning systems. Indiscriminate warning may result in non-responsiveness of the people. From the District control room the warning will be disseminated to the blocks and from blocks to

panchayat offices. From the panchayat warning will be disseminated to the village warning groups by local means or through beating drums, ringing of bells, hoisting of flags or any method which can be easily visualised. The panchayat control room in charge is the Panchayat secretary. The block administration is the prime agency responsible for issuing disaster warning. Besides the police, irrigation, meteorological departments etc. will communicate the same to the Blocks.

Operating Procedures for Evacuation

Disasters by their very nature like flood, cyclone etc. requires evacuation of communities before hand to a safer place which was identified in the contingency plans at the blocks, panchayats as well as village levels. It is important to understand the nature of threat and the procedures to be adopted after receiving warning. All agencies involved in evacuation must have a common understanding of their roles and responsibilities in order to avoid confusion and panic behavior. Different situations demand different priorities and hence the responsibility for ordering evacuation is assigned to different agencies. All evacuations will be ordered only by the deputy commissioner, Police, and Fire Brigade or by the Industries Security Officer. For appropriate security and law order situations evacuation should be undertaken with assistance from village disaster management committee, village evacuation, rescue and shelter management task force members. All evacuations should be reported to the Deputy Commissioner or Superintendent of Police immediately.

6.18 General Guidelines for Evacuation

The selection of such safe sites is done keeping in mind the following:

- Shelter Sites are within one hour's walk (5 kilometer) of dwellings.
- The evacuation routes are away from the coast or flood-prone areas.
- Evacuation routes do not include roads likely to be submerged in flood, but may include pathways.

It is the responsibility of administration to ensure proper evacuation by seeking community participation along the following lines:

- Evacuation is undertaken with assistance from village disaster management committee, rescue and shelter management task force members and community based organisations (CBOs) like youth clubs for appropriate security and order.
- Care is taken to see that evacuation routes are not blocked.
- It is always preferable to encourage the entire family to evacuate together as a unit.
- In case of inadequate transport or limited time, encourage community for emergency evacuation in the following order:
 - Seriously injured and sick
 - Children women and handicapped
 - Old
 - Able-bodied

(An evacuation plan on a priority basis helps avoid stampede and confusion)

Emergency Evacuations Procedure

The families should be encouraged to assemble the following disaster supplies kit.

- Adequate supply of water in closed unbreakable containers
- Adequate supply of non-perishable packaged food and dry rations
- A change of clothing and rain gear
- Blankets, Plates, glasses, mugs
- A battery-powered radio, torch, lantern, matches
- Cash and jewellery
- Personal medicines

- A list of important family documents including ration card, passport, bank passbook address/telephone book (of relatives), certificates, driving license, property documents, insurance documents etc.
- Special items including foods, for infants, elderly or disabled family members.
- Ask people to shut off electricity, gas and water at main switches and valves before leaving.
- Ask people to listen to a battery-powered radio and follow local instructions.
- If the danger is a chemical release, then people should be instructed to immediately.
- In other cases, advice people to these steps is followed:
 - Wear protective clothing
 - Secure their homes. Close and lock doors and windows.
 - Turn off the main water valve and electricity.
 - Leave early enough to avoid being trapped.
 - Follow recommended evacuation routes. Shortcuts may be blocked.
 - Not to move or drive into flooded areas.
 - Stay away from downed power lines.
 - Animals may not be allowed in public shelters.
 - Community should set the livestock free.
 - If possible, the community may be advised to carry the livestock along.

(If the evacuation does not involve transportation by vehicles).

Procedure for Evacuation of Marooned persons

With all the administration intentions for early warning and evacuation, there may not be adequate time opportunity for evacuation of all. Communities' individuals may be marooned. In cases of marooned communities, the administration may decide to reach out these for providing relief supplies or may decide to evacuate them.

In case the administration decides to evacuate marooned persons:

- Evacuation must be carried out within the shortest possible time.
- The marooned persons must be transferred to transit camps
- Marooned people must be provided Water, Medicines, First-aid, Cooked food must be provided
- Inventory of Rubber boats in working condition made available to the responders
- Emergency transport for the seriously injured by Motorised boats
- The senior medical officer of PHC should accompany the rescue team along with required medical kit and ensure priority for shifting of those seriously injured or requiring immediate medical attention.
- Water supplied must be in accordance with acceptable standards of potable water. It is the responsibility of medical officer to check the water quality.

EVACUATION PLANNING DURING PREPAREDNESS

Responsibility: The Fire Services and Police to develop evacuation plans. The plans are developed in consultation with the Home Guards, Forest Protection Force and representatives of CBOs and NGOs working in vulnerable taluks.

Components of the plan:

- Vulnerability assessment - Identification of the taluks, regions, areas that are prone to disaster; Identification of population, households, livestock, crops and cropping pattern, water sources
- Mapping of resources availability for evacuation, search and rescue - community groups, CBOs, leaders, swimmers, boat drivers, infrastructure such as boats, cranes, earth moving equipment, helicopters, medical personnel, etc.
- Shelter identification - where transit shelters can be located
 - Camps should be located away from the coast or flood-prone areas

- Shelter sites should be within one hour's walk and three miles (5 km) of dwellings.
- Mapping the evacuation routes to the shelters
 - The evacuation routes should be away from the coast or flood-prone areas.
 - Evacuation routes should not include roads likely to be submerged in flood.
 - Evacuation routes should not be blocked.
- Identification of relief services - Operation of gruel centers, provision of drinking water
- De-mobilization plan
- Communication of the plan to communities
- Mock-drills

AGENCIES INVOLVED IN EVACUATION, SEARCH AND RESCUE AND THEIR ROLES

Scenario	Evacuation ordered by	Primary Agency	Secondary agencies
Scenario A: Fire Incident	Fire and Rescue Services	Fire and Rescue Services	Police
Scenario B: Landslide	Deputy Commissioner	Fire and Rescue Services	Police, Home Guards, NCC, community volunteers
Scenario C: Flooding	Deputy Commissioner	Fire and Rescue Services	Police, Home Guards, NCC, community volunteers, SDRF, NDRF, CRPF, CISF, Red Cross

Role of agencies/individuals in evacuation, search and rescue

Agency	Role
STATE LEVEL	
1 Chief Secretary/Secretary Revenue Dept	<ol style="list-style-type: none"> 1. Inform Chief Minister, SEC, SCMC 2. Direct DC to order evacuation, if required 3. Direct State level resources to the disasters site if required. Deploy Quick Response Teams (QRTs) 4. Communicate at national level for support if required 5. Send FIR and sitreps
2 Fire Dept	<ol style="list-style-type: none"> 1. Develop the evacuation and SAR plan 2. Lead evacuation and SAR activities
3 Civil Defense QRT	<ol style="list-style-type: none"> 1. Develop the evacuation and SAR plan 2. Coordinate with district administration and others such as NDRF, SDRF, Home Guards and Fire Services
4 Police Dept, Home Guards, Dept of Health and Family Welfare	<ol style="list-style-type: none"> 1. Be on alert to provide resources, equipments if required and ordered by Incident Commander of the state (Chief Secretary/Secretary). All resources sent from the state will report to the incident commander
DISTRICT LEVEL	
1 DDMA	<ol style="list-style-type: none"> 1. Direct preparation of an Evacuation plan (during preparedness) 2. Monitor implementation of the plan
2 DC	<ol style="list-style-type: none"> 1. As the IC, oversee the evacuation 2. Requisition for support of state/central level assistance if situation warrants 3. Order air operations – as advised by Fire Services/Police if situation warrants 4. Send sitreps to the state
3 Operation Chief of the IRS	<ol style="list-style-type: none"> 1. Coordinate evacuation and SAR from the district

		<ol style="list-style-type: none"> 2. Guide air operations- as advised by Fire Services /Police 3. Update IC on status
4	Fire Dept	<ol style="list-style-type: none"> 1. Develop the Evacuation plan in consultation with other key stake holders-fire dept., home guards, forest protection force and community representatives of the vulnerable areas 2. Primary agency during evacuation 3. Guide and lead task teams at the ground 4. Inform the operation chief of the status of evacuation-every 3 hours
5	Police, Home Guards, SDRF/NDRF/CISF/CRPF Armed Forces	<ol style="list-style-type: none"> 1. Secondary agency for evacuation 2. Support evacuation and SAR
6	Dept of Health	<ol style="list-style-type: none"> 1. Go with evacuation teams (as possible) and provide immediate first-aid to injured 2. Direct referrals of seriously injured to higher levels of medical care
7	Oil companies	<ol style="list-style-type: none"> 1. Coordinate with district administration 2. Keep the on-site and off-site plan updated in conformity with SDMP and DDMP. 3. Utilize emergency facilities created with district administration

6.19 Provisions for Women and Children during Disasters:

To increase the coping capacity of vulnerable sections of community, viz., women, adolescent girl, girl child, Department of Women and Child Development is implementing various schemes, programmes. These initiatives envisage to encourage Women Empowerment, gender equality, promoting their participation and leadership among others. To achieve these objectives, various programs are in place, for instance:

1. Subsidy on the loans – to encourage entrepreneurship among the women and also form Self Help Groups, formation of Sree Shakthi Groups
2. Education, Training – Schemes to assist to taking up job oriented courses to upgrade the skill sets of women
3. Financial assistance/Cash – to become self employed and also tide over difficult circumstances
4. Scholarship – to encourage meritorious students to pursue higher education
5. Nutrition Supplements– to ensure better health
6. Rehabilitation programs - Santhwana Scheme, Scheme of financial assistance for remarriage of destitute widows and Marriage of Devadasis

These initiatives aim to address the needs of Girl Child, pregnant women, mothers, Anganwadi Workers, Women Health Volunteers, the women living in the rural and tribal areas, ex-servicemen, physically handicapped, nursing women, Lactating mother, widows/destitute, Old age women, women self-help group (SHG), Women Entrepreneurs and Adolescent Girls. Special assistance is also given to the women and child belonging to Scheduled Caste (SC) and Scheduled Tribe (ST), Other Backward Classes (OBC), Socially and Educationally Backward Classes (SEBC) Minority Category and below poverty line (BPL).

In the event of pre and/or post disaster scenario, schemes that focus on women and child development need to be activated as recovery and coping mechanism phase. During pre and post disaster phases, throughout the state, these schemes should be mandated and

implemented by Women and Child Development, in association KSDMA and respective line department at district level. The respective Departments should priorities those schemes that help in building resilience among the vulnerable sections. Line Departments should implement these measures at district level in association with DDMA and Department of Women and Child Development.

Schemes for Girl Child

Department of Women and Child Development has been implementing schemes for developing and empowering the girl children who are socially and economically vulnerable.

Bhagyalakshmi : a flagship programme implemented by Government of Karnataka aimed at improving the sex ratio in the State by encouraging the birth of girl child in the Below Poverty Level (BPL) families.

Prohibition of Child Marriage: During pre and post disaster phase, with the assistance of District Administration and Civil Society Organization, the DWCD should maintain an effective vigil to ensure compliance with prohibition of child marriage and ensure effective implementation of girl child empowerment schemes such as Kishori Shakti Yojana at district level.

- **Sabala:** With the objective of empowering adolescent girls in the age group of 11-18 years, Rajiv Gandhi Scheme for Empowerment of Adolescent Girls (RGSEAG) - SABALA is implemented by DWCD. The scheme, in addition to improving nutritional and health status, aim to upgrade various skills like home skills, life skills and vocational skills of adolescent girls. During pre and post disaster phases, DWCD should encourage formation of SABALA groups to empower girl child in association with professional bodies and academic institutions at district level.
- **Kishori Shakthi Yojana (KSY):** Under KSY, 180 adolescent girls in each project are given 5 days residential training every year and supplementary nutrition is being provided to 2 adolescent girls in each anganwadi centre.
- **Balasanjivini:** To focus on rehabilitation and treatment of severely malnourished children Balasanjivini scheme introduced. An amount of Rs.750 is being given to meet therapeutic and medical needs of malnourished children.
- **Indira Gandhi Matrutwa SahayogaYojana (IGMSY):** To improve the health and nutrition status of pregnant and lactating women and their young infants, IGMSY a Centrally Sponsored Scheme has been introduced
- **“Beti Bachao Beti Padhao (BBBP)”** To control the decline of child sex ratio, this initiative has been launched by the Government The scheme aims around the strategies to be implemented for balancing the CSR (Child Sex Ratio). For an effective launch of the scheme, three types of districts were identified. These include the districts with a low CSR rate, the districts that have maintained CSR from a long time and others where the CSR keeps on fluctuating. DWCD in association with concerned departments should implement its Plan of Action right from Village level to better CSR
- **Namma Magalu Namma Shakthi for Girls:** This scheme envisages a) To Discourage early marriages and b) To Enhance the value of a daughter within a family, through insurance facility. DWCD in association with concerned departments at district levels, should ensure enrolment of all beneficiaries.

- Under **Kshera Bhagya** scheme 6 months – 6 yrs children are provided 150 ml milk for 3 days a week (15 gms skimmed powder and 10 gms sugar) Severely malnourished children are provided egg for 3 days and 200 ml milk for 3 days, children who do not consume egg are provided 6 days milk. Moderately malnourished children of 5 backward districts viz., Bidar, Gulbarga, Raichur, Koppal and Yadgir are provided egg for 3 days and 200 ml milk for 3 days, children who do not consume egg are provided 6 days milk.
- **"Multi- Sectoral Nutrition programme** to address the maternal and child malnutrition in selected High burden districts. The main aim of the scheme is to ensuring strong nutritional focus through Institutional and programmatic convergence and empowering families and communities for improved care behaviors.
- **"Bala Snehi Programme"** has been announced to make 10000 anganwadi centers child friendly so as to attract children to anganwadi centers, wall paintings relating to pre-school education . For this Rs.10.00 crores has been released to districts under head of account:2235-02-102-0-04(051)(general expenses). Rs.998.80 lakhs has been drawn till March 2017.

Child Centred Disaster Risk Reduction

It is the children and young people who are severely affected and during the disaster period, they are not able to get sufficient nutrition, access to learning and health care; but also suffer from emotional trauma. Hence, this chapter is incorporated into SDMP. Focus of this chapter is to focus primarily on 6 key thematic areas that are relevant for child survival, development and protection. Child population from 0 to 14 years age groups contribute to 26.5% and population above 65 years constitute about 6% of total population, indicating the significance of having child centered disaster risk reduction programmes in the state.

The basic understanding that stakeholder need to have about children and their vulnerability are:

- Children require special protection, especially nursing babies, infants and under-fives.
- Adolescent girls and women, and pregnant women in particular, bear an additional burden of vulnerability based on gender.
- Socio-economic status and minority group membership increase vulnerability.
- The family remains the chief source of protection for children. Separation of children from their families increases their vulnerability.
- Children are often overlooked in disasters and often their needs (food rations, medications, latrines, clothes and distances) are not taken into consideration.
- Children in shelters are potential victims (violence and sexual abuse).
- Children are subject to intra-family violence, especially in unfamiliar, stressful situations.
- Separated children require identification, tracing and reunification; new orphans require foster care.
- Children with disabilities need special consideration in disasters.
- The right to play, learn and care pertains, especially in the shelter context

The Non-negotiables, which can provide ample avenues and directions for all stakeholders to enable the children are priority during emergency situation.

1. Schools must be safe and education must not be interrupted
2. Child protection must be a priority before, during and after a disaster
3. Children have the right to participate and to access the relevant information
4. Community infrastructure must be safe, and relief and reconstruction must help reduce future risk

The Karnataka State Disaster Management Plan will further ensure implementation of following programs to demonstrate the importance of ensuring Resilience of the State for Disasters, especially for protection of children and adolescents in the age group of 0-18 years constituting about 11% of State population:

School Safety There is urgent need to strengthen risk resilience of schools in rural as well as urban areas of the state and that all school children across the state should remain safe from any kind of disaster risk as they access their right to education.

The program should addresses the vertical of school safety in a more inclusive and holistic manner in the national policy sphere and should adhere to guidelines prescribed under National School Safety Policy.

DDPI in association with concerned local authorities (Police, Home Guards, Fire Department) and Departments (DCWD, District Health Officer, PWD, ZP Engineering Section) and Civil Society based NGOs, should ensure that all schools in the State comply and implement the program to the prescribed levels (please refer to relevant policy documents, for instance, National & Karnataka State School Safety Policy.)

Hygiene Education program it has been recognized that improved hygiene practices and clean school environment are contributing factors in ensuring that children can enjoy an acceptable standard of health. Efforts to achieve clean school environment, cheerful and attractive classrooms and enthuse children with life skills can be complimented with Nali Kali Program as well. DDPI in association with State Department of Education, District Health Officer, DWCD, Sarva Shiksha Abhiyan will ensure the implementation of Hygiene Education throughout the state. .

Nali Kalli Program: meaning joyful learning method, introduced through a UNICEF assisted initiative focused on teaching methods that did not depend on books only. As result of such intervention, attendance has significantly gone up. DDPI though various agencies such as Sarva Shiksha Abhiyan, NGOs, DCWD will bring entire State is covered under this program. If need be, district administration assistance may be sought.

Multi-Purpose Cyclone Shelter will be strengthened to be effective at all time. To function as shelter during emergency and as community centre during normal times. The shelter management team will be trained to meet the needs of children. At present, Dakshina Kannada, Udupi and Uttara Kannada are developing their infrastructure to meet the cyclone disaster effectively, under the supervision of KSDMA. DDMA in association with DWCD, should impart training to concerned agencies for proper upkeep of this infrastructure and optimum utilization during pre and post disaster phases, from village to district level.

The WASH program in schools being presently implemented in all Districts with the involvement of Sarva Shiksha Abhiyan (SSA) of District Directorate of Public Instruction (DDPI) and District Administration. It will further be expanded to ensure that all schools in

the State will provide clean and safe drinking water and access to sanitation, even during emergencies.

School Mock drills will continue under the guidance of DDPI as being done now at district level. In the course of coming years, it will reach out to every village with support from National Disaster Response Force, Fire and Disaster Response Department, School Management Committee, Community Based Organizations, SHGs and other stakeholders. KSDMA should ensure the regularity of School Mock Drills through DDMA. Directorate of Information, Education and Training (DIET) will also monitor and ensure the implementation of School safety program at district level.

Capacity Building for Child Centred Departments

CDM ATI Mysuru has been identified for imparting training to all the Departments. All departments, such as District Directorate of Public Instructions, Department of Women and Child Development, Food and Civil Supplies Department, Health Department etc, involved with welfare of child shall be provided with suitable capacity building programs. Overall supervision of these programs can be entrusted to KSDMA. Capacity building will be based on the Training Need Assessment. This would involve mainstreaming of DRR and CCA into departments, for which the 5% of capacity building fund available under the SDRF grants provided in the 14th Finance Commission. This capacity building will be also one of the agenda of KSDMA.

Capacity Building of Children focused Civil Society Organisations KSDMA need to collaborate with related line departments to ensure that Civil Society organisations with their reach-out to communities, could support in transferring of knowledge and skills to work on emergency response, preparedness and mitigation activities, that would lead to resilience of communities. During the next 3 years period it is planned to reach out 70% of children focused civil society organisations in a phased manner.

Assisting Overall Development of Child Percentage of child population of Karnataka (11.21%, as per 2011 Census) is less than that of all-India level, but in comparison with other southern states, it is at the higher side. Department of Women and Child Development is entrusted with implementation of schemes for overall development of the children in the State such as Integrated Child Development Services Scheme (ICDS), Integrated Child Protection Scheme (ICPS), Scheme to Medical Expenses for Severely Malnourished Children. Overall objectives of these schemes is to reduce vulnerability of child population to various problems such as malnutrition, health problems, provision of safe and secure environment etc.

During post and pre disasters phase, among these schemes, DWCD should prioritize those schemes which would reduce vulnerability of child population to difficulties due to disasters and enable them to cope with conditions in aftermath of disasters. KSDMA in association with Department of Women and Child Welfare will work towards making these programs more efficient by integrating and incorporating necessary changes and implement them with assistance from respective line departments.

Vulnerability assessment of State indicates that the State is prone to several disasters, viz., Drought, Lightning, Flooding, Landslides, Coastal Erosion, Industrial Accidents etc. Children are more susceptible to adverse impacts of these disasters, be it in terms of their physical

safety (On their way to school and back), or health (consuming contaminated water or exposure to toxic fumes) etc. Therefore, the need to develop Child Centric Disaster Risk Reduction is significant and following are some guidelines for children safety to be followed in the event of disasters establishing Relief Centres, are given below. (For additional details, please Refer - Guidelines on Minimum Standards of Relief During Disasters, Government of Karnataka. Revenue Department - Disaster Management).

Child Protection

BEFORE AN EMERGENCY	DURING AND AFTER AN EMERGENCY
<p>A Shelter Management Team should be trained to meet the needs of children. Non-discrimination toward children with disabilities, HIV/AIDS, street children and others must be the stated policy of all shelters. Shelter environments should be certified as such ahead of time.</p>	<p>Unaccompanied children at shelters must be identified and given special care and support. Tracking mechanisms to be in place at shelter and community. Orientation at shelters on child-specific issues for mothers, guardians and children on do's and don'ts at shelter, counseling on sexual abuse and violence. Adequate supervision of children at the shelters by Child Development Agency personnel and their visit to be on regular basis. Supervision of children must be continuous. No child should be allowed to leave the shelter without the permission of a guardian</p>
<p>DDMA should identify and create a suitable Shelter Management Team and provide them required training</p>	<p>DDMA in association with other related agencies such as Police, Home Guards, DWCD should ensure that all recommended measures reach the vulnerable child population.</p>

Health

BEFORE AN EMERGENCY	DURING AND AFTER AN EMERGENCY
<ol style="list-style-type: none"> 1. Develop hygiene, first aid and sex education kits 2. First aid kits should be pre-placed at shelters with adequate provision of medicines for children, under supervision of trained promoters. 3. Shelter Management Teams should be sensitized on children's health issues. 4. Shelter Management Teams and other community members should receive training in first aid and basic public health issues 	<ol style="list-style-type: none"> 1. Rapid assessment of the affected population must specifically analyse the condition of children: i.e. age, gender and health status. 2. A health team must make regular visits to monitor the status of children and of pre/post-natal mothers in shelters. 3. Health education should be provided in shelters via simple health messages to women and children. 4. Adolescents in disaster areas should have access to sex education kits with counselling. 5. Age and gender appropriate personal hygiene kits and toiletries must be available in the shelters.
<p>DDMA in association with the Shelter Management Team, District Health Officer DWCD should ensure required enabling environment</p>	<p>DDMA in association with other related agencies such as Distirct Health Officer, DWCD, NGOs, SHGs, Home Guards, DWCD should implement all measures required for ensuring better health</p>

WATER & SANITATION

BEFORE AN EMERGENCY	DURING AND AFTER AN EMERGENCY
<ol style="list-style-type: none"> 1. Ensure adequate sanitary facilities need to be provided at each shelter, taking into account the number of children each shelter can accommodate. 2. Design of latrines for new facilities should take 	<ol style="list-style-type: none"> 1. Water sources should be treated to minimize cases of water-borne diseases. 2. Hygiene education should be included in shelter orientation for parents.

<p>into consideration the special needs of children; shelters must have a minimum stock of “potties” for toddlers.</p> <p>3. The Ministry of Education and Youth, Ministry of Health, and Superintendent of Road and Works), Red Cross and the Ministry of Labour and Social welfare must carry out periodic monitoring and maintenance of sanitary facilities in all shelters and schools.</p> <p>4. Proper hand washing facilities must be available and accessible for children.</p> <p>5. Educational curriculum should include information on sanitation, health and hygiene in a disaster, utilizing creative techniques such as songs and drama.</p>	<p>3. An adequate waste disposal system must be established at each shelter to reduce children's contact with solid waste. For example portable “Sanitact” disposal units.</p> <p>4. Where sanitary facilities are insufficient for the number of children and adults, additional resources (for example portable toilets) must be provided immediately.</p> <p>5. Shelter Management Teams must ensure the capacity for adequate cleansing, sterilization and protection of utensils.</p>
<p>DDMA in association with other line departments should ensure the presence of requirement environment and infrastructure</p>	<p>DDMA in association with other related agencies such as, Home Guards, DWCD, Food and Civil Supplies, District Health Officer should ensure that all recommended measures reach the vulnerable child population.</p>

EDUCATION

<p>BEFORE AN EMERGENCY</p> <ol style="list-style-type: none"> 1. Shelter Management Teams should ensure that the environment within each shelter can be made child-friendly, with a designated area for play, and space and equipment for educational activities. 2. Each school should develop an emergency preparedness and response plan. 3. The Ministry of Education and Youth should develop an educational kit for shelters, including a visual booklet on disaster preparedness and “Things to do in a disaster.” 4. School curriculum should include a unit on disaster preparedness, including awareness, pro-active behaviour and concern for others 	<p>DURING AND AFTER AN EMERGENCY</p> <ol style="list-style-type: none"> 1. Existing community centres are to be used with preference over schools if safe and appropriately furnished. The use of schools as shelters should be a last resort and be limited to a maximum of one week. 2. Families with vulnerable members (including children) housed in schools and churches should be given priority for relocation. 3. The shelter environment must be inspected and cleaned daily
<p>DDPI , in association with District administration should implement preparedness measures</p>	<p>DDPI with assistance of other line departments should ensure that children education is restored to normalcy as soon as possible</p>

SHELTER

<p>BEFORE AN EMERGENCY</p> <ol style="list-style-type: none"> 1. The actual conditions of shelters must be monitored continuously. 2. New community developments should allocate space for shelters independent of schools. 3. The shelter manual should be revised to incorporate provision for children with special needs or disabilities. 	<p>DURING AND AFTER AN EMERGENCY</p> <ol style="list-style-type: none"> 1. The nutritional status of children at shelters must be assessed regularly in line with accepted international standards. 2. Trained nutritionists should identify and refer children to health centres for nutritional support. 3. The school-feeding programme should be extended to the shelters and affected areas (that
---	--

<p>4. The design, location and planning of purpose-built shelters should take into account personal privacy, child convenience, and related issues.</p> <p>5. Pre-packaged shelter kits (clothing) should be stored ahead of time, and provided to shelters in accordance with age cohorts</p>	<p>is provision of nutri-bun and milk).</p> <p>4. Appropriate food must be available in shelters for children. 5. Each child should receive at least three, simple, nutritious meals per day. 6. Adequate nutritional supplements for children and pregnant women must be provided continuous. No child should be allowed to leave the shelter without the permission of a guardian.</p>
<p>DDMA should ensure proper shelter conditions</p>	<p>DDMA in association with other line departments should ensure all conditions are met with</p>

FOOD AND NUTRITION

DURING AND AFTER AN EMERGENCY

1. Water sources should be treated to minimize cases of water-borne diseases.
2. Hygiene education should be included in shelter orientation for parents.
3. An adequate waste disposal system must be established at each shelter to reduce children's contact with solid waste. For example portable "Sanitact" disposal units.
4. Where sanitary facilities are insufficient for the number of children and adults, additional resources (for example portable toilets) must be provided immediately.
5. Shelter Management Teams must ensure the capacity for adequate cleansing, sterilization and protection of utensils.

DDMA in association with related line departments, for instance, Food and Civil Supplies Department, DWCD etc need to ensure the implementation of these guidelines

PSYCHOSOCIAL SUPPORT

BEFORE AN EMERGENCY

1. Appropriate recreational items should be provided at shelters with guidelines on the type of toys permitted.
2. Include psychosocial care in child support services as standard operating procedures.
3. Provide psychological trauma management training for children's officers, guidance counselors, community workers, social workers, and shelter managers including how to provide counseling to children and caregivers.
4. Include trained counselors for children's psychosocial needs with the Disaster Team

DDMA should create a team with required expertise and ensure that these teams are available at district level

DURING AND AFTER AN EMERGENCY

1. Shelter Management Teams should implement the child-friendly environment with the aid of community educators, to provide educational activities (for example, conduct activity with toys, books, arts and craft, visual items and outdoor activities) appropriate to the environment.
2. Local human resources should supervise and carry out these activities

DDMA should ensure the availability of adequate psycho support team and may even request support from other districts, if need arises.

In addition to the vulnerable sections of Women, Girl Child and Children, special emphasis is required on another vulnerable section, i.e. Persons with Disabilities and Senior Citizens. DWCD should in association with DDMA and other line departments work towards reducing the vulnerability of this group.

CHAPTER 7

COMMUNICATION, RESPONSE, RELIEF, REHABILITATION AND RE-CONSTRUCTION PLAN

7.1 Strategy

- To reduce the impact of disaster through appropriate actions and improve the capacity of those affected/likely to be affected.
- To involve response systems at the state, district and community levels.

Following organizations/systems will be activated for Disaster Management at all phases.

- SEOC/DEOC
- State Disaster Response Force
- National Disaster Response Force
- Civil Defense
- Home Guards
- NCC
- NSS
- NYK
- Educational and training institutions
- Civil society, CBOs, corporate entities
- Fire brigade
- Civil police
- Red cross
- Media-electronic, print and through folk media, inter personal communication
- Line departments
- Nominate/designate hospitals, doctors and paramedics to cover emergency health management including trauma and psycho-social care
- Arrange for the use of ICT tools and resources such as Community Service Centers
- Testing of the plans—through mock drills and rehearsals.
- GIS process for collecting and analyzing spatial data for emergency management problem solving.
- Fail-safe communication including last-mile connectivity.

7.2 Response Measures

- The design of plans developed for immediate response which would be initiated on a trigger mechanism basis upon the occurrence of a calamity of extreme nature.
- Incident Command System (suitably modified/indigenized).
- Emergency Operation Centers.
- Alert mechanisms—early warnings etc.
- Disaster risk reduction framework, policy, act of the state/state road map for hazard risk management.
- Probabilistic scenario-building for different levels of various disasters to which different areas of the state are vulnerable.
- The yearly schedule for the conduct of mock exercises for different disasters in different parts of the state at specified locations.

7.3 Multi-disaster action plan

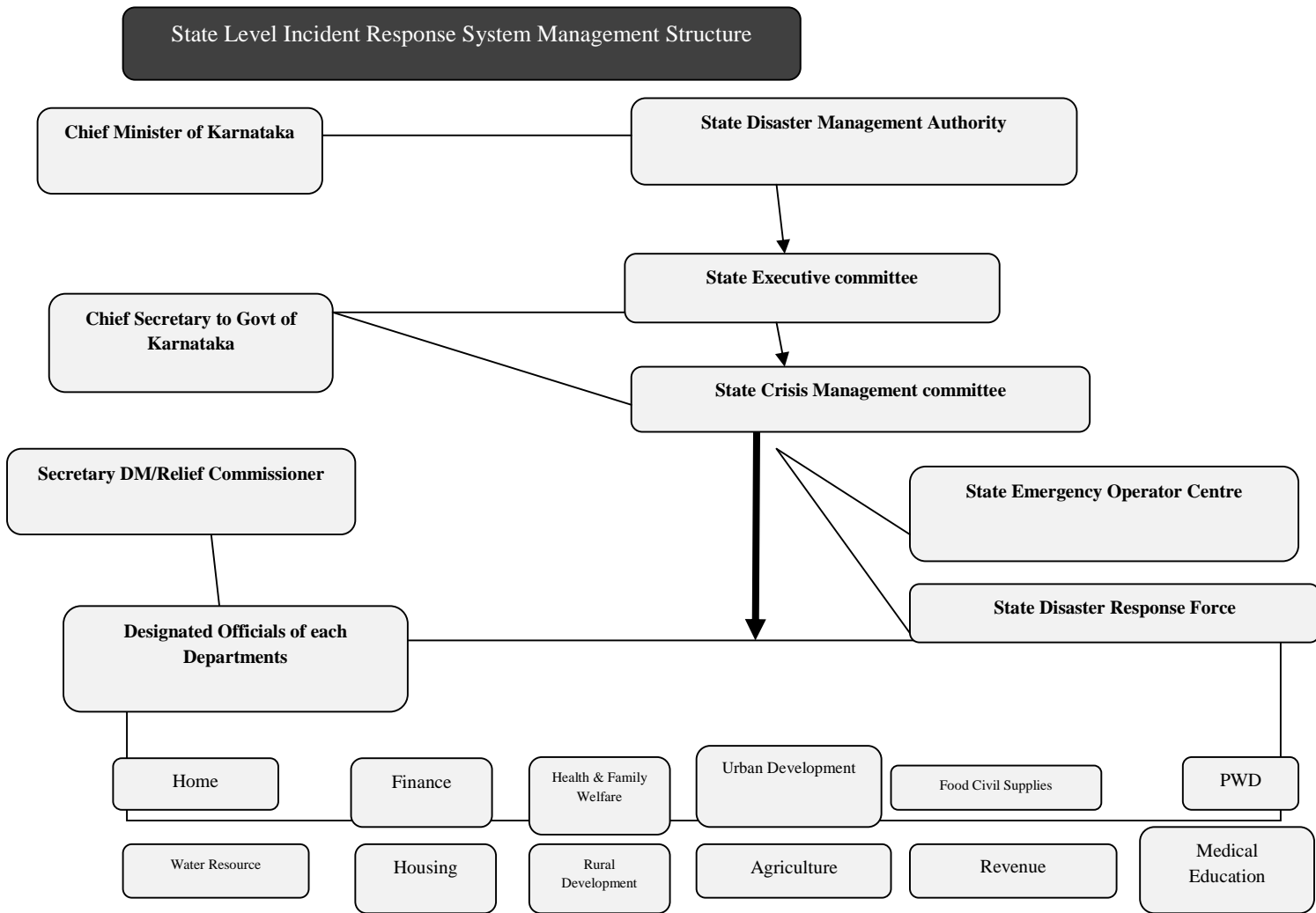
- All disaster specific mechanisms would come under a single umbrella
- Allowing for attending to all kinds of disasters.

The existing arrangements therefore will be strengthened by defining this administrative arrangement. This arrangement proposes

- Chief Secretary as the team leader supported by the Principal Secretary/Secretary (Disaster management) through the arrangements at the State Emergency Operations Centre (EOC).

Chief Secretary to Government
Government of Karnataka
Room No.320, rd Floor,Vidhana Soudha
Dr.B.R.Ambedkar Veedhi,
Bangalore- 560 001
Ph No.:080- 2225 2442, 2225 3716
Fax: 080- 2225 8913

Principal Secretary, Revenue Department
(DM)
Room No. 546-547, 5th Floor, 2nd Stage
M.S. Building, Dr.B.R.Ambedkar Veedhi,
Bangalore- 560 001
Ph No. :080- 2235 3980, 2232 0582
Fax: 080- 22354321



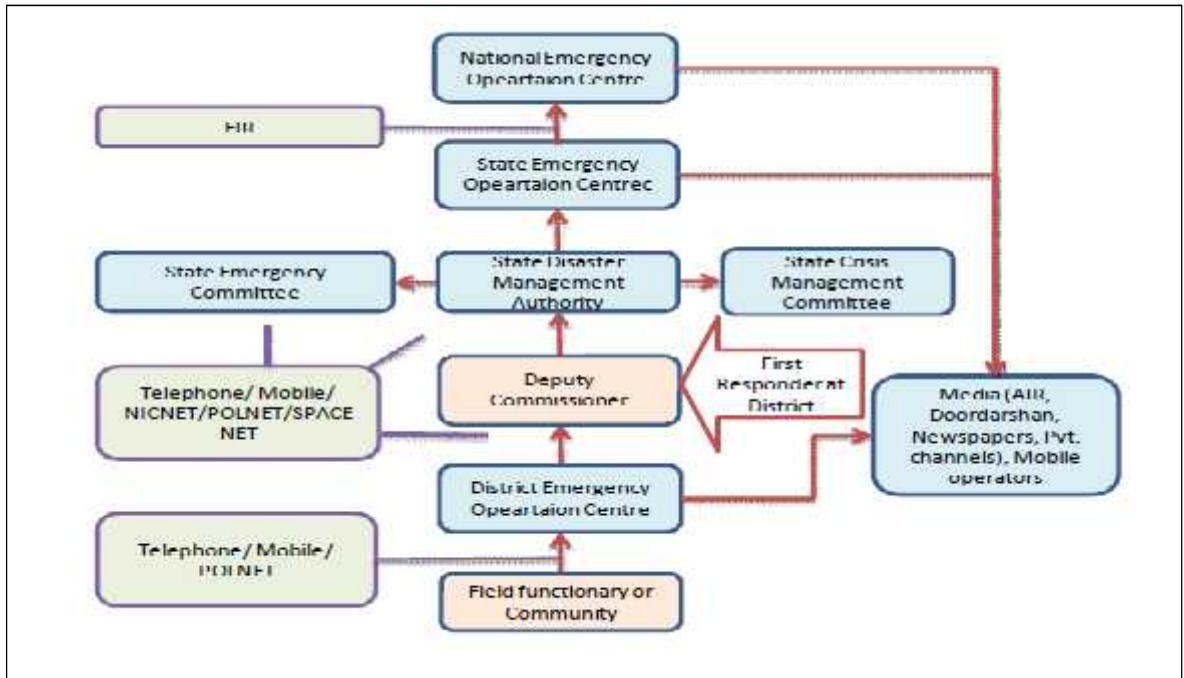
7. 3.1 Warning or Occurrence of Disaster

On the receipt of warning or alert from any such agency which is competent to issue such a warning, or on the basis of reports from Deputy Commissioner/DM of the district, of the occurrence of a disaster, all community preparedness measures including counter-disaster measures will be put into operation. The Chief Secretary/Secretary Disaster management will assume the role of the Incident Commander if disaster cannot be managed at lower levels. It is assumed that the district administration would be one of the key organisations for issuing warnings and alerts. Additionally, the following agencies competent for issuing warning or alert are given below.

Disaster	Agencies
Earthquakes	IMD, KSNDMC
Flood & Drought	IMD, KSNDMC, Irrigation Department
Cyclones	IMD, KSNDMC
Epidemics	Health and Family Welfare Department
Road Accidents	Police
Industrial and Chemical Accidents	Industry, Police, Factories and Boilers,
Fires	KSFES, Police

The occurrence of the disaster will be communicated to

- Governor, Chief Minister, Home Minister, State Cabinet, Minister of the district, and elected representatives namely MPs and MLAs from the affected district.
- PMO, Cabinet Secretary, Secretary, Home and Defense
- Secretary(Agriculture)and Joint Secretary, NDMA, Ministry of Agriculture, GOI
- Other Ministries depending on the necessity



The occurrence of the disaster would essentially bring into force the following:

- The Emergency Operations Centre will be put on full alert and expanded to include Branch arrangements, with responsibilities for specific tasks, depending on the nature of disaster and extent of its impact. The number of branches to be activated will be decided by the Chief of Operations
- All designated line department officers and Nodal Officers will work under the overall supervision and administrative control of the Chief of Operations/Secretary (DM) or Chief Secretary as the case may be.
- Immediate access to the disaster site

An on-going VSAT, wireless communication and hotline contact with the Deputy Commissioner and DM of the affected district/s will be activated. The EOC in its expanded form will continue to operate as long as the need for emergency relief and operations continue and the long-terms plans for rehabilitation are finalised.

7.4 Incident Response System (IRS)

7.4.1 Incident Commander

The Incident Commander is the focal point in the command and control for disaster response at each level. Depending on the nature of disaster and response he will be the Incident Commander himself or delegate the responsibility to some other Officer.

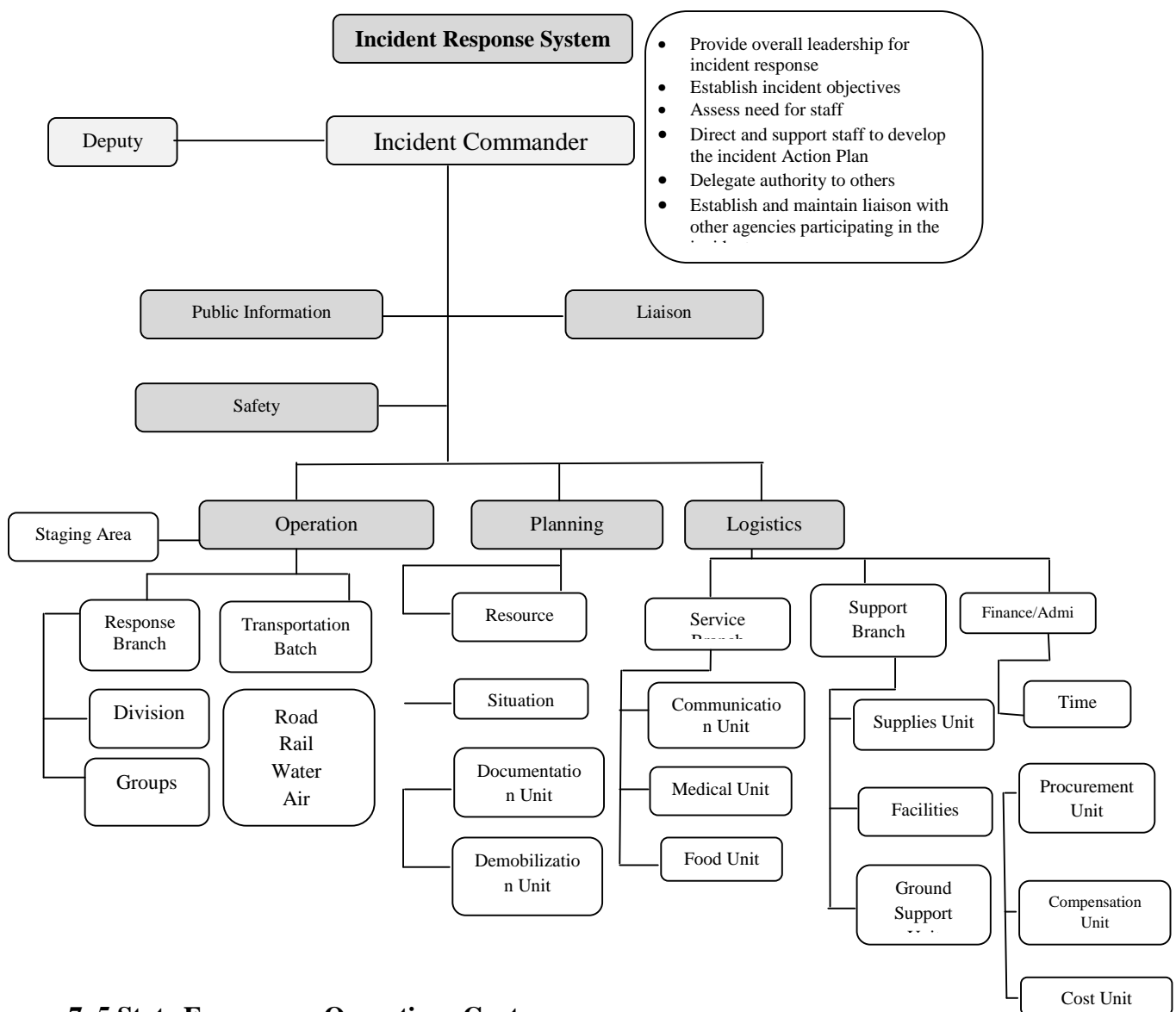
All the Departments/Agencies of the Central and State Governments in the District/City involved in response and relief will work in accordance with the directions of the incident commander

Level	Incident Commander
State	Chief Secretary/State Relief Commissioner
District	Deputy Commissioner

7.4.2 Functions of the Incident Commander

- Provide overall leadership for incident response
- Establish incident objectives
- Assess need for staff
- Direct and support staff to develop the Incident Action Plan
- Delegate authority to others
- Establish and maintain liaison with other agencies participating in the incident

7.4.3 Incident Response System – Flow Chart



7.5 State Emergency Operations Centre

The Emergency Operations Centre will be the hub of activity in a disaster situation. This is however, not to underestimate its normal time activities. The EOC, the key organizational structure, is flexible to expand when demands increase, and contract when the situation slows down. There is no

one best way to organize an EOC. The primary function of an EOC is to implement the Disaster Management Action Plan which includes:

- Coordination
- Policy-making
- Operations management
- Information gathering and record keeping.
- Public information
- Resource management.

The EOC, its system, and procedures are designed in such a way that information can be promptly assessed and relayed to concerned parties. Rapid dissemination contributes to quick response and effective decision-making during emergency. As the master coordination and control point for all counter-disaster efforts, the EOC is the place of decision-making, under a unified command. The EOC under the normal circumstances will work under the supervision of Relief Commissioner. It is the nerve centre to support, co-ordinate and monitor the disaster management activities at the district level. In a disaster situation, the EOC will come under the direct control of Chief Secretary or any other person designated by the Chief Secretary as Chief of Operations. The SEOC has been upgraded with modern facilities and equipments as given in the table below:

Karnataka SEOC (State Emergency operation Centre) Facilities and Equipment

Sl. No	Equipments	No's	Equipments are Present (Yes/ No)	Is the Equipment working
1	Work Station	4	Yes	Yes
2	Heavy Duty Printers cum Scanner(color)	2	Yes	Yes
3	VoIP Phones	1	Yes	Yes
4	EPABX(Junction+ 24 Extension)	2	Yes	Yes
5	Satellite Phone	1	Yes	Yes
6	Smart Phones	2	Yes	Yes
7	Desktop Video Conferencing		Yes	Yes
8	TV Multi channel Monitoring System up to 8 channels	2	Yes	Yes
9	Dash Boards	2	Yes	Yes
10	VSAT Phone	1	Yes	Yes
11	Router and LAN switch LAN Cables Online UPS System		Yes	Yes
12	Handicam	1	Yes	Yes
13	HF Radio Sets for HAM	2	Yes	Yes
14	Laptop	1	Yes	Yes
15	Desktop Systems	10	Yes	Yes
16	Radiation Dictation equipment (one for each subdivision, Thesil and Block)	As per nos. Of Sub division, Thehsil and Block)	No	No
17	Fax Machine	1	Yes	Yes

The normal time activity of the SEOC through the office of the Secretary Disaster management will be to ensure through appropriate statutory instruments that;

- District Disaster Management Action Plan (DDMAP) is operationalised
- Standard Operating Procedures for various departments are operationalised
- Ensure that all districts continue to update DDMAP on a regular basis
- Encourage districts to prepare area-specific plans prone to specific disasters
- Receive reports on preparedness from the district control room as per the directives every six months. Based on these, the EOC will prepare a summary report for the consideration of the Chief Secretary
- Setup study groups and task force for specific vulnerability studies and submit the reports to Chief Secretary
- Identify and interact with expert agencies to evolve mitigation strategies
- Serve as a data bank to all line departments and the planning department with respect to risks and vulnerabilities, and ensure that due consideration is given to mitigation strategies in the planning process
- Receive appropriate proposals on preparedness, risk reduction and mitigation measures, from various state departments/agencies and place the same for consideration of the Chief Secretary
- Convey policy guidelines and changes, if any, in the legal and official procedures, eligibility criteria, with respect to relief and compensation
- Upgrade and update state DMAP(Disaster Management Action Plan) according to changing scenarios in the state
- Dissemination of state DMAP to other departments of the state govt and state level agencies
- Update data bank
- Monitor preparedness measures undertaken at the district levels, including simulation exercises undertaken by various departments
- Monitor the training imparted to state level officials, private sector and NGOs by ATI Mysore.
- Organise post-disaster evaluation and update state DMAP accordingly
- Prepare an actions-taken report for Chief Secretary
- Receive reports and documents on district level disaster events, and submit the same to Chief Secretary, Revenue Minister and Chief Minister
- Warning and communication systems, and other equipments in the control room are in working condition.
- Inform district control room about the changes, if any, in legal and official
- Procedures, with respect to loss of life, injuries, livestock, crop, houses, to be adopted (death certificates, identification procedures, etc.).

The EOC is equipped with

Necessary furniture and store wells for keeping

- Files of messages
- Stationery
- Other office equipment.
- Action Plans
- Maps
- List of key contact persons during emergencies.

[Are accessible with clear labels and not under lock and key].

Important phone numbers, which are frequently required, would be displayed on the wall so that they could be seen easily, while other phone numbers, names and addresses etc., are maintained on the computer, to facilitate easy retrieval and cross-referencing.

Some provision is made for

- First-aid and other basic medical relief for the staff
- An adjoining toilet
- A rest room with adequate facilities and
- A lunch room.

7.6 Control Room (Main Message Room)

The following facilities are available in the control room

- Telephones
 Intercom units for contact within Departments
- VSAT connection to the Regional Commissioner and Deputy Commissioner
 Hotline to District Disaster Management Control Rooms, Police Control Rooms
- Networking of Computers
 One PC with printer
 Mobiles (where necessary)
 Photocopying machine
 Television unit and major newspapers to be monitored for news.

During disaster, hotlines from control room to be connected to

Regional Commissioner/s of the affected district/s

Deputy Commissioner/s of the affected district/s

Superintendent of Police of the affected district/s

Separate tables are provided for each communication instruments such as

- VSAT
- Telephones
- Fax
- Computer with Printer
- Typewriter
- NIC terminal and
- Wireless communication system for all the districts and city corporations

The phones, i.e. intercom, STD phone, EPBX extension, hotline etc., would be of different colours, and with distinct rings if possible, to enable them to be distinguished from each other. An emergency light, fire extinguishers and a generator for the computer and fax machine would also be provided in the control room.

Services and facilities to be provided by the EOC

- The EOC will have to monitor continuously the preparedness and the response capacity of each district as per the details given in the DDMP. A constant review of the district situation will imply making provisions of such services and facilities, under the government as well as the private sponsorship, at the district level so that these can be mobilised at a very short notice.
- It will be difficult for the EOC to maintain an inventory of all the resources at the state level. Therefore, identification of agencies and institutions, for locating inventory items for specialised services becomes an important function of the EOC. EOC will also ensure the availability of the inventory items as and when required.
- For instance, speed boats/rescue ships for rescue operations can be located with Irrigation department, Navy, Coast guards at different locations. The EOC/District Control Room can press these boats from the nearest locations into relief operations during emergencies. It will be useful if the state agencies such as Irrigation Department in consultation with other agencies like Coast Guard, have a special plan for locating these facilities.

- Similarly, civil hospitals can be equipped for trauma care with mobile trauma vans and CT Scan facilities, so that each district will be in a position to handle such emergencies, and the mobile trauma vans can be mobilised from few adjoining districts at a short notice during disaster.

Coordination between EOC and District Control Room

The need for coordination in disaster management between different levels of government, is based on the necessity for having a unified command, and coordinated action by all the agencies. The objective is to ensure that state action is organized in a disaster situation to:

- Effectively and efficiently meet needs
- Avoid waste and-duplication of effort
- Ensure that resources are distributed equitably and to areas of need.

Priorities must be clearly defined and understood by all agencies. This is mainly done at the state level, while preparing the standard operating procedures for each department, during the disaster cycle. Effective coordination is largely dependent upon an effective data collection, processing and reporting machinery.

The link of the District Control Room with the SEOC will be through:

- Hotlines
- VSAT
- Telephones
- fax
- NICNET.

7.7 Multi-district Disasters

In case of disasters which have an impact on more than one district in a region, the role of the Secretary Revenue (DM) comes into prominence. The Secretary Revenue (DM)'s responsibilities shall include exercising general supervision over the work of preparation of contingency plan undertaken by the DCs in his/her Region, and also on the relief and rehabilitation operations in those districts. At the Secretary Revenue (DM) level all the state departments and agencies have a head. It is very practical for the Regional Commissioner to seek the support of these towards the commitment of regional resources to a disaster situation.

For a disaster in more than one district (within or across the region), the role of Secretary Revenue(DM) is to:

1. Provide a unified command through inter-district control room
2. Ensure need-based resource allocations amongst districts
3. Seek the support of regional heads of line departments for relief
4. Direct and coordinate in response to requirements from district control room the services of
 - KSRTC
 - State Government departments
 - Fire Services, Home Guards, Coast Guards, PWD, NDRF Civil Defence
 - Telecommunications.
 - Maintain a close liaison with the SEOC/DEOC
 - Seek policy guidelines, if necessary
 - Mobilize services of Central/State government/Private laboratories and recognised research centers for specialized services.

In such a situation, the Secretary Revenue (DM) will

- access funds from the state government for this purpose
- Be assisted by Deputy Commissioner, Revenue, in discharge of disaster management functions, as is the normal practice.
- Receive the support of other Deputy Commissioners and Assistant Commissioners and Line Department Heads.

7.8 Activating the EOCs

Action	By Whom
- Mobilisation of additional staff: With the impending disaster the SEOC need to alert staff-on-call and staff during disasters (Refer CMP). The assessment of the latter will be made based on the extend of the warning	SEOC/DEOC Officer
- Set-up of facilities such as GIS maps specific to the areas likely to be affected, data from the area, information display areas, etc	SEOC/DEOC Staff
- Plan for augmentation of material and technological resources	SEOC/DEOC Staff

Probability of occurrence	Disaster level expected	Actions
Low	Low	- No action until upgraded of warning level
Low	Moderate	- Ensure that the warning has been communicated to the DEOC - No action until upgrade of warning level
Medium	Moderate/High	- Establish Incident Response System - Activate EOCs - Alert SDMA/DDMA, SEC, SCMS, sub-divisional officers - Activate ESFs and departmental plans - Ensure that the warning has been communicated to communities - Direct evacuation based on assessment with DCs - Constantly monitor the status of the imminent disaster - Inform media
High	High	- All the above action moved in high gear

7.9 Incident Response - State

Action	By Whom
<ul style="list-style-type: none"> - Establish incident Response System 1. Take Charge as the Incident Commander or depute this charge to another capable officer 2. Establish the incident staging area- this is usually the SEOC, or any other location from where all the directions in case disaster strikes can be coordinated 3. Define the incident objectives –during the early warning phase at state level these are <ul style="list-style-type: none"> - Support districts in executing their contingency plans - Mobilise resources to respond to all district level needs if incident strikes 4. Establish Incident Response Team – Extent of response functions required , and how they will expand or retract given changing scenarios. (All command functions may not be required to operate, or more than one command function can be managed by a single team. However with changing scenarios the IRT may need to be expanded or retracted. If planned in advance this proves can 	<p>Chief Secretary/Secretary Disaster Management</p>

be quickly initiated and required personnel informed/alerted in advance) 5. Assign resource – the ESFs directs this step 6. Convene and facilitate planning meetings 7. Authorise release of information to media	
- Convene SEC and SCMC meeting	Chief Secretary/Secretary
- Assess district level preparedness for response - Get in touch with district likely to be affected - Ensure the Following a. DEOC activated b. Warning disseminated to community c. Activation of state/department contingency plans d. Evacuation ordered/planned Provide guidance and support as required - Ascertain availability of resources – manpower, material and funds and support required from the state - Ascertain the need for support for evacuation	SEC representatives
- Assess state level preparedness for response - Departmental contingency plans activated - Assess preparedness of relevant departments to support evacuation search and rescue and immediate relief activities	SEC
- Mobilise resources for the response as directed by SEC	Department Heads
- Dispatch support to the district, as required	SEC

7.9.1 Incident Response – District

Action	By Whom
1. Take Charge as the Incident Commander or depute this charge to another capable officer 2. Establish an incident staging area – this is usually the SECOC, or any other location from where all the directions in case disaster strikes can be coordinated 3. Define the incident objectives – during the early warning phase these are - Mobiles resources to respond to all district level needs if incident strikes - Prevent loss of lives and injury - Minimise damage to property 4. Define strategy and tactical direction – who does and how 5. Establish the incident Response Team : Extent of command functions required, and how they will expand or retract given changing scenarios, (All command functions may not be required to operate, or more than one command function can be managed by a single team. However with changing scenarios the IRT may need to be expanded or retracted. If planned in advance this process can be quickly initiated and required personnel informed/alerted in advance) 6. Assign resources – with support ESFs can direct this step 7. Monitor scene safety – with support of the safety officer 8. Manage planning meetings 9. Approve and authorise the implementation of an incident plan 10. Authorise release of information to media	Deputy Commissioner
- Convene DDMA and District level committee meetings	Deputy Commissioner
Ascertain availability of resources – manpower, material and funds and support required from the state	Incident Response Team

<ul style="list-style-type: none"> - Ascertain the need for evacuation - Ascertain the level of support that is likely to be required from the state <p>Plan and implement</p> <ul style="list-style-type: none"> a. Community warning b. Evacuation – from when, where c. Transit camps d. Relief distribution and sourcing e. SAR f. Restoration of essential services g. Provision of health services 	
Mobilise resource for the response as directed by DC	Department Heads
Dispatch support to the disaster sites/transit campus	Department Heads
Inform state authorities of plan	Deputy Commissioner

7.10 Non-governmental organizations (NGOs) and Voluntary Agencies

The non-governmental organizations and voluntary agencies play an important role in disaster management, and provide valuable resources and expert manpower.

The specific areas where the NGOs can be involved are:

- As a resource group
- Well-defined area of operations such as
 - Red-Cross will work for triage and mass casualty management
 - Blood banks
 - Management of Feeding centers, Transit Camps, Relief Camps
 - Construction of temporary shelters
 - Trauma Care
 - Community Counseling and Mental Health Services
 - recreational Services
 - legal Aid
 - educational Programmes
 - services for Vulnerable Groups (handicapped, destitutes, orphans, widows, separated families)
 - As part of confidence building measures, managing Information Centers and acting as rumour control centers
 - Assist beneficiaries towards optimal utilization of government assistance and compensation
 - Reconstruction
 - Social and economic rehabilitation which includes
 - Restoration of the community's asset base
 - Resuscitation of livelihood
 - Restoration of social units through processes such as adoption, foster-care, remarriage etc.
 -

Community Participation

The DDMP expects the district administration to enlist community participation in the entire disaster cycle.

The major areas of community participation would include:

- During Evacuation
 1. Community leaders and community based organisations (CBOs) can assist in maintenance of security and law and order during evacuation.
 2. For emergency evacuations, the families can be encouraged to take along water, food, clothing and emergency supplies to last at least three days.
 3. Encourage families to assemble disaster supplies kit.

4. Encourage people to keep fuel in their cars as petrol pumps may be closed during emergencies.
5. Ensuring that electricity, gas and water at main switches and valves, are shut off before evacuation.
6. With respect to livestock, community assistance can be sought to set the livestock free before evacuation.

➤ During the Disaster

1. Seek the help of community leaders in containing panic, orderly movement towards community shelters (safe zones) and on other preventive steps to avoid injuries and accidents.
2. During Relief and Rehabilitation

It is necessary to ensure that members of the community are continuously engaged in some sort of helping activity to draw them out of their depression.

7.11 Dissemination of Other IEC Materials

Following activities will be taken up by the State Disaster management Department/SDMA;

- The department concerned will be instructed to identify the black spots on the highways, accident prone locations like recent Kanaganamaradi bus fall, display warning and sign boards about likely danger and disasters exhibited in places where large number of people visit. Ex: River sites, Dams, Forest camp, Festivals, Temples, Marriage halls, Tourist places etc.,
- Poster. Pamphlets and brochure preparation and distribution
- Padayatra,
- Street plays,
- Volunteers training,
- Task force training, etc.

7.12 Drills

The objective of full scale drill include evaluation of the following

- Practicality of the plan (structure and organization)
- Adequacy of communication and interactions among the agencies and the public
- Emergency equipment effectiveness
- Adequacy of first aid and rescue procedures
- Adequacy of emergency personnel response and training
- Public relation skills
- Evacuation and count procedures
- Timely updating
- Coordination with the CBOs / NGOs

7.13 Reconstruction and Rehabilitation

Once the response process is in place the recovery process is activated by resorting to the following actions:

- Providing and erecting temporary housing to the victims and displaced persons.
- Facilitating and providing claims and grants as per the relief manual.
- Providing counselling to the victims
- Providing and facilitating medical support for the victims requiring long term care.
- Clearing and disposing off the debris created as a result of collapse of physical infrastructure and elements.
- Initiating the process of reconstruction by adapting improvised technologies for safe construction.

7.14 Reconstruction and Resettlement

The approach to the reconstruction process will be aimed at converting adversity into opportunity. Incorporating disaster resilient features to **'build back better'** will be the guiding principal. This phase requires the most patient and painstaking effort by all concerned. The choice of technology will be based on its likely impact on physical, social-cultural or economic environment of the communities in the affected areas or in their neighbourhood. Systems for providing psycho-social support and trauma counselling need to be developed for implementation during the reconstruction and recovery phase.

7.15 Owner Driven Construction:

Reconstruction plans and designing of houses will be a participatory process involving the government, affected community, NGOs and the corporate sector. After the planning process is over, owner driven construction will be preferred. Reconstruction programmes will be within the confines and the specification as laid down by the government. Essential services, social infrastructure and intermediate shelters/camps will be established in the shortest possible time. For permanent reconstruction, the work including the construction of houses will be completed within two to three years. Dedicated project teams will be constituted to speed up the reconstruction process.

7.16 Disaster Specific Response Plan- L2 and L3 Earthquake Disaster

Real Time Information on Earthquake

The IMD has been designated to monitor seismic activity in and around the country and notify the user agencies including the State Governments about the magnitude and epicentre of the earthquake as soon as it occurs. The I/C State and district EOCs can also obtain information about occurrence of earthquake either directly contacting the IMD office or checking up with IMD website.

7.17 Impact Assessment

- i) EOCs/Control Rooms at the State, District and Sub-division and Tahsil Level would be activated fully and response mechanism as per ESF Plan would be put into motion automatically on the basis of information on the magnitude and epicenter of the earthquake.
- ii) State/District Administration will gather information regarding the deaths, injuries and damages to the buildings/infrastructures.
- iii) State Government, if need be, will conduct an aerial survey to determine the scope of the damage, casualties, and the status of key facilities. State Government/District Administration will identify areas and assess the requirement of NDRF teams for urban search and rescue operations. The priority of conducting these operations will be established by the DDMA's.
- v) The Deputy Commissioner (s) will send FIR as per SOPs to the State EOC and State EOCs would send consolidated FIR to the NEOC.

Deployment of Search and Rescue Teams

- As an immediate measure District Administration would deploy local SAR teams of Civil Defence/Home Guards, Police, Local Volunteers etc.
- Requirement of Armed Forces – Army, Air Force, CPMFs, NDRF etc. would be worked out by the respective DDMA's and requisitioning placed by the DM or the SEC/State Government as the case may be.
- The ESF Department/District Administration shall arrange for local transportation (from airport/railway station to affected site) of NDRF teams and supplies POL etc. for their equipment/vehicles of NDRF.
- District and local authorities shall control traffic to ensure that NDRF teams/other SAR and relief teams could reach the earthquake affected areas without delay.
- ESF Department/District Administration shall provide access routes for transportation of NDRF, other SAR and Relief Teams to the affected sites. If need be, roads and bridges will be repaired or reinforced even on a temporary basis or emergency detours be provided.

- State Government in consultation with DG NDRF/JS, DM Division, MHA, shall make arrangement for deployment of USAR Teams from foreign countries to districts.

Emergency Medical Relief

- The Department of Health and Family Welfare and AYUSH would activate their respective emergency medical plan forthwith.
- NDRF teams are also trained in Emergency Medical Services (EMS) such as Medical First Response techniques with basic knowledge of life saving of disaster victims Each NDRF battalion has 9 Doctors and 90 paramedics. NDRF teams shall provide EMS to the areas of their deployment during post disaster phase.
- Ministry of Defence would be requested to provide QRMTs, mobile field hospitals, ARMVs and Heli-ambulances. They will be activated to reach the earthquake affected areas immediately along with dressing material, splints, portable X-ray machines, mobile operation theatres, resuscitation equipment and life-saving drugs, etc.
- The Department of Health and Family Welfare at the State Level would coordinate with its counterpart at the national level for medical assistance required for the State.
- Medical teams should be trained on Mass casualty Management & triage.
- Hospital Security personnel should be trained on crowd control measures

Supply of Relief Materials to affected States

- The DDMAAs would assess requirement of relief items and material required for the affected areas. It would also project its demand to the State Government.
- The ESF departments both at the district and state level would arrange to supply relief material to the affected locations.
- The Revenue Department at the State level would consolidate demands received from the districts and would coordinate with Central Relief Commissioner for central assistance, if any.
- The DDMAAs/districts would appoint Nodal Officers at airports/helipads to coordinate receipt and channelization of relief material. Adequate arrangement would be made the transportation of relief material to different parts of the district.
- A mechanism would be put in place for proper accounting for and distribution of the relief material received in the district.

Establishment and Running of Relief Camps

- District administration would establish relief camps as per requirement.
- ESF departments would arrangement for all basic amenities in these camps.
- These relief camps would be run and managed by the PRIs, ULBs, Red Cross and NGOs. Temporary shelters would be constructed as per requirement by the PWD, local bodies and RD.
- Sanitation through portable toilets to be kept ready by Dist Administration as stock pile.

Repair and Restoration of Roads, Communication, Electricity and Water Supply

- The Public Works Department would undertake repair, build temporary bridges, access ways and other temporary structures for restoration of National and State Highways and other roads.
- The PWD would also repair damaged helipads and make temporary helipads as per requirement.
- Communication network would invariably be damaged in an earthquake. The BSNL and other service providers would take immediate steps to restore communication in the affected areas. Secondary ESF departments/agencies for communication would also provide communication facilities for disaster communication and relief.
- NDRF, if called, would be requested to set-up mobile communication facility at the site so that rescue and relief operations are conducted smoothly.

- e. KPTCL/ESCOM would take immediate steps for restoration of electricity supply to the affected areas.
- f. The Municipal Administration Department/KUWS&DB would restore water supply to the affected areas and would also ensure supply of water through other means till water supply is not fully restored through pipelines.

Earthquake Damage Assessment of Public Building and Infrastructure and Individual Houses

- a. All Departments would constitute teams of officers/technical persons to:
- b. Inspect buildings and structures that are critical to emergency services operations and mass care activities. Designate those that may be occupied and identify/mark those that are unsafe.
- c. Inspect buildings and structures that may threaten safety. Identify/mark those that are unsafe and may not be occupied.
- d. Inspect less critical damaged structures. Designate those that may be occupied and identify/mark those that are unsafe to occupy.
- e. District Administration shall constitute teams of qualified technical personnel for damage assessment of individual houses. These teams shall also identify/certify those houses that are unsafe and may not be occupied.
- f. The State Government in consultation with the IITs and NITs develop guidelines for assessment of damaged individual housing units.
- g. The State Government in consultation with the IITs/NITs develop guidelines for repair/retrofitting of earthquake damages housing units.
- h. Criteria for damage and usability classification of houses would be as per the table given hereunder:

7.18 Indicative Criteria for damage and usability classification of buildings

Damage & usability category	Usability category	Damage state	Damage degree	Damage description	Note
I	Usable	None: Slight non-structural damage, very isolated or negligible structural damage	1	Non visible damage to structural elements. Possible appearance of fine cracks in the wall and ceiling mortar. Non-structural and structural damage barely visible. Cracks in the wall and ceiling mortar. Displacement of large patches of mortar from wall and ceiling surfaces.	Immediately usable, or usable after removal of local hazards such as cracked chimneys, attics and gable walls.
			2	Considerable cracks, or partial failure of chimneys, attics and gable walls. Disturbance, partial sliding, sliding or collapse of roof covering. Cracks in structural elements such as columns, beams and reinforced-concrete walls.	
II	Temporarily usable	Severe: Extensive non-structural damage considerable structural damage yet repairable	3	Diagonal or other cracks in supporting walls, walls between windows and similar structural elements. Large cracks in reinforced structural elements such as columns, beams and reinforced concrete walls.	Buildings classified as damage degree 3 and 4 are of significantly decreased seismic capacity. Limited entry to the building is permitted, and it is

		structural system.	4	Partially failed or failed chimneys, attics or gable walls. Disturbance, sliding and collapse of roof covering. Large cracks with or without detachment of walls, with crushed material from walls between windows and similar elements of structural walls. Large cracks with small dislocation of reinforced-concrete structural elements columns, beams and walls. Slight dislocation of structural elements and the whole building.	usable before repair and strengthening. The needs for supporting and protection of the building and its surroundings should be considered.
III	Unusable	Total: destroyed or partially or totally collapse Structural system.	5	Structural elements and their connections are extremely damaged and dislocated. Large number of crushed structural elements. Considerable dislocation of the entire building and roof structure. Partially or completely failed buildings.	Buildings classified as damage degree 5 are unsafe and risk sudden collapse. Entry is prohibited Protection of streets and neighbouring buildings or urgent demolition is required. Decision on demolition should be based on an economic study that considers repair and strengthening as one of the possible alternatives

7.19 Information Management and Helpline

- a. State Government/District Administration shall set up Emergency Information Centre (EIC) at the SEOC/DEOCs level or other suitable location for release of consolidated information to all stakeholders including Media at the State/District Level.
- b. Helpline would be established at SEOC/DEOCs or other suitable location for providing information about victims to the next of kin, friends and others.
- c. EIC shall maintain all records and document of all major actions taken in managing the incident.

7.20 Prevention of Human Trafficking of Widows/Orphans

The Department of Women Empowerment and Child Development shall set-up monitoring and coordination mechanism in the affected area for prevention of human trafficking of women and children.

Sensitizing local Police / Army / NDRF / KSFES /Civil Defense about Human Trafficking gangs during Disasters

Anti Human Trafficking Unit (AHTU) Police to be deployed at Disaster Sites.

7. 21 Identification and Disposal of Dead Bodies

The Home Department shall deploy forensic teams and equipment for DNA Fingerprinting of victims in mass casualty cases. The Department would also coordinate with MHA for central assistance as per requirement. While disposing of unclaimed/unidentified dead bodies NDMA/SDMA Guidelines shall be followed.

7.22 Psycho-social Support

- a. The Health and Family Welfare Department shall arrange to provide psycho-social support to the victims of disaster and train volunteers for this job.
- b. The Health and Family Welfare Department shall assess the requirement of central assistance for providing psycho-social support to the victims.

7.23 Financial Assistance to the Victims of Disaster

- a. The victims/dependants of victims shall be provided disaster relief assistance as per the guidelines and as per additional assistance guidelines issued by the Government in such cases.
- b. The damage and needs assessment carried out by the State Government shall be sent to the Central Government for seeking grants under NDRF or Prime Minister's Relief Fund.

The damage and needs assessment carried out by the District administration shall be sent to the State Government for seeking grants under SDRF or Chief Minister's Relief Fund.

7.24 LANDSLIDE-SPECIFIC RESPONSE PLAN

Likely impacts of landslides:

Primary Impacts

- Extensive damage to roads and highways;
- Major road closures;
- Damage to habitations leading to relocation of population and establishments;
- Loss of cultivable lands;
- Adverse effect on environment; and
- Creation of artificial lakes.

Real Time Information on Landslide and Impact Assessment

- a. The GSI, the Nodal Agency, shall monitor landslides for identified sites and notify about the impending landslide to all the user agencies and departments of the state and district administration.
- b. Earthquakes may trigger landslides and therefore, IMD shall communicate the occurrence of an earthquake magnitude and epicentre of the earthquake to GSI for initial assessment of earthquake induced landslide.
- c. PWD, ZP, Forest Department shall notify the State/District EOC about the occurrence of the landslide along with preliminary information on location, magnitude, damage caused, etc.

Landslide Response Planning

- a. The DEOC/Sub-Division control room will establish contact with the site and obtain information regarding deaths, injuries, damages to building/infrastructure, environment etc. and communicate the same to all designated/ESF departments/authorities for appropriate action.
- b. District/local administration shall mobilize local SAR teams and further identify areas and assess the requirement of SDRF/NDRF teams for urban search and rescue operations. The priority for conducting these operations shall be established by the district administration.

Deployment of Search and Rescue (SAR) Teams of NDRF, Army, etc.

- a. The SDRF, NDRF, Army etc. if requisitioned by the district will be deployed for search and rescue operations as per assessment of the situation.
- b. The district administration shall arrange for transport (from railway station or airport) of NDRF teams and supply POL etc. for equipment, vehicles of NDRF.
- c. DM/SEC will also coordinate with JS MHA (DM Division) for deployment of Army, if required.

Emergency Logistics

- a. Specialized heavy earthmoving and SAR equipment will be required immediately after a landslide to clear debris and carry out search and rescue operations of trapped people in huge masses of debris.
- b. The PWD will immediately move its machinery and men to the locations.
- c. The equipment available with power projects, and private sector would also be mobilized as per requirement.
- d. SRC will coordinate with JS (DM), MHA for mobilization of earthmoving equipment from SAIL, BEML etc. to the effected site, if need be.

Emergency Medical Relief

- a. The DHO/Department of Health and Family Welfare will dispatch a team of medical specialists to the affected site with medicines etc. and prepare the nearest hospital for receiving the victims. 108 medical responses will be activated too.
- b. SDRF/NDRF teams are also trained in Emergency Medical Services (EMS) such as Medical First Response techniques with basic knowledge of life saving of disaster victims. Each NDRF battalion has 9 Doctors and 90 paramedics. NDRF teams, if deployed, shall provide EMS to the areas of their deployment during post disaster phase.

Repair and Restoration of Road, Power, Water and Telecommunication etc.

- a. The PWD, ZP will repair and restore the affected roads immediately. The departments may take assistance of secondary ESF agencies, if need be.
- b. The damaged water supply, electricity and telecommunication lines will be restored by the respective departments forthwith.

Other Measures

- a. Environment Impact Assessment: Department of Environment and Forest will get the environment impact assessment carried out for the affected area.
- b. Technical Assistance: The GSI will be requested to provide trained professionals, technical experts to state Government for geo-technical studies and remedial measures for stabilization of slopes.

CHAPTER 8

CAPACITY BUILDING, TRAINING AND HUMAN RESOURCE DEVELOPMENT AND PUBLIC AWARENESS

8.1 Introduction

KSDMA has the mandate to develop disaster preparedness plans for the State to meet any eventuality arising out of all kinds of disasters such as flood, drought, chemical explosion, bomb explosion etc. The CDM ATI, Mysore has been identified as a nodal training institute for DM training in the State covering the functionaries of 23 departments. KSDMA responsible for;

- (i) Preparation of State disaster management plans & District Plans including automation of all District DM Plans through GIS, RS, GPS technology with the support of CDM, ATI, Mysore and others
- (ii) Design and development of training programme for the functionaries, decision makers, elected, representatives and the Civil Society groups in collaboration with ATI Mysore
- (iii) Arranging state and district-wise drilling of the plans to verify the preparedness levels
- (iv) Establish and maintain a failsafe communication network interconnecting the State, district, block and GP Headquarters for dissemination and collection of information relating to disaster management.
- (v) Institutional capacity building in terms of modern equipment, technology, capacity building in all forms required at the state and district levels
- (vi) Capacity building of the communities and Community Based organisations to handle emergencies in collaboration with ATI, Mysore
- (vii) Coordination of NGO efforts.

KSDMA will undertake comprehensive restoration and reconstruction of public infrastructure damaged due to various calamities. KSDMA will be coordinating between the executing agencies i.e. the various line departments and the various funding agencies, such as Govt. of India, World Bank, etc. KSDMA is expected to review and approve the technical proposals received from the executing agencies, process the procurement packages, manage the disbursement of funds and monitor the implementation. The role of KSDMA is critical in preparedness, mitigation and capacity building initiatives in the State through designing, developing and implementing effective public policies to reduce risk and vulnerabilities associated with various disasters. A multidisciplinary group in KSDMA will be set up to strengthen the Disaster Management Unit. The group will include technical experts with experience in managing various disasters, Engineering/Housing and rehabilitation experts, IT and GIS personnel, social scientist, geologist, medical officer with specialization in Preventive and social medicines and communication specialist.

8.1.1 Opportunity for Capacity Building in Disaster Management

A strong institutional framework supporting overall capacity building for disaster management has been initiated in India by enacting and enforcing a Disaster Management Act in 2005. The Act has clearly assigned the roles and responsibilities to local, district, state and national authorities for enabling disaster resilient and safe community. The Creation of NDMA, NIDM at New Delhi, CDM at every State, Response Forces, Funding mechanism at various levels, Institutional structures etc., have given a greater thrust to capacity building at every level namely local, sub-district, district, state and national levels. In Karnataka, about 23 departments have been identified as responsible for effective disaster management. The Department of Disaster Management (GoK) in Karnataka Government, KSDMA, SEC, DDMA have all been established. The Centre for Disaster Management, ATI Mysore is the nodal institute for disaster management training in Karnataka.

8.2 Capacity Building for Disaster Response : The thirteenth Finance Commission has recommended a grant of Rs. 4.00 crores per year from 2010-11 for building capacity within the administrative machinery for better handling of disaster response and for preparation of District and State level disaster management plans as envisaged under the Disaster Management Act, 2005.

8.3 Capacity Building for Disaster Management & Training in Karnataka

8.3.1 Centre for Disaster Management (CDM), ATI, Mysuru

Centre for Disaster Management (CDM) was established at ATI Mysore in the year 2000-01. The State Executive Committee in its meeting held on 12.12.2018 has approved the proposal to further strengthen the existing centre as an advanced centre for disaster management and to act as a state level nodal agency for training and human recourse development in the area of disaster management in the state. The Centre functions under the overall monitoring by the department of disaster management and directly under the administrative control of the Director General, ATI, Mysuru. Senior and experienced faculty members and professional staff in the disciplines of Civil/Structural Engineering/Housing, Geology/Earth science, Communication, Environmental Science, GIS/RS, Information science and Technology, etc., are working in the centre. The Centre is financed by the Revenue Department (Disaster Management), Government of Karnataka under Capacity Building Programme. The Centre aims at fulfilling training and competency needs of the functionaries working in various government departments, elected representatives of PRIs and ULBs, non-government organizations and the community for effective preparedness, mitigation and management of natural and manmade disasters in the State.

In addition to in-house personnel, the resource persons and experts comprising senior administrators in the government, professionals from scientific and research agencies, engineering institutions, NDRF, SDRF, NIDM, NDMA, NIMHANS, field level disaster professionals from NGOs, private and CBOs including a host of specialized agencies have been identified and involved in the training, research activities of the centre. The infrastructure facilities and faculties of ATI and other sister institutions namely SIUD, SIRD, PPP Cell, Centre for Social Justice, are shared for optimum output and results. The centre has well experienced recognized national level master trainers in the area. The training is conducted at ATI, DTI, sub-district levels and local bodies covering senior level employees to field functionaries and elected representatives.

Vision

- To be a premier Institute of Excellence for formulation of policy, plans, training and research on disaster risk mitigation, preparedness and effective response and to be recognized as a leading Institution in the State in the field of Disaster Management.

Objectives

- To conduct training programmes, workshops, seminars/conferences on various issues of disaster management at the State, District, Taluk, village and Hobli levels.
- To assist the State Government and district administrations in planning for preparedness, mitigation, relief and rehabilitation for Disaster Management
- To promote implementation of GIS, GPS and customized automation and advanced technology for management of disasters at the district levels
- To undertake case studies, action research and documentation on disaster management
- To provide professional support to the district administrations to formulate state, district and sub-district level disaster management action plans
- To organize mock drills on disaster management in co-ordination with concerned departments and agencies
- To prepare and disseminate the information, education and communication materials on disaster management
- To bring awareness among the community through different media such as TV/Radio/News paper etc.
- To establish networking and partnership with Departments/ organizations/NGOs/Stakeholders/Professionals to share expertise and experience across the country.

8.3.2 Nodal Training Institute/Net working Role

Work as a networking organization by organizing seminars, workshops, conferences to share and promote good practices The CDM has expanded its networking with various organizations such as Karnataka State Natural Disaster Monitoring Centre, Karnataka State Remote Sensing Application Centre, Geological Survey of India, Technical & Educational Institutions, Fire and Emergency service, NIDM, NITK Surathkal, NIMHANS, IISc Bangalore, Factories and Boilers, Red-Cross, Bomb squad, Civil Defense, MEG, CGWB and NGO's etc., to share experience and expertise on Disaster Management. Centre is closely working with Government departments and other private organizations.

8.3.3 Training Needs Analysis(TNA) for Disaster Management in Karnataka

The ATI Mysore has carried out a detailed study on TNA for Disaster Management in Karnataka. The CDM has carried out a comprehensive study to identify and assess the gaps in knowledge, skills, attitude of employees in the departments. Based on the study, the state level training plan for DM involving other training institutes at the district and taluk levels has been prepared and implemented by CDM, ATI, Mysore.

8.3.4 Training Areas & Targets

The Government Departments at the district level who are involved in the multi-hazard management are grouped as follows based on the similarity in functions;

1. Department of Revenue & Department of Food and Civil Supplies
2. Department of Rural Development and Panchayatraj and Urban Development
3. Department of Education(Primary, Secondary and Technical Education)
4. Department of Health & Family Welfare and Animal Husbandry and Veterinary Services
5. Department of Home (including Fire and Emergency Services), Home Guards & Civil Defense.
6. Department of Industries and Commerce and Factories and Boilers
7. Public Works Department
8. Department of Fisheries and Department of Port and Harbour

9. Department of Social Welfare, Department of Backward Classes & Minorities, Department of Women and Child Development
10. Department of Agriculture and Department of Horticulture
11. Department of Forest, Ecology and Environment
12. Department of Information and Publicity

Specific areas of training

- Safe Building Codes and design
- School Safety Measures
- Drought Mitigation
- Incident Response System
- Application of GIS and Remote Sensing
- Psycho-social care
- Gender concern
- Chemical Disaster Management
- Community based disaster management
- Earthquake and Land slide management
- Urban Risk Mitigation
- Health Care & Epidemic Management
- Dam safety and flood management
- Climate Change and Environmental Change
- Disaster Management Plan Preparation
- Man induced disasters viz., Accidents, Bomb threats, Stampedes etc.
- Management of stampedes and large congregation.

8.3.5 Statement showing the number of officers/officials/Elected representatives for DM training from District Level/Taluk Level/Sub-taluk level

Sl. No.	Name of the Dept.	Officials from each Department		
		District	Taluk	Hobli/Village
1	Revenue, Food and Civil Supplies	6	4	35
2	RDPR & ULBs	8	4	30
3	Education	4	4	150
4	Health & Family welfare and Animal Husbandry & Veterinary Sciences	6	5	210
5	Agriculture, Horticulture & Forest	12	6	35
6	Home(Police, Fire Force) Home Guard & Civil defence	10	5	-
7	Industries and Commerce/Factories & Boilers	3	2	-
8	Fisheries/Port & Harbour/Coast Guard	2	2	
9	PWD & Irrigation	5	2	8
10	Social Welfare/Backward Classes & Minorities/Women & Child Development	6	3	12
11	Information and Publicity	1	1	-
	Total	63	40	480

1. Total No. District Level Officers = $63 \times 30 = 1890$ (63 programmes)

2. Total No. of Taluk Level Officers = $177 \times 40 = 7080$ (236 programmes)

3. Total No. of sub-taluka level official

Including elected chairpersons of GPS = 177X480 + 84960

Total =92229

SATCOM Training

SATCOM/ Video conference based awareness programmes need to be conducted to cover large number of elected representatives of PRIs and ULBs, GP Chairpersons, Municipal Councillors, Chairpersons & Officials.

1. Cost at receiving stations per day

175 taluks x40 participants x130 =9,10,000/-
175 taluksx700 per RP=1,22,500/-
(Norms: Rs. 100/- lunch + Rs.30/- kit + Rs. 500 hon(One RP)+ 200 TA(One RP)

2. Studio Cost per day

- Studio rent per day = Rs. 60,000/-
- Institutional Support for Saamarthya Soudha = 500x175 = 87500/-
- Receiving Signal & Maintenance = 250x175 = 43750/-
- Saamarthya Soudha upgradation = 1000x175=175000/-

Total Cost of Studio per Day = Rs. 3,66,250/-

Cost per Day =910000+122500+366250 =1398750/-

Annual Budget for One course per year of 2 days duration=2x1398750/ =2797500/-
(In word Twenty Seven Lakhs Ninety Seven Thousand Five Hundred only)

Annual Training Calendar for DTI and ATI 2019-20

SL No	Name of the Programme	Sponsoring Dept	Dates	Duration
1	Landslide Risk Mitigation & Management(Including revision of DDMP)	Revenue Department – Disaster Management-Gok	02-05-19 to 04-05-19	03 days DTI, Kodagu
2	Climate Change	Revenue Department – Disaster Management-Gok	02.05.2019 to 04.05.2019	03 days Mysuru
3	Drought Risk Mitigation & Management (Including revision of	Revenue Department – Disaster Management-Gok	08-05-19 to 10-05-19	03 Days DTI, Bagalakote
4	Revision of DDMP in Consultation with DDMA Drought Risk Mitigation & Management	Revenue Department – Disaster Management-Gok	08.05.2019 to 10.05.2019	03 Days Bellari, DTI
5	Coastal erosion management. Revision of UK DDMP in consultation of DDMA.	Revenue Department – Disaster Management-Gok	13.05.2019 to 15.05.2019	03 Days Uttara Kannada
6	Disaster Mitigation and management for DDMA members	Revenue Department – Disaster Management-Gok	13-05-19 to 17-05-19	05 Days ATI, Mysuru
7	Drought Risk Mitigation & Management(Including revision of DDMP	Revenue Department – Disaster Management-Gok	21-05-19 to 23-05-19	03 Days DTI, Koppal
8	Revision of DDMP in Consultation with DDMA and Drought Risk Mitigation & Management	Revenue Department – Disaster Management-Gok	21.05.2019 to 23.05.2019	03 Days Davanagere, DTI
9	Earthquake Risk Mitigation and Management	Revenue Department – Disaster Management-Gok	27-05-19 to 31-05-19	05 Days ATI, Mysuru
10	Revision of DDMP in Consultation with DDMA and Man animal Conflict	Revenue Department – Disaster Management-Gok	28.05.2019 to 30.05.2019	03 Days Mysuru
11	Drought Management	Revenue Department – Disaster Management-Gok	27.05.2019 to 31.05.2019	05 Days ATI, Mysuru
12	Role of media in Disaster Management	Revenue Department – Disaster Management	20.05.2019 To 21.05.2019	02 Days ATI, Mysuru

13	Drought Risk Mitigation & Management Revision of DDMP in consultation of DDMA	Revenue Department – Disaster Management	10.06.2019 To 12.06.2019.	03 Days DTI, Bidar
14	Health Care Management during Disasters	Revenue Department – Disaster Management	10.06.2019 To 14.06.2019	05 Days ATI, Mysuru
15	Land slide Risk Management	Revenue Department – Disaster Management	10-06-19 to 14-06-19	05 Days ATI, Mysuru
16	Drought Risk Mitigation & Management	Revenue Department – Disaster Management	13.06.2019 To 15.06.2019	03 Days DTI, Yadgir
17	Drought Risk Mitigation & Management. Revision of DDMP in consultation of DDMA.	Revenue Department – Disaster Management	17.06.2019 To 19.06.2019	03 Days DTI, Tumkuru
18	Revision of DDMP in Consultation with DDMA Drought Risk Mitigation & Management	Revenue Department – Disaster Management	18.06.2019 To 20..06.2019	03 Days DTI Vijayapura
19	Drought Risk Mitigation & Management(Including revision of DDMP)	Revenue Department – Disaster Management	19-06-19 to 21-06-19	03 Days DTI, Gadag
20	Cattle Health Care Management during Drought. Revision of DDMP in consultation of DDMA.	Revenue Department – Disaster Management	20.06.2019 To 22.06.2019	03 Days Chitradurga
21	Management of Large Congregations and Stampede Risk Management	Revenue Department – Disaster Management	24-06-19 to 28-06-19	05 Days ATI, Mysuru
22	Revision of DDMP in Consultation with DDMA Drought Risk Mitigation & Management	Revenue Department – Disaster Management	24.06.2019 To 26.06.2019	03 Days DTI ,Haveri
23	Health Care Management during Disaster	Revenue Department – Disaster Management	28.06.2019 To 29.06.2019	02 Days DTI , Davanagere
24	Drought Risk Mitigation & Management. Revision of DDMP in consultation of DDMA	Revenue Department – Disaster Management	01.07.2019 To 03.07.2019.	03 Days DTI, Ramanagar
25	Drought Risk Mitigation & Management(Including revision of DDMP)	Revenue Department – Disaster Management	02-07-19 to 04-07-19	03 Days DTI, Kalaburagi
26	Landslide Risk Mitigation & Management. Revision of DDMP in consultation of DDMA.	Revenue Department – Disaster Management	08.07.2019 To 10.07.2019	03 Days DTI,Shivamogga
27	Disaster Safe Building Codes	Revenue Department –	08-07-19 to 12-07-	05 Days

	and Designs	Disaster Management	19	ATI, Mysuru
28	Revision of DDMP in Consultation with DDMA and Industrial & Chemical Disaster Management	Revenue Department – Disaster Management	09.07.2019 To 11.07.2019	03 Days DTI, Bengalore-rural
29	Flood Management. 1 day Revision of DDMP in consultation of DDMA.	Revenue Department – Disaster Management	15.07.2019 To 17.07.2019	03 Days DTI, Mandya
30	Drought Risk Mitigation & Management	Revenue Department – Disaster Management	15.07.2019 To 16.07.2019	02 Days DTI, Vijayapura
31	Drought Risk Mitigation & Management(Including revision of DDMP)	Revenue Department – Disaster Management	16-07-19 to 18-07-19	03 Days DTI, DTI, Raichur
32	Revision of DDMP in Consultation with DDMA and Drought Mitigation & Management	Revenue Department – Disaster Management	18.07.2019 To 20.07.2019	03 Days DTI, Chamarajanagara
33	Training of Trainer on Disaster Risk Mitigation and Management	Revenue Department – Disaster Management	22-07-19 to 26-07-19	05 Days ATI, Mysuru
34	Urban Flood Risk Mitigation & management. Revision of DDMP in consultation of DDMA	Revenue Department – Disaster Management	22.07.2019 To 24.07.2019.	03 Days DTI, Bengaluru – Urban
35	Safe Schools	Revenue Department – Disaster Management	23.07.2019 To 27.07.2019	05 Days ATI, Mysuru
36	Flood risk mitigation & management. Revision of DDMP in consultation of DDMA.	Revenue Department – Disaster Management	29.07.2019 To 31.07.2019	03 Days DTI, Belagavi
37	Climate Change	Revenue Department – Disaster Management	29.07.2019 To 31.07.2019	03 Days ATI, Mysuru
38	Drought risk mitigation & management(Including revision of DDMP)	Revenue Department – Disaster Management	29-07-19 to 31-07-19	03 Days DT26I, Hassan
39	Role of media in Disaster management	Revenue Department – Disaster Management	09.07.2019	02 Days DTI, Chamaraja nagara
40	Flood risk mitigation & management(Including revision of DDMP)	Revenue Department – Disaster Management	01-08-19 to 03-08-19	03Days DTI, Udu30pi
41	Urban Flood	Revenue Department – Disaster Management	05.08.2019 To 06.08.2019	02 Days Bengalore-rural
42	Incident Response System	Revenue Department – Disaster Management	05-08-19 to 09-08-19	05 Days ATI, Mysuru
43	Industrial & Chemical Disaster Management	Revenue Department – Disaster Management	06.08.2019 To	02 Days Bengaluru Urban

			07.08.2019	
44	Revision of DDMP in Consultation with DDMA Mining and quarry related disaster management	Revenue Department – Disaster Management	07.08.2019 To 09.08.2019	03 days DTI Chikkaballapura
45	Formulation of DM Action Plan	Revenue Department – Disaster Management	19.08.2019 To 23.08.2019	05 Days ATI, Mysuru
46	Safe City	Revenue Department – Disaster Management	19.08.2019 To 21.08.2019	03 Days Mys40uru
47	Drought risk mitigation & management(Including revision of DDMP)	Revenue Department – Disaster Management	20-08-19 to 22-08-19	03 Days DTI, Kolara
48	Forest Fire	Revenue Department – Disaster Management	26.08.2019 To 27.08.2019	03 Days DTI, Chamarajanagara
49	Earthquake Risk Mitigation and Management	Revenue Department – Disaster Management	26.08.2019 To 30.08.2019	05 Days Mysuru
50	Role of Media in Natural Disaster Management	Revenue Department – Disaster Management	07.08.2019	Kodagu DTI
51	Disaster Crisis and Management	Revenue Department – Disaster Management	03.09.2019 To 07.09.2019	05 Days ATI, Mysuru
52	Landslide Risk Mitigation & Management(Including revision of DDMP)	Revenue Department – Disaster Management	04-09-19 to 06-09-19	03 Days DTI, Chikkamagaluru
53	Revision of DDMP in Consultation with DDMA Drought Risk Mitigation & Management	Revenue Department – Disaster Management	04.09.2019 To 06.09.2019	03 Days DTI, Dharwada
54	Disaster Mitigation and Management for DDMA members	Revenue Department – Disaster Management	23.09.2019 To 27.09.2019	05 Days ATI, Mysuru
55	Mock Drills in Industries, Schools and Public Places	Revenue Department – Disaster Management	11.09.2019 To 12.09.2019	02 Days Mysuru
56	Grama panchayat level Hazard & Vulnerability Specific Disaster Management Plan	Revenue Department – Disaster Management	11-09-19 to 12-09-19	02 Days DTI, Kodagu
57	Management of Large Congregations and Stampede Risk Management	Revenue Department – Disaster Management	16-09-19 to 20-09-19	05 Days ATI, Mysuru
58	Health Care Management during Disasters	Revenue Department – Disaster Management	16.09.2019 To 20.09.2019	05 Days Mysuru
59	Earthquake Risk Mitigation and Management	Revenue Department – Disaster Management	23-09-19 to 27-09-19	05 Days ATI, Mysuru
60	Revision of DDMP in	Revenue Department –	23.09.2019	03 Days

	Consultation with DDMA Flood Risk Mitigation & Management	Disaster Management	To 25.09.2019	DTI, Dakshina Kannada
61	Safe City	Revenue Department – Disaster Management	03.10.2019 To 05.10.2019	03 Days Mysuru
62	Dam Safety Management	Revenue Department – Disaster Management	04.10.2019 To 05.10.2019	02 Days DTI, Mandya
63	Dam safety management	Revenue Department – Disaster Management	10.10.2019 To 11.10.2019	03 Days DTI, Shivamogga
64	Grama panchayat level Hazard & Vulnerability Specific Disaster Management Plan	Revenue Department – Disaster Management	10-10-19 to 11-10-19	DTI, Hassan
65	Safe Schools	Revenue Department – Disaster Management	14.10.2019 To 18.10.2019	05 Days ATI, Mysuru
66	Formulation of DM Action Plan	Revenue Department – Disaster Management	14.10.2019 To 18.10.2019	05 Days ATI, Mysuru
67	GIS Applications in Disaster Management	Revenue Department – Disaster Management	14-10-19 to 18-10-19	05 Days ATI, Mysuru
68	Mining and quarry related disaster management	Revenue Department – Disaster Management	21.10.2019 To 22.10.2019	02 Days DTI, Ramanagar
69	Disaster Safe Building Codes and Designs	Revenue Department – Disaster Management	21-10-19 to 25-10-19	05 Days ATI, Mysuru
70	Disaster Safe Building Codes & Design	Revenue Department – Disaster Management	21.10.2019 To 22.10.2019	02 Days DTI, Vijayapura
71	Mining and quarry Related Disaster Management	Revenue Department – Disaster Management	24.10.2019 To 25.10.2019	02 Days DTI, Bellari
72	Safe School	Revenue Department – Disaster Management	04.11.2019 To 08.11.2019	05 Days ATI, Mysuru
73	Disaster Mitigation and Management for DDMA Members	Revenue Department – Disaster Management	04.11.2019 To 08.11.2019.	05 Days ATI, Mysuru
74	Training of Trainer on Disaster Risk Mitigation and Management	Revenue Department – Disaster Management	04-11-19 to 08-11-19	05 Days ATI, Mysuru
75	Grama panchayat level Hazard & Vulnerability Specific disaster Management Plan	Revenue Department – Disaster Management	12-11-19 to 13-11-19	02 Days DTI, Koppal
76	Mock Drills in Industries, Schools and Public Places	Revenue Department – Disaster Management	13.11.2019 To 14.11.2019	02 Days Mysuru

77	Drought Risk Mitigation & Management	Revenue Department – Disaster Management	13.11.2019 To 14.11.2019	02 Days Chitradurga
78	Drought Risk Mitigation & Management	Revenue Department – Disaster Management	18.11.2019 To 19.11.2019	02 Days Haveri
79	Management of Large Congregations and Stampede Risk Management	Revenue Department – Disaster Management	18-11-19 to 22-11-19	05 Days ATI, Mysuru
80	Health Care Management during Disaster	Revenue Department – Disaster Management	21.11.2019 To 22.11.2019	02 Days Tumkuru
81	GIS Applications in Disaster Management	Revenue Department – Disaster Management	25-11-19 to 29-11-19	05 Days ATI, Mysuru
82	Coastal Erosion Management	Revenue Department – Disaster Management	26.11.2019 To 27.11.2019	02 Days Dakshina Kannada
83	Industrial & Chemical Disaster Management	Revenue Department – Disaster Management	29.11.2019 To 30.11.2019	02 Days Mysuru
84	Role of Media in Disaster Management	Revenue Department – Disaster Management	07.11.2019	Kalburgi
85	Disaster Safe Building Codes and Designs	Revenue Department – Disaster Management	02-12-19 to 06-12-19	05 Days ATI, Mysuru
86	Health Care Management during Disaster	Revenue Department – Disaster Management	03.12.2019 To 04.12.2019	02 Days Belagavi
87	Disaster Safe Building Codes & Design	Revenue Department – Disaster Management	03.12.2019 To 04.12.2019	02 Days Dharwada
88	Earthquake Risk Mitigation and Management	Revenue Department – Disaster Management	09-12-19 to 13-12-19	05 Days ATI, Mysuru
89	GIS Applications in Disaster Management	Revenue Department – Disaster Management	09-12-19 to 13-12-19	05 Days ATI, Mysuru
90	Incident Response System	Revenue Department – Disaster Management	09-12-19 to 13-12-19	05 Days ATI, Mysuru
91	Safe City	Revenue Department – Disaster Management	09.12.2019 To 11.12.2019	03 Days Mysuru
92	Health Care Management during Disasters	Revenue Department – Disaster Management	16.12.2019 To 20.12.2019	05 Days Mysuru
93	Man animal Conflict	Revenue Department – Disaster Management	23-12-19 to 24-12-19	02 Days DTI, Chikkamagaluru
94	Man and animal Conflict	Revenue Department – Disaster Management	26.12.2019 To	03 Days Mysuru

			28.12.2019	
95	Man animal conflict	Revenue Department – Disaster Management	27.12.2019 To 28.12.2019	02 Days Uttara Kannada
96	Flood risk mitigation & management	Revenue Department – Disaster Management	27-12-19 to 28-12-19	02 Days DTI, Bagalakote
97	Grama panchayat level Hazard & Vulnerability Specific Disaster Management Plan	Revenue Department – Disaster Management	30-12-19 To 31-12-19	02 Days DTI, Raichur
98	Disaster safe Building Codes & Design	Revenue Department – Disaster Management	02-01-20 to 03-01- 20	02 Days DTI, Kalaburagi
99	Flood Risk Mitigation & management	Revenue Department – Disaster Management	06.01.2020 To 07.02.2020	02 Days Bidar
100	Management of Large Congregations and Stampede Risk Management	Revenue Department – Disaster Management	06-01-20 to 10-01- 20	05Days ATI, Mysuru
101	Heat wave management	Revenue Department – Disaster Management	09.01.2020 To 10.02.2020	02 Days Yadgir
102	Mock Drills in Industries, Schools and Public Places	Revenue Department – Disaster Management	13.01.2020 To 15.12.2020	02 Days Mysuru
103	Flood risk mitigation & management	Revenue Department – Disaster Management	13-01-20 to 14-01- 20	02 Days DTI, Gadag
104	Coastal erosion management	Revenue Department – Disaster Management	13-01-20 to 14-01- 20	02 Days DTI, Udupi
105	Incident Response System	Revenue Department – Disaster Management	20.01.2020 To 24.02.2020	02 Days Mysuru
106	Role of Media in Disaster Management	Revenue Department – Disaster Management	08.01.2020	Mysuru DTI
107	Relief and Response in Emergency	Revenue Department – Disaster Management	03-02-2020 To 05-02-2020	03 Days Mysuru
108	Disaster Safe Building Codes and Designs	Revenue Department – Disaster Management	04-02-20 to 08-02- 20	05 Days ATI, Mysuru
109	Safe Schools	Revenue Department – Disaster Management	10-02-2020 To 15-02-2020	05 Days Mysuru
110	Safe City	Revenue Department – Disaster Management	17-02-2020 To 19-02-2020	03 Days Mysuru
111	Relief and Response in Emergency	Revenue Department – Disaster Management	24-02-2020 To 26-02-2020	03 Days Mysuru
112	Disaster Crisis and Management	Revenue Department – Disaster Management	02-03-2020 To 06-03-2020	05 Days Mysuru
113	Incident Response System	Revenue Department –	03-03-20 to 07-03-	05 Days

		Disaster Management	20	ATI, Mysuru
114	Relief and Response in Emergency	Revenue Department – Disaster Management	16-03-2020 To 18-03-2020	03 Days Mysuru

8.3.6 Training output (2018-19 to 2022-23)

Activity	2018-19		2019-20		2020-21		2021-22		2022-23	
	No.of Courses	No. of Trainees	No.of Courses	No. of Trainees	No.of Courses	No. of Trainees	No.of Courses	No. of Trainees	No.of Courses	No. of Trainees
State Level Training at ATI	54	1620	54	1620	54	1620	54	1620	54	1620
District and sub-district level training	60	1800	60	1800	60	1800	60	1800	60	1800
SATCOM Training and or through Video Conferencing	175 taluks (Receiving stations)	7000	175 taluks (Receiving stations)	7000	175 taluks (Receiving stations)	7000	175 taluks (Receiving stations)	7000	175 taluks (Receiving stations)	7000
Total	289	10420	289	10420	289	10420	289	10420	289	10420

Research and Documentation output: (2018-19 to 2022-23)

Sl. No.	Activity	2018-19	2019-20	2020-21	2021-22	2022-23
1	Action Research	6	6	6	6	6
2	Case study	3	3	3	3	3
3	Handbooks	3	3	3	3	3
4	State Plan	1	1	1	1	1
5	Training Modules on DM	20	20	20	20	20
6	Workbooks	5	5	5	5	5
7	Re-formulation/updation of district DM Plans	30	30	30	30	30
8	Training films on DM themes	2	2	2	2	2
	Total	70	70	70	70	70

8.3.7 Training Modules and Designs

The TNA study could bring out the areas of specific training needs for different levels of functionaries department-wise including the elected representatives of PRIs and ULBs. Based on key areas identified, the CDM has developed training modules/designs/manuals. As a result of TNA, a state level training plan was prepared for all the departments covering all levels of employees. These modules and designs are updated every year and after every training based on the evaluation and feedback of trainees.

8.3.8 Training Materials/ Handouts/Reading Materials

To improve the quality of training and to make it more relevant, the CDM has developed case scenarios, TTX & Mock drills, Field exercises, HRVC formats, DM Action Planning Tools etc.

8.3.9 Books/Case studies, Action Research

In order to ensure the quality and practical relevance, the CDM has prepared relevant Books, Case studies, Action research etc., which are used in the training. This is a continuous process and more such activities are continued.

8.3.10 Short films/E-Lectures

In order reach the training and awareness, certain short films and e-lectures have been prepared. Short films on flood & fire, E-lecture on DM, school safety, GIS are prepared.

we have started preparing for launching online Mooc- **massive open online courses** on Disaster Management themes.

8.4. State Level Training at ATI, Mysore

The CDM conducts training programmes at the State, district, taluk and village levels. Group A and B officers of the state Government are trained at ATI Mysore. 23 line departments of the state Government are identified as responsible for preparedness, mitigation and relief & rehabilitation and the trainees include Joint Directors, Deputy Directors, Assistant Directors of Agriculture, Animal Husbandry, etc. CE/SE/AEE of PWD, ZP, Local Bodies and all Technical Departments, DC, AC, Tahasildhar of Revenue Department. The officers in the similar grade working in other line departments are the target group



8.4.1 District Level Training

District and taluka level officers including elected chairpersons of local bodies are trained at District Training Institute. There are 25 District Training Institutes in the State. CDM conducts training in all the DTIs.

8.4.2 Taluk Level Training

All Taluk Level Officers such as Tahasildhar, TPEO, TMO, AEE/AE, Taluk Welfare Officer, CDPO, CO & elected Councilors. are trained at Taluk. CDM Conducts these training programmes.

8.4.3 Village/Community Level Training

Elected members of the PRIs, Representatives of NGOs, Anganwadi Workers, Village Accountants, Community Leaders, Members of the Local Committees, Members of the Self Help Groups, etc. are trained at village. These programmes conducted by the CDM Faculty in collaboration with other experts.

8.4.4 School Safety Training

Three days school safety management programmes are conducted at school/Colleges in collaboration with Fire Services, Homeguards, Traffic Police, Hospitals etc. Comprehensive School safety plans are being prepared as a result of the training by the respective principals. Within four weeks after training, the principals who have attended training were to prepare the plans and submit a copy to ATI and their HoD.

8.4.5 Field Training

The officers are taken to specific MaH units, vulnerable areas and Risk assessment was carried out in groups for preparation of DM Action Plans. Specific Risk Assessment tools were used during field training.

8.4.6 SATCOM/Satellite Based Training

In order to provide awareness on important issues of Disaster Management specific to talukas, districts and regions at a time covering large number functionaries and talukas, the ATI makes use of its satellite communication studio with two way audio and one way video facility. At a time, a large number of field functionaries, elected representatives, NGO/CBO representatives are trained through this method. At the same time a lot of questions posed to the resource persons are answered during the training and discussion sessions.

8.4.7 Mock Drills

In collaboration with MaH units, Line Departments, Schools, Police/Fire/Homeguards, Hospitals, etc., Disaster scenarios are created and mock drills are conducted at different locations such as MaH units, Public Offices, Public Places, Schools etc.

8.4.8 TTX, Mock Drill and Demonstration

Mock Drill and Demonstrations were designed and implemented in collaboration with line departments, BPCL, HPCL, IOCL, Organosys and other hazardous Private sector Industries. These drills have been highly appreciated by the participants as practical exposure provided them to devise their own rehearsal and safety mock drills at schools, colleges, industries and buildings



Table top exercise were designed and conducted for the medical officers and others who have attended the training on health care management at ATI, Mysore. This exercise design was implemented in the form of mock drill in collaboration with hospitals, fire service, home guards, police, media. This mock drill provided practice on how to handle mass casualties during disasters. At the end of the mock drill, feedback & corrective actions to be taken by the hospitals, doctors, police, and other stake holders was given by the observers designated in the exercise. It is found that such mock drills bring out defects and malfunctioning of systems to effectively handle the injured during disaster. All the stake holders participated in the drill have been able to rectify the defects based on the feedback.

8.4.9 Geographical Information system (GIS) – Laboratory

The CDM has set up a GIS laboratory with latest GIS software Arc GIS-10. The laboratory is used extensively for conducting training programmes on preparation of Disaster management plan, HRVC analysis, mapping etc. The participants of all the training programme conducted by CDM have been provided hands on training on vulnerability mapping, inputting and retrieving of relevant data for managing disasters at village, taluka and district levels.

8.4.10 Group Activities/Exercises

The participants were grouped based on the entry behaviour and were asked work in group on specific areas of Disaster Management Action Planning with reference to disaster scenarios such as Urban Flood, Drought, Building collapse, Air Crash, Epidemic situation etc. After the Group

Activity, each group was asked to present the works in the plenary. The lessons would be drawn by the Faculty during debriefing.

8.4.11 Role Plays

Disaster scenarios are given to the participants and participants are asked to prepare for playing respective roles. Feedback is given based on the observations by the Faculty and Experts

8.5 Evaluation of CDM Training

Evaluation of training programmes was done for all the programmes conducted both at ATI and Off – Campus. A three stage evaluation is done; 1) Filling the Evaluation Forms with respect to the content and training objective/outcome, 2) Oral Feedback by the participants on the same points, 3) Assignments in the form of Plans and Projects within 4 weeks. Participants of the programme have given the feedback at the end of each programme. Some key areas for adoption and improvement are listed below;

- Participatory methods, mock drills, group activities & presentations were useful.
- Table top exercises have provided skills
- Field visits and HRVC analysis were helpful for preparation of DDMP
- Case studies and project experiences provided practical exposure
- Group exercise helped learning from each other
- Group presentations and role plays have provided team building skills
- Short films followed by discussions have helped to understand better
- Book provided adequate information
- ToT programmes provided trainer skills and designing skills to officers for conducting DM Training at Local levels
- SATCOM based training provided awareness on CBDM to large number of field functionaries across the state

Overall, the training programme including trainers, methodology, content, case studies, reading materials (soft & hard copies), hostel facilities, library, class room & other facilities have been rated between very good to excellent. A few sessions between 5-10% rated as average and ineffective have been corrected.

Professional Organizations utilized for training and awareness activities

- National Institute of Disaster Management
- Karnataka State Natural Disasters Management Centre (KSNDMC)
- National Informatics Centre (NIC):
- Voluntary Agencies and Community Based Organizations (CBOs)
- Karnataka State Remote Sensing Application Centre (KSRSAC)
- Red Cross Society (RICS)
- NIMHANS
- NITK Suratkal,
- IISc Bangalore,
- VTU, SJCE, NIE
- Mass Media
- Karnataka State Fire and Emergency Services(KSFES)
- Civil Defense & Home Guards
- Others

8.6 Capacity Building for Gender Perspective in DM

The CDM ATI Mysore conducts training on Gender concerns in disaster management. The issues on vulnerability of women to various disasters, addressing the concerns of women before doing and after disaster events, planning for Gender sensitive disaster action plans, role of women in

disasters, training of women on first aid, response, activity etc., are discussed during the training. The training is given to officers of all the departments.

8.7 Capacity Building for Psychosocial Care (PSC) during Disasters

CDM, ATI, Mysore conducts training on Psychosocial care (PSC) in collaboration with NIMHANS. PSC is a process that deals with a broad range of psychosocial problems and promotes the restoration of the social cohesion and infrastructure as well as the independence and dignity of individual and groups. It serves to prevent pathologic developments and further social dislocations.

8.8 Outcome of the CDM Training

The ATI Mysore through CDM is exploring all possible training methods to not only transfer learning but to practice and apply the skills and knowledge back home in their respective place of work. Efforts are made to develop skills by devising exercises, cases studies, mock drills, Field visits, Disaster scenarios and TTX etc. Participants were given tasks of formulating and reformulating disaster action plans at the end of training programmes. The faculty of CDM could follow up and helped the officers to complete the preparation of plans by conducting remedial training at District & Taluk levels. Participants were able to prepare HRVC analysis and fill the templates distributed to them. Awareness, knowledge on DM, preparing workable DM plans, conducting regular safety drills, dos and donts during disaster, SOPs and roles and responsibilities of officers are some of the important inputs that have made impact among the officers. Village & Taluk level training programmes have helped the grass root functionaries to be aware of the community based disaster management. SATCOM programme has reached PRIs and field level officials. The CDM has prepared a few important short films on Flood and fire, e-lectures, books, action research studies, training modules to improve the effectiveness of training and for use in all training programmes. Disaster scenarios, exercises, mock drills, field visits for HRVC analysis provided practical experiences to a large extent. Many schools and colleges have prepared DM action plans after the taking training at ATI Mysore. The Group activities have played an important role in applying the experiences and knowledge to simulated exercises in the class.

CHAPTER 9

COMMUNITY BASED DISASTER PREPAREDNESS & AWARENESS

9.1 Introduction

Local opportunities and constraints can be better understood by the local communities themselves who therefore need to be involved in the identification and resolution of disaster vulnerability issues. The Village and Block level disaster management plan shall be prepared by the Local Community facilitated by the concerned Officers of line departments such as Revenue, PRIs, Police, PWD, Irrigation, Industries, NGO, Community leaders, Local experts and senior citizens, youth groups etc. At the village level, it is crucial to enable the community, GP members, Youth, women SHGs, Sthree Shakthi Group, School Teachers/Anganawadi workers and Health workers etc., to be part of the members of the Disaster Management plan for preparedness, mitigation and Response. The steps in the preparation of Village/Block Plan would be similar to District Disaster Management Plan. The community members shall be associated with various DM teams such as Village DM Team, Evacuation Team/Relief Team/Rescue Team/First Aid Team, Mitigation Team and Mock Drill Team. The Officers of the Government at the Local/Block level and the community representatives need to be trained frequently twice in a year to perform the tasks of Disaster Management.

In the context of disaster risk management, a community can be defined as people living in one geographical area, who are exposed to common hazards due to their location. They may have common experience in responding to hazards and disasters. However, they may have different perceptions of and exposure to risk. Groups within the locality will have a stake in risk reduction measures.

9.2 Why Community Involvement in Disaster Management?

It is noticed over the years that the top-down disaster risk management and response activities of the Government and others fail to address specific local needs of vulnerable communities, ignore the potential of local resources and capacities, and may in some cases even increase people's vulnerability. Addressing the root causes of disasters, e.g. poverty, discrimination and marginalization, poor governance and improper Implementation of development schemes, would contribute towards the overall improvement in the quality of life and environment. The community therefore needs to be aware of the close relationship between the development and disaster risks. Participatory Disaster Risk Assessment: It is a process whereby all concerned parties collect and analyze disaster risks information, in order to make appropriate plans and implement concrete actions to reduce and/or eliminate disaster risks that will adversely affect their lives. It is both a dialogue and a negotiated process involving those at risk, authorities and other stakeholders

Karnataka has been traditionally vulnerable to natural disasters on account of its unique geo-climatic conditions. Floods, droughts, cyclones, earthquakes and landslides are regular phenomena in India. The need is felt to reduce disaster risks by improving capabilities of people and ensuring preparedness, mitigation and response planning processes at various levels. The objective is to look at the entire cycle of disaster management in reducing risk and linking it to developmental planning process. In the past, disasters were viewed as isolated events, responded to by the Governments and various agencies without taking into account the social and economic causes and long term implications of these events.

The recent disasters and its socio-economic impact on the country at large, and in particular the communities has underscored the need to adopt a multi dimensional approach involving diverse scientific, engineering, financial and social processes to reduce vulnerability in multi-hazard prone areas. In view of this, the Government of India has brought about a paradigm shift in its approach to disaster management. The change is from "relief and emergency response" to a balanced approach covering all phases of the Disaster Management Cycle. This approach acknowledges disaster

management as a part of the development process, and investments in mitigation are perceived to be much more cost effective than relief and rehabilitation expenditure. In this regard, Government of India has taken various initiatives in area of disaster preparedness, mitigation and response through networking of various institutions, institutional capacity building, and policy interventions at all levels. Community participation and community ownership in disaster risk reduction is one of the key factors in reducing vulnerabilities of people and minimizing the loss. The Government of India's focus Community Based Disaster Preparedness (CBDP) approach promotes community involvement and strengthening of their capacities for vulnerability reduction through decentralized planning process. This document deals with the concept, component and some of the best practices in India.

9.3 Community Based Disaster Preparedness

Analyses of response to past disasters have highlighted reaching out to the victims within the critical period during an emergency as a major requirement to protect people and assets. This has resulted in developing mechanisms to mitigate disasters at the grassroots level through participation of communities. Communities being the first responder and having more contextual familiarity with hazards and available resources are in better position in planning and executing immediate rescue and relief actions. In areas that have experienced repeated disasters, the communities are realizing that they need to work out a plan to prevent losses and at the same time enable faster recovery in the event of an emergency situation. To convert this realization into an effective plan, they need guidelines which will help them to prepare their own Community Based Disaster Management plans to safeguard lives, livelihood and property.

The primary goal of CBDP is to reduce vulnerability of the concerned community and strengthen its existing capacity to cope with disasters. The approach of preparing the CBDP plans considers people's participation a necessary pre-requisite for disaster management. By involving the community in the preparedness phase, it not only increases the likelihood of coordinated-action by the communities to help in mitigating disasters but also brings the community together to address the issue collectively. There are evidences of collective and coordinated action yielding good results and to a great extent it has been effective in lessening the impact of disaster.

10 Steps Procedure for CBDM Planning at Village/Block Level

1. Organizing Local Community Members (Men, Women, Youth, SHG, Officials of TP/GP/ULB/Rev/PWD/Fire/Police/Irrigation Department including elected representatives etc.)
2. Training the above members on Basic Disaster Management skills and Roles and Responsibilities before, during and after the disaster and Local Action Planning
3. Building the Appropriate Rapport, Coordination and Team spirit among the members
4. Hazard, Risk, Vulnerability of the Village/Block: Survey, Analysis and Mapping
5. Data on Past History of Disasters
6. Preparedness Plan: Teams and Task forces including readiness of the teams and resources
7. Mitigation Plan: Structural ((Housing Type, Irrigation channels/Tanks etc.) Non-structural (Community preparedness, Coordination, Capacity Building, Training etc)
8. Loss and Damage Assessment
9. Rescue, Relief and Rehabilitation
10. Every year training for community through SATCOM and Video Conference

CHAPTER 10

INSTITUTIONAL ARRANGEMENTS FOR IMPLEMENTATION OF PREPAREDNESS, PREVENTION, RESPONSE AND RECOVERY

10.1 Introduction

The institutional arrangements at the district, State and National levels for Disaster Management for different levels of disasters are described in the Chapter-4. The Standard Operating Procedures for the officers and departments are given in the Chapter13 and 14. In this Chapter, the arrangement for implementation of preparedness, mitigation and response are briefly explained.

Sections 30 (2) (xix) of the Act mandates the DDMA for collaboration with stakeholder agencies including NGOs for the purpose of improving the effectiveness of DM. Similarly the Act mandates NGOs to act in an equitable and non-discriminatory manner for the purpose of assisting or protecting the disaster affected communities or for providing relief to the affected communities or while dealing with any effects of threatening disaster situations and has fixed the responsibility to monitor this on DDMA's vide section 34 (1).

Section 30 (2) (xix) of the Act stipulates that the DDMA shall “advise, assist and coordinate the activities of the Departments of the Government at the district level, statutory bodies and other governmental and non-governmental organizations in the district engaged in the disaster management” and Section 24 (1) lays down that the DDMA shall “ensure that the non-governmental organizations carry out their activities in an equitable and non-discriminatory manner”. The Act also directs the State Government under Section 38 (2) (a) to coordinate “actions of different departments of the Government of the State, the State Authority, District Authorities, local authority and other non-governmental organizations”.

10.2 KSDMA and Revenue Department (DM), GoK

The KSDMA has the overall responsibility and powers to manage all types of Disasters in the State. It formulates State specific DM policies, plans and guidelines as per the National Disaster Management Policy. The Revenue Department(DM), GoK headed by the Secretary is the overall incharge of Disaster Management in the State. The Department functions as a coordinating and implementing agency for all the departments, district administrations, GoI and its agencies. The department works under the guidance of KSDMA. The department ensures the preparation and implementation of DDMP and SDMP by the DDMA's. It is the Nodal Department to prepare Memoranda of loss and damage assessment and seek the required funds for relief and recovery from the GoI and Central agencies. It directs the district administrations, PSUs, UDAs, PRIs, ULBs, Industries, MaH units, Institutions, School and Colleges etc., to be prepared for disaster management by having a comprehensive disaster action plan comprising preparedness, prevention, response and recovery.

DDMA's shall:

- Prepare inventory of all research and academic institutions, NGOs and other stakeholders located in each district.
- Facilitate their membership within the technical committee(s)
- Establish Partnerships with line departments and external stakeholders
- Coordinate periodic meetings
- Support NGOs for community mobilization

10.3 Institutional Arrangement for Preparedness

Departments/Agencies	Preparedness Phase/Indicative Task
All 23 departments of GoK, DDMA, Coast Guard including Technical and Research Organizations, NGOs, SDRF, ULBs, PRIs, KPTCL, KPC, BSNL, AIC, KSNDMC, KRSAC, IMD	<ul style="list-style-type: none"> • Vulnerability Assessment • Dissemination of Warning • Emergency Response Activities • Coordination • Rapid Damage Assessment • Maintenance of Essential Services • Stocking of Essential Commodities • Medicines • Drinking Water • Shelter/Camps • Mock Drills • Training Plan

10.4 Institutional Arrangement for Mitigation

Departments/Agencies	Mitigation Phase/Indicative Task
All 23 departments of GoK, DDMA, NGOs, ULBs, PRIs, KPTCL, KPC, BSNL, AIC (PWD, Irrigation, Housing Department, Factories and Boilers, Water supply, Health, Animal Husbandry have special role in mitigation, IISc, NITK, All Engineering Colleges, NIMHANS etc.	<ul style="list-style-type: none"> • Structural and Non- Structural Mitigation • Short & Long term Mitigation Building bye-laws, awareness, education, planning, HRV, repairs and retro-fitting of all vulnerable structures coming under respective departments

10.5 Institutional Arrangement for Response

Departments/Agencies	Response Phase/Indicative Task
All 23 departments of GoK, DDMA, IRS, EoC, SoC, NGOs, CBOs, SDRF, ULBs, PRIs, KPTCL, KPC, NIMHANS, BSNL, AIC (Police, Fire Service, Civil Defence, Home Guards, Para-Military Forces, Government and Private Hospitals have special role) IMD, CWC, KSNDMC, SEOC, Red cross society, MHA have special role in early warning	<ul style="list-style-type: none"> • Search and Rescue • Evacuation Plan • Activate Control Rooms • Search and Rescue Team • Early warning and Communication • Identification of Nodal Officer • Relief • Rehabilitation • Reconstruction

10.6 Role of State Government Department/Agencies in Disaster Management

KSDMA/DDMAs will take all appropriate measures for transparency in the relief operations. Affected people shall be apprised of the nature and quantum of relief admissible to them. Proper formats will be developed to acknowledge the receipt of relief materials and their further distribution. GoI has issued norms for relief compensation for different damages and losses vide GO No. 22-1/2018-NDM-Dated: 28-01-2019, All Relevant Department under the overall supervision of the DC and ADC will carry out damage and loss assessment in the first few weeks following the disasters.

SL No	Types of assessment	Period	Objectives
1	Rapid assessment	Within 24 hours of disaster	To determine the nature and get an overview extent of damage so that Rescue and Relief measures can be planned and prioritised
2	Detailed assessment	72 to 96 hours of the disasters	To determine as precisely as possible the extend of damage so that Relief measures are undertaken in the affected areas
3	Individual levels loss assessment	Within the first month or month and half of the disasters – continuously updated thereafter	To get details of specific losses and damages to life, livestock, housing, land – to enable restoration planning and provide compensation.

10.6.1 Central Water Commission (CWC)

The Central Water Commission (CWC) provides flood forecasting and warning. The flood forecasting network of the CWC covers all the major flood-prone inter-state river basins in the country. Flood forecasting and warning system is used for alerting the likely damage and enables the people to move and also to remove the moveable property to safer places.

10.6.2 Bureau of Indian Standards (BIS)

The Bureau of Indian Standards (BIS) provides standards for construction in seismic zones, popularly known as Building Codes. The building construction in urban and suburban areas is regulated by the Town and Country Planning Acts and Building Regulations.

10.6.3 Interest Group/Voluntary Groups:

These are also NGOs, which are multi-purpose in nature having varied interests, such as the Rotary Club and Lion Club. Such interest groups are very active help to disaster victims in the times of need. They could also play a major role in resource mobilization for relief aid and rehabilitation purpose.

10.6.4 Association of Local Occupation groups:

Such association are formed on the basis of common occupational backgrounds, and could include groups such as doctors' association, traders' association and Army wives' associations, officers & employees association etc. such groups, just like other interest groups, could play a major role in resource mobilization, and provision of specialized services to the victims in any emergency situation.

10.6.5 Geological Survey of India

Geological Survey of India located at Chandigarh is responsible for coordinating and understanding geological studies for landslide hazard mitigation and for carrying out landslide hazard zonation, monitoring landslides and avalanches and studying the factors responsible for sliding and suggesting precautionary and preventive measures.

10.6.6 Building Material & Technology Promotion Council (BMPTC)

As part of Ministry of Housing & Urban Poverty Alleviation BMPTC is knowledge and demonstration hub for providing simple solutions aimed at common man in the field of sustainable building materials, appropriate and disaster resistant construction.

10.6.7 CFTRI and DFRL

These central institutions have come to the relief of affected in the form of readymade/packaged food materials and are located in Mysuru city

10.6.8 Religious Bodies

Religious bodies such as Suttur, ISCON will come to the immediate rescue and relief of the disaster victims. These bodies have a large and dedicated following in their communities. They also have control over the local places of worship, which are usually built on high and safe ground, and can serve as ideal shelters for the disaster victims. Besides, they often have infrastructure and resources to feed mass gathering, which facilitate disaster relief work. District-wise inventory of all such facilities shall be prepared by respective DDMA.

10.6.9 Educational Institutions

The education institutions such as schools and colleges play an important role in disaster management. Their prime responsibility is to spread awareness on natural disasters, provide preventive action needed to minimize damage due to disasters as well as ensure immediate relief and rescue. Besides, these institutions have large buildings at local level, which could be used as shelters for the victims in the times of disaster.

10.6.10 Indian Red Cross Society

In India, we have Red Cross Society at the national, state and district levels. This is not just an agency, but also a movement for providing relief to the people when they are in dire need of it. Being apolitical organization it is the image of the Red Cross that makes, it one of the most acceptable institutions in the area of providing relief to the people in distress

10.6.11 Media

Recently, the print, electronic new and social media have great impact on the people in India. Media also have the capacity to facilitate effective natural disaster management in urban and rural areas. The suggestive, informative and analytical role of the media must form a key component of disaster education. It is the most potent way of educating the community on disaster prevention, mitigation and rehabilitation.

10.7 Use of technology

- Technology will be extensively used for effective storage and processing of data.
- GIS Maps will be developed and operators trained in their use.
- All data will be added to these maps
- Information from DEOC will get updated directly onto consolidated maps at the SEOC
- These outputs will be used for decision making on planning response

10.8 General Preparedness

Each Department and Govt. agency involved in Disaster Management and mitigation will:

- ✓ Designate a Nodal officer for emergency response and will act as the contact person for that department / agency.
- ✓ Ensure establishment of failsafe two-way communication with the State, District and other emergency control rooms and within the organization.
- ✓ Emphasis on communication systems used regularly during L0 with more focus on the use of VHF's with automatic repeaters, mobile phones with publicised numbers, HF radio sets etc. It should be remembered that SAT phones fail during prolonged emergencies and electric failure if the phones cannot be re-charged.
- ✓ Work under the overall supervision of the Principal Secretary/Secretary(Disaster Management)/DC (DDMA) during emergencies.

At the district level, all the departments shall work to prepare the DDMP under the overall supervision of the DC who is also the chairperson of DDMA.

10.9 Revenue Department (Disaster Management)

- Coordination with Govt. of India and District Administration
- Overall control & supervision
- Damage assessment, finalization of reports and declaration of L1/L2/L3 disasters
- Mobilization of finance and other resources

10.10 Home Department

- Requisition, deployment and providing necessary logistic support to the armed forces
- Provide maps for air dropping, etc.

10.11 Voluntary, Bilateral and Multilateral Agencies

Participation of the community is crucial in Disaster Management. However, preparing the community for appropriate response within a limited time and motivating it for adopting long-term mitigation measures would require a very sustained, intimate and a flexible approach. This is a challenge which can be effectively addressed through involvement of NGOs and CBOs (Community Based Organizations) due to their close linkages with the community, their outreach and flexibility in procedural matters.

10.12 NGOs & CBOs

Local NGOs and CBOs, due to their proximity to the community, can act as a vital link between government and the community particularly during emergencies. They are in a better position to appreciate the area and time specific problems of the people and their flexibility in approach makes them more acceptable in the community. These organizations work generally in the fields of health, education, livelihood, micro-finance, infrastructure, animal husbandry, social reforms, etc.

Indian Red Cross Society and other international NGOs have considerable experience and expertise in emergency management. These organizations, apart from their resources and expertise, have a network of NGOs whom they can harness during emergencies. They could also play a vital role in information dissemination because of their existing global network.

The NGOs can be used through following actions;

No.	Issues	Action Points
1.	Geographic spread of NGOs	Develop a database of NGOs at all levels working on disaster management focusing on geographic outreach and thematic capacities of the organizations. (Action: DDMA with the help of NGOs)
2.	Volume of support provided by NGOs	Compile statistics on quantum of support provided by NGOs at all levels, both international and national. (Action: DDMA)
3.	Coordination	Establishing inter agency mechanisms for coordination and networking activities (information and knowledge management, training and capacity building, collaborative advocacy, quality and accountability) at all levels. (Action: DDMA)
4.	Accessibility	Establish protocols for cooperation and ensure access to the affected areas with support from government agencies at respective levels like NDRF and SDRF that have good logistics base to reach inaccessible

		areas. (Action: DDMA, NGOs, CBOs)
5.	Hazard and vulnerability based planning	Conduct community centric hazard and vulnerability analysis at all levels, and develop disaster management plans in accordance. (Action: DDMA, NGOs)
6.	Community participation	Ensure community participation in assessment, planning, implementation and monitoring of activities at all levels. (Action: DDMA, NGOs, CBOs)
7.	Mainstreaming of Disability Issues in DM	Support the most vulnerable groups through mitigation activities as well as disaster preparedness and response, with a particular focus on the special needs of the Persons with Disabilities (PWDs). (Action: DDMA, NGOs)
8.	Gender Mainstreaming	Make women's as well as men's concerns and experiences an integral dimension in the design, implementation, monitoring and evaluation of policies and programs such that inequalities between men and women are not perpetuated through the routine operations of DM. (Action: DDMA)
9.	Focus on most vulnerable rather than only on Epicentre	National level: Advocate with all actors to reach out to gap areas State level: Coordinate among actors to identify gap areas District and Local level: Ensure targeting with equity and outreach to all excluded areas. (Action: District NGO Task Forces in DM)
10.	Rural-urban diversity	Develop the capacities of NGOs or specialized civil society agencies at all levels to manage urban as well as rural disasters and accordingly make investments. (Action: DDMA)
11	Adherence to standards	National level: Develop minimum standards for India State level: Develop minimum standards for the state District and Local level: Develop capacities for adherence to minimum standards through collective and coordinated efforts of all stakeholders (Action: DDMA, NGOs, CBOs)
12.	Transparency and accountability	Develop an agreed framework of accountability for all levels and mechanisms to bring in transparency. (Action: DDMA)
13.	Do No Harm	Advocacy at all levels on Do No Harm through disaster response and development interventions. (Action: District NGO Task Forces in DM)
14.	Exit strategy	Ensure that the NGO programmes have an exit strategy to link with long term recovery/rehab/development programs of other NGOs or the government. (Action: District NGO Task Forces in DM)

10.13 Bilateral Organizations

Bilateral agencies play a major role in disaster management and work through government as well as NGOs and other partner agencies. They provide resources for preparedness, research, networking and institution development, relief, reconstruction and rehabilitation. They can assist in making suggestions for possible changes in policies by sharing of disaster management applications in other parts of the world. In addition they can provide technical expertise and give

support by mobilizing advanced rescue and evacuation teams from other countries during the time of extreme emergencies. These organizations carry out responsibilities in coordination with the Government of the affected country, other donor Governments, international organizations, UN agencies and NGOs.

10.14 Corporate Bodies

So far the role of corporate sector has been limited to relief and reconstruction activities following emergencies. Some business centers and corporate houses have special cells to take up relief activities.

- The corporate sector can play an active role in preparedness and planning through raising community awareness in their project areas on various aspects of disaster preparedness
- Providing specialized equipments (earthmoving equipments, boats, etc. for disaster response
- The corporate sector will be encouraged to develop a fund at the state and district levels for preparedness and post-disaster activities.
- Mobilization and creation of contingency fund for relief and recovery activities
- Provision of technical know-how to manage disasters (especially industrial accidents, fire etc.)

10.15 UN Agencies:

The UN has a central and unique role through the organizations under its aegis, coordinate international co-operation in the field of disaster management and mitigation. Even though disaster management and mitigation rests on the National Government, the UN agencies are responsible for providing advice and assistance to the government and responsible to mobilize and provide technical and material assistance according to its mandate and resources.

10.16 UNICEF (United Nations International Children's Emergency Fund)

The SDMA/the Department of DM (RD)/State administration may request the UNICEF for following assistance

Provision of emergency relief to the affected communities

- Immunization
- Restoration of health infrastructures
- Supply of educational and other infrastructures to the affected schools
- Restoration and augmentation of sanitation and drinking water facilities
- Establishment of child labour prevention school
- Supply of boats to the State Government

The key areas of UNICEF's involvement in disaster mitigation will be

- Post disaster situation and needs analysis with the help of NGOs or Govt. machinery.
- Promoting & guiding disease surveillance
- Training support for medical personnel for control of epidemics
- Provision of relief support to the affected community as per its mandate.
- Supply of emergent food aid relief, medicine and study materials for children of the affected communities.
- Allocate/generate financial assistance for restoration and rehabilitation activities in the affected areas.
- Restoration of drinking water and sanitation facilities in post disaster period.
- Incorporate disaster preparedness aspects in its ongoing programs.
- Special programmes for child and mother health

10.17 UNDP (United Nations Development Programme)

UNDP is mandated to promote incorporation of disaster mitigation in development planning and provide financial support and technical assistance for different facets of disaster management. Assistance is also provided in the planning and implementation of post disaster rehabilitation and reconstruction and incorporation of risk reduction techniques in the affected areas.

The activities of UNDP in the State could be as follows;

- ✓ Supporting the State and district administration in distribution of relief
- ✓ Co-ordination of NGO activities in the affected areas
- ✓ Promotion of alternative housing techniques in the affected areas
- ✓ Strengthening of disease surveillance
- ✓ Supporting Disaster Preparedness initiatives in the State through organizing workshops, training programmes for various stake holders
- ✓ Initiating community based disaster preparedness programme in the State
- ✓ Initiation of sustainable livelihood programmes
- ✓ Provision on agricultural inputs immediately after emergencies
- ✓ Provision of tents, family relief kits

UNDP can play the following roles in a disaster management;

- ✓ Incorporation of disaster mitigation in development planning.
- ✓ Support and get involved in planning and implementation of relief and rehabilitation activities of the Govt.
- ✓ Propagate disaster preparedness in community level through NGOs, CBOs, PRIs and Govt. machinery.
- ✓ Play a vital role in preparing disaster management plans at state, district, block and community levels.
- ✓ Play a vital role in designing early warning systems.

10.18 WFP (World Food Programme)

World Food Program provides targeted food aid to vulnerable communities for humanitarian relief and supports rehabilitation, reconstruction and risk reducing development programmes.

10.19 FAO (Food and Agriculture Organization)

FAO provides technical advice in reducing vulnerability and helps in the rehabilitation of agriculture, livestock, fisheries and local food production. It also monitors food production and forecasts any requirements of exceptional food assistance.

10.20 WHO (World Health Programme)

WHO provides advice and assistance in various aspects of preventive and curative health care including preparedness of health services for rapid disaster response.

10.21 Important organizations and contact details

Sl. No	Departments/ Organization	Contact Details
1	SDMA	080-22032995
2	Revenue Department (DM)	080-22032995
3	NDRF	011-23438091,011-23438136
4	SDRF	101
5	Fire and Emergency Service	101
6	Civil Defense	080 2557 6851

7	IMD	1800220161, 080 22211118, 080 22235675
8	GSI	080-26662595
09	KSNDMC	080-67355000
11	KRSAC	080 2972 0557
12	Directorate Health and Family Welfare	080-022873151
13	Factories and Boilers	080-26531200
14	Forest Department	080-23343770
15	PWD	080-22255210
16	Red Cross Society	080-22264205
17	NIMHANS	080-26995530
18	DGP	080-22942999
19	SEOC	1070 (Free Toll)

CHAPTER 11

MAINSTREAMING DISASTER REDUCTION WITH DEVELOPMENT PLAN OF THE STATE AND DISTRICTS

11.1 Introduction

“Mainstreaming risk reduction” describes the process to fully incorporate disaster risk reduction into development planning. Government funded schemes and projects taken up for implementation in all development sectors should invariably go through the process of risk assessment and risk reduction strategies. The state of Karnataka has led the decentralization process both for the rural and urban local bodies. All development plans and projects are being prepared by the local bodies namely Zilla Panchayats and Municipalities. Development plans are prepared right from the village level to district level and an integrated district plan is prepared by the ZP with participation of all the line departments and community. Every district has formed District Planning Committee under the chairmanship of President of the Zilla Panchayat with larger representation from line departments.

Purpose of DRR

- Development programmes and projects that originate from or funded by Government are evidently designed to be disaster resistant and sustain hazard impact.
- To make certain that all the development programmes and projects that originate from or are funded by Government do not inadvertently increase vulnerability to disaster in all sectors: social, physical, and economic and environment.
- To make certain that all the disaster relief and rehabilitation programmes and projects that originate or are funded by Government are designed to contribute to development aims and to reduce future disaster risk.

In this background, the state has good decentralized system of planning at every level right from grass root level. This approach to development planning would make it possible for the district administration to easily incorporate the disaster risk reduction measures at every level of planning process.

Following actions are required

- Political will, willingness of the top state level Government officials and district level officers of the line departments and the deputy commissioner of the district are prerequisite for mainstreaming initiative. Without the acceptance, participation and ownership of the local governments, line departments, private industries and NGOs to reduce disaster risks within their jurisdiction/area of influence, the mainstreaming cannot be sustained.
- The local level Disaster Management Teams will have significant impact on mainstreaming process if they are made workable with necessary infrastructure.
- Since resources for development and development plans are vested with the ZP and ULB, these organizations need to prepare disaster risk reduction plans as part of the development plan.
- Administrative Training Institute Mysore through its Centre for Disaster Management prepared a training and capacity building plan for the officials of the line departments, elected representatives, NGOs and community level functionaries and such training would help them to prepare disaster risk reduction plans.
- Mainstreaming can not take place unless training is given to the functionaries. ATI Mysore in order to bring large scale awareness about the disaster risk reduction has planned a comprehensive training plan on disaster management to cover the entire target group.
- While it is required to give training to the functionaries at PRIs and ULBs, simultaneously, the capacity building in terms of infrastructure, communication network, equipment, machineries, vehicles etc., also need to be provided to these organizations and other line departments such as Health, Police, Fire, Home guards, and Agriculture etc.

- The local plans prepared at village, ward, taluka and town levels shall be converged into the district development plan of which the disaster risk reduction plan has to be the main component.
- Obtaining political commitment for disaster risk reduction into state development planning and assess and revise the existing policies of the departments and organizations to assign tasks and responsibilities for disaster management.
- Institutionalize disaster risk reduction.
- Elaborate hazard mapping and vulnerability assessment need to be done.
- Monitoring system for different hazards in the state with state of the art warning systems
- Disaster Risk Reduction measures in every development project such as roads, highways, dams, industries, power, drinking water, buildings, schools, housing, heritage monuments etc.
- Elements of impact assessment, risk reduction, and the “do no harm” approach to be built into the developmental plans of each department.
- Economic and social infrastructure like irrigation, power, drinking water, sanitation, roads, buildings, schools and hospitals, housing, heritage monuments etc., need special attention while planning for disaster risk reduction

11.2 Approaches to Integration of Disaster Management in Development Planning

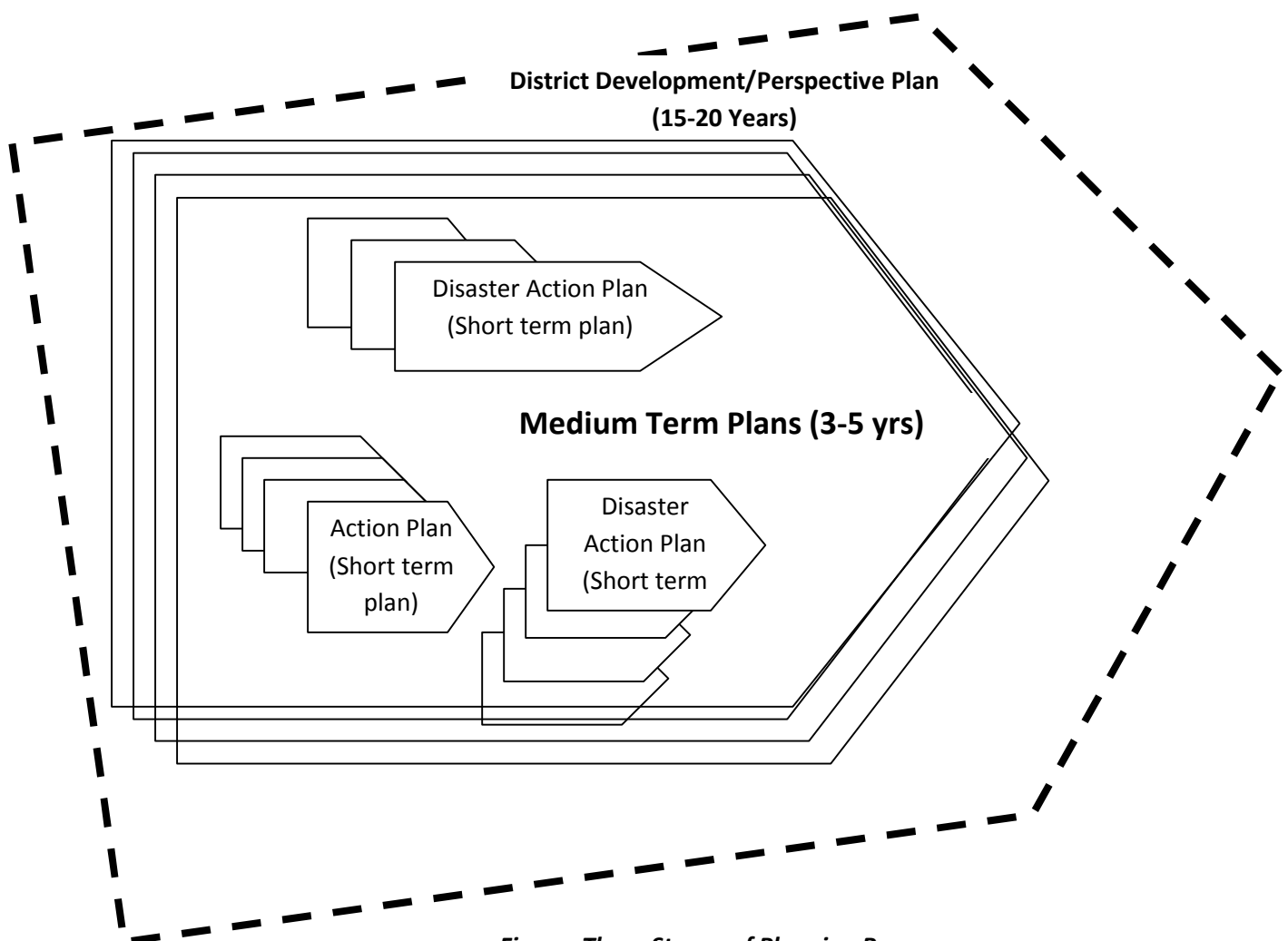


Figure: Three Stages of Planning Process

11.2.1 Short-term Plan (Up to 2 years)

The preparation of short term plans involves the process of identification of problems, setting objectives, Force-field analysis, Developing options, prioritization, choosing/Deciding the option, plan action, implementation, operation and maintenance. The monitoring and evaluation is a continuous process from the beginning to end. Disaster risk reduction plans should be prepared simultaneously while the development plans are prepared. The municipalities and the Grama Sabhas have to prepare the short term action plans. Since the Ward Sabhas have not been set up in urban areas, the municipalities have to prepare the action plans.

11.2.2 Medium Term Disaster Risk Reduction plans

These plans would include medium term disaster risk reduction plans with investment drawn from the respective departments. A medium term plan of 3-5 years focuses on achieving prioritized objectives. It normally comprises a number of programmes and projects which are closely tied into the commitments –institutional and investment including Government which are necessary for implementation. A medium term plan may consists of more than one action plans. A medium term plan could comprise a number of multi-sector investment plans that are drawn from different sectors such as infrastructure, poverty, housing, health etc. The GoI and State schemes like MGNREGA, NRHM, JnNURM etc., and all such schemes must be converged to reduce impact of any possible disaster.

11.2.3 District Development Plan

It should be a statutory development plan for a period of 20 years. The district development plan should be evolved based on the action plans and medium term plans of the rural and urban areas. The medium term/multi-sector plans requiring investments of different magnitude and based on their priority are spread across a scale of 20 years. This perspective/development plan is prepared based on the action and medium term plans prepared by the local bodies and various departments. At every stage of planning, it should be made mandatory to assess the hazard and vulnerability aspects of various development plans and programmes of the departments/organizations. Based on the risks involved due to various disasters/hazards, adequate disaster risk reduction measures are to be planned. It would be appropriate if these disaster risk reduction plans are incorporated at every taluka and town level plans and finally converged into the district disaster management plan. The state disaster management plan is basically the reflection of the district disaster management plans of all the districts in the state.

a. Planning for Disaster safety in Public Infrastructure Projects:

Disaster Management and Risk Reduction plans should be prepared for important infrastructure projects namely:

- Metro Rail
- DRR in Highways and other roads
- DRR plan for Bridge/Fly over Safety
- DRR plan for under pass stability
- DRR plan for life line buildings and public utility buildings such as Hospitals, Universities and Colleges, Public Offices, Convention Halls etc.,

The State Disaster Management Plan proposes the following actions for the district administration/DDMA;

- Assessment of hazard, risks, vulnerability and capacity of each district on continuous basis
- Preparation of Disaster Management Plan
- Structural and non-structural Mitigation Plan
- Revision of plan on monthly basis and seasonal basis depending on the preparedness levels required
- Mock drilling/rehearsal of plan
- Preparation of Budget requirements

- If budget requirement exceeds the available resources, it can be spread over to a medium term plan of 3-5 years.
- DM plan needs to be integrated into the District Development Plan

11.3 Mainstreaming Disaster Risk Reduction in District Development Plan

District Administration under the DC and the CEO of Zilla Panchayat are the two focal points for implementation of all the Government policies, plans, schemes, projects in the district. Almost all the ULBs, PRIs, Line Departments and other Government Agencies are also to work under the overall guidance and control of DC in the district and ZP CEO. Further, DDMA has also been constituted under the DC as per Chapter 4 of DM Act-2005. In addition the 73rd and 74th CAA have given adequate functions and powers to ULBs and PRIs as Local Self Governments with stress on ensuring Safety of People and emergency services. These are the favorable opportunities and strengths at the district level to not only prepare a comprehensive District Development plan but also streamline the disaster risk reduction or disaster management in the development plan of the district. *Under these circumstances,*

Following steps shall be initiated by the DC, CEO of ZP and DDMA;

1. Form Expert Groups/Task Forces for Disaster Preparedness, Mitigation and Response at district, Taluka, Town levels taking skilled and willing persons from the Line departments, ULBs, PRIs, Govt. Agencies, Technical organizations, Private industry, NGOs etc.
2. Conduct survey and identify the vulnerable areas in the district covering rural and urban areas to different natural and manmade disasters
3. Identify vulnerable public life line buildings, rivers, roads, schools, colleges, Cinema halls, Kalyanamantapas, Temples, heritage buildings, areas prone to epidemic diseases etc., of the entire district.
4. Segregate the hazards and vulnerabilities with respect to each line department, PRI, ULB, Agency, NGO/Private industry in the entire district.
5. After the segregation, the probable losses and damages due to the prevailing hazards are estimated by the respective stakeholders such as PRI or ULB or Department or Industry etc.
6. Now, each stakeholder shall prepare budgets/estimates for preparedness, the structural and non-structural mitigation and responded.
7. The stakeholders such as PRI or ULB or Department or Industry etc., shall be asked to prepare time line for implementing the structural and non-structural mitigation plan depending on the size of the funds required.
8. Now, each stakeholder shall be asked to identify the disaster mitigation/relief from different sources such as own, scheme, project, State & district mitigation/relief funds, Private sources, donations, Community contributions, charity etc.
9. Ascertain and mobilise the required funds with all out efforts with greater initiation and commitment of DC and ZP CEO and Heads of Line Departments and Heads of ULB, PRI etc., in the entire district
10. Based on the resource mobilised at step 8, the Short term, medium and long term preparedness, structural and non-structural mitigation and response plans are prepared by each stakeholder
11. Short term plans are of 1 month to 18 months, Medium Term plans are of 2-5 Years and long term plans could be 5-20 years
12. Specific attention is needed to ensure disaster safety measures in all the scheme based projects in the sectors of roads, housing, water supply, solid waste management, Health and family welfare, schools/colleges, sanitation, transport, tourism, poverty alleviation such as MNREGA, SJGSRY, NRHM, NUHM, JnNURM Bus terminal, Electricity supply, Irrigation, Master Plans, Layouts/Sites and service etc.,
13. The Plans prepared under step 11 must be made part of not only the Development Plan of the district but also in specific the annual plan of respective stakeholder /department.
14. The Disaster Risk Mitigation plans should be implemented by the respective Departments and stakeholders under the Constant Monitoring and supervision by the DC, CEO ZP, and DDMA

members. In the Taluk, Tahasildars and TPEOs should be made responsible to execute the Plans.

15. In cities, the ULBs shall be made responsible for preparation implementation of DM plans in coordination with district DM plan.
16. The DDMA shall prepare a Preparedness and Response Plan at the Taluka and district levels with minimum emergency facilities at every level
17. Communication facility with wireless systems, HAM radio and other modern communication tools shall be provided as listed in the chapter 4 and 9 of this Handbook
18. At village level, the Community including some selected persons/Community leaders facilitated by the Officials and Local NGOs should be formed into Disaster Teams such as First Aid, Rescue, Relief, Mitigation, Preparedness. Adequate Awareness, Drills and Training should be given periodically utilizing the ATI/DTI/Fire Service/Hospitals/NGOs etc.
19. Persons involved in the above activities must be given training in DM for three to 5 days at ATI Mysore.
20. The provisions of the DM Act-2005 as explained in Chapter 4&10 including the penalty/punishment clauses should be made binding at every level so that the plans are implemented as per the time line
21. Continuous checks and balances or accountability be fixed for every stakeholder for the implementation of plans prepared under point-11
22. DDMA Chairperson and members, ZP CEO, Heads of ULBs, Heads of PRIs, SP, DHO, AC, Tahasildars must take wherever necessary proactive and reactive measures as per the DM Act 2005 for safety of the District, Taluk and Village against all types of hazards.

11.4 Responsibility of Mainstreaming DRR in District Development Plan

The Deputy Commissioner of the District being the Chairperson of DDMA shall take overall responsibility. The CEO of the ZP shall ensure preparation of DRR plans as part of District Development Plans. For eg., under NRHM and NUHM schemes, the DHO who is also the Member of the DDMA shall ensure health related DM Plans to be part of District Development Plan. Similarly, CEO of the ZP who is incharge of all the development schemes shall ensure DRR component as part of every scheme/plan.

SL NO	Officer Responsible	DRR Component	Overall Responsibility	Other Officers
1	DHO	Health & Biological Disasters NRHM etc	DC & Director of Health & Family Welfare	Taluk Medical Officers & Para-Medics
2	EE/SE	Rural Housing Schemes	CEO of ZP	AEE/AE
3	EE/SE	Urban Housing and Infrastructure Projects e.g., JnNURM, IHSDP, ASHRAYA etc.	Municipal Commissioner	AEE/AE
4	SE/EE	Road Projects, NH,SH etc	CE	AEE/AE
5	JD Agri	Drought Mitigation, Crop Insurance etc	DC	AD /DD Agri
6	DD Factories	Industrial Safety Plan	DC	AD/Inspectors of Factories DIC etc
7	EE	DRR in MNREGA	CEO of ZP	CPO/AEE/AE etc
8	DCF	DRR in Forest Scheme	CEO of ZP	ACF/RFO
9	Chief Engineer	Dam Safety	CE/DC/SE	EE/AE

Note: Above table indicates the responsibility of different officers for some areas/schemes of the Government. A similar strategy shall be adopted in all sectors.

11.5 Mainstreaming DRR into ongoing Flagship Programmes

Sl. No	Name of the Programme	Department/ Sector	Proposed Strategies for DRR Integration into the Flagship
	Indira Awas Yojana	Rural Development	<ul style="list-style-type: none"> • Inclusion of such measures like application of Hazard resistant design in construction of IAY houses, appropriate sitting of IAY housing in guideline of IAY • Development of model design for IAY houses which could be easily referred to by ZPs at district level and used for community awareness depending on the geographical location. • Capacity Building of Rural masons on safe construction. • Capacity Building of PRIs. • Community Awareness. • Capacity Building Programmes for ZP officials on Disaster Risk Reduction issues
	Mahatma Gandhi National Employment Guarantee scheme	Rural Development	<ul style="list-style-type: none"> • Utilisation of MGNREGS funds to reduce the vulnerability of Panchayat vis a vis natural hazards such as landslide, drought, forest fire, cloud burst, flash floods, earthquake etc. • Giving priority to those works which reduce the vulnerability of area over the works which enhances the vulnerability of the area to natural hazards. • Identified works are available which take into account the hazard profile and offer continuous employment opportunities in the event of disasters to ensure livelihood security in the event of disasters.
	Pradhan Mantri Gram Sadak Yojana	PWD	<ul style="list-style-type: none"> • The Master Plan for rural roads, the district rural road plan and identification of core network under the planning process of this scheme should, which the overall guidelines of its preparation, explicitly address the disaster risk reduction concerns and accord priority to connect the vulnerable habitations. • The technical guidelines should explicitly provide for suitable protection and inclusion of disaster risk concerns explicitly while provision of cross drainage, slope stabilization, protection works are already included, in multi-hazard and especially flood and landslide prone areas fair weather roads need to be upgraded on a priority basis. • The maintenance guidelines are modified to ensure that in case of disasters these roads get provision for restoration to ensure all weather connectivity.
	Sarva Siksha Abhiyaan	Education	<ul style="list-style-type: none"> • Development of a Policy paper of school safety. • Introducing school safety as a part of the guidelines of SSA which is currently focusing on inclusive development. • Developing model structurally safe designs for schools.

			<ul style="list-style-type: none"> • Introducing School Safety in the Teacher’s Training Curriculum. • Training of Rural Engineers appointed under SSA Scheme as well as the SSA State Coordinators. • Training of masons in rural areas. • Construction of Technology Demonstration Units. • Community Awareness.
	AMRUT, Smart City, Swaccha Bharath Mission. etc.	Urban Development	<ul style="list-style-type: none"> • Strengthening of the compliance mechanism at the detail project report submission and appraisal stage in case of infrastructure projects as well as housing scheme to ensure structural safety. • Emphasis on disaster risk audit at the stage of preparation of detail project reports. • Inclusion of amending of building byelaws to ensure structural safety as a mandatory reform in the Mission cities to ensure safe habitat development.(Both structural safety and fire safety norms). • Inclusion of disaster management as a function of the Urban Local Bodies and allocate resources. • Inclusion of Disaster Resistant features in the houses being constructed under the housing component as well as promote development of safe habitat. • Inclusion of strategies for disaster management in the City Development Plans. • Training and Capacity Building Programmes for municipal officers on disaster risk reduction
	Prime Minister Awas Yojana	Urban Development	<p>Since Prime Minister Awas Yojana is focusing on developing slum free cities and Capacity Building and Community Mobilization is also an important component of PMAY, through this programme attempts can be made towards community level disaster preparedness as slum dwellers often become the most vulnerable community during such disasters as floods, fire and high wind speed. The 30 cities selected on a plot basis can be targeted to initiate community based disaster preparedness activities.</p> <p>ii. Also the Housing Programmes to be implemented in these selected cities can ensure incorporation of hazard resistant features and safe sitting.</p>
	National Rural Health Mission	Health and family welfare	<ul style="list-style-type: none"> • Ensure that the village Health Plan and the District health plan explicitly address the disaster risk reduction concerns in the vulnerable habitations and the vulnerable districts and the disaster management plan as per DM Act 2005 takes links itself to the District and village Health plans. • Provide training to the ASHA workers on disaster health preparedness and response. • Strengthening of Disease Health Surveillance System in rural areas. • Ensuring structural safety of the CHC/PHC and other health care service delivery centers in rural areas.

			<ul style="list-style-type: none"> • Training of doctors and hospital staffs on mass casualty management and emergency medicine. • Community awareness on disaster management.
--	--	--	--

a) Public Infrastructure:

- Incorporate disaster risk impact assessment as a part of the planning process before the construction starts.
- Site analysis and risk sensitive land-use planning (either avoid development in hazard prone areas or adopt treatment and mitigation measures)
- Strengthen compliance to the various provisions of the codes – set up hazard safety cell for advice and monitoring
- Disaster resistant technologies mandatory in case of all construction using public/corporate funds.
- Training and capacity building of the department and functionary

b) Housing – Rural and Urban:

- Application of hazard resistant designs
- Prepare construction guidelines for rural areas, Nagar Panchayats and Municipal Councils.
- Amendment of Building bye-laws, Zoning regulations and Development Control Regulations.
- Strengthening the enforcement of techno-legal and managerial regime.
- Training of masons, engineers, architects, contractors, promoter and builders of the banking and financial institutions.
- Promotion of disaster insurance in housing sector.
- Having a housing reconstruction policy.

c) Health Sector:

- Ensure hospitals and health facilities are not located in hazard-prone areas.
- Analyze the internal and external vulnerabilities of existing health care facilities during emergencies.
- Retrofitting of the critical hospitals.
- Prepare and implement hospital preparedness plan.
- Training of doctors on mass casualty management, trauma care and emergency medicine.
- Training of health workers on emergency preparedness and response.
- Strengthening of disease surveillance system.

d) MGNREGS – Scope of work – Some illustrations:

- Water conservation and water harvesting;
- Drought proofing, including forestation and tree plantation;
- Irrigation canals, including micro and minor irrigation works;
- Plantation and horticulture;
- Renovation of traditional water bodies, including de-silting of tanks;
- Land development;
- Flood-control and protection works, including drainage in water logged areas; and
- Rural connectivity to provide all weather access.

Indira Awas Yojna:

- Study IAY housing typology and develop hazard resistant model design (taking into consideration of available local materials and culture).
- Training of officials and engineers.
- Awareness generation among villagers and PRIs members and community mobilization campaign.
- Construction of sample IAY units for promoting the technology.
- Training of Masons and community members on hazard resistant technology.

CHAPTER 12

BUDGET AND FINANCIAL ARRANGEMENTS FOR DISASTER MANAGEMENT

12.1 Introduction

All State Government Departments, Boards, Corporations, PRIs and ULBs will prepare their DM plans including the financial projections to support these plans. The necessary financial allocations will be made as part of their annual budgetary allocations, and ongoing programmes. They will also identify mitigation projects and project them for funding in consultation with the SDMA/DDMA to the appropriate funding agency. The guidelines issued by the NDMA vis-a-vis various disasters may be consulted while preparing mitigation projects.

At present the rehabilitation projects are funded by Government and in case of major disasters, the support of International agencies would also be used. Since, the budgetary requirements of each department need to be estimated based on the assessment of measures for preparedness, mitigation, prevention, response (search & rescue, relief and reconstruction). The Revenue Department (DM) shall give instructions to all the departments and organizations to prepare Disaster Management Budget and mobilize resources from all possible sources namely Government, SDRF, Schemes, Industries, NGOs and private sector. The Disaster Management Plans at every level shall necessarily be prepared along with budget and resource mobilization plan and submit the same every year to the KSDMA/Department of Revenue (DM), GoK. All the Departments and Government organizations are mandated to comply this requirement as per DM Act-2005. As Stated in the section (48) of the DM Act 2005, the State Government shall establish for the purposes of the Act the following funds:

a) State Disaster Response Fund:

This fund will be constituted and made available to the SEC for meeting the expenses for emergency response, relief and rehabilitation.

b) District Disaster Response fund:

This fund will be constituted and made available to the District Disaster Management Authority for meeting the expenses for emergency response, relief and rehabilitation.

c) State Disaster Mitigation Fund:

This fund will be constituted and made available to the SEC for meeting the expenses on mitigation activities.

d) District Disaster Mitigation Fund:

This fund will be constituted and made available to the District Disaster Management Authority for meeting the expenses on mitigation activities.

By Ministries and Departments of Government of India and State Government

As per the section (49) of the Disaster Management Act, 2005, every ministry or department of Government of India and the State Government shall make provisions in their annual budget for carrying out the activities and programs set out in their disaster management plans. The planning department will be advised to mark 0.5% of budget allocation for meeting the disaster management requirement.

Techno-Financial Regime

Considering that the assistance provided by the Government for rescue, relief, rehabilitation and reconstruction needs cannot compensate for massive losses on account of disasters, new financial tools such as catastrophe risk financing, risk insurance, catastrophe bonds, micro-finance and insurance etc., will be promoted with innovative fiscal incentives to cover such losses of individuals, communities and the corporate sector. In this regard, the Environmental Relief Fund under the Public Liability Insurance Act, 1991, enacted for providing relief to chemical accident victims is worth mentioning. Some financial practices such as disaster risk insurance, micro-finance and micro-insurance, warranty on newly constructed houses and structures and linking safe construction with

home loans will be considered for adoption. The Prime Ministers Fasal Bhima Yojane bringing crop insurance to farmers is an important initiative of the Central Government.

12.2 Budget for Line Departments

Budget requirements for each line department for drought, flood, epidemics, fire, chemical and all other disasters district-wise need to be worked out by the respective department under the guidance of District Disaster Management Authority (DDMA) and State Disaster Management Authority (SDMA). The State Disaster Management Authority may instruct the departments concerned to prepare the budget requirement for managing various stages of disasters namely;

- ✓ Preparedness
- ✓ Prevention
- ✓ Mitigation
- ✓ Response: Rescue, Relief, Rehabilitation
- Budget for Preparedness shall be worked out by all the concerned line departments and ULBs
- Budget for Mitigation (Short-term and long term measures) shall be prepared by all the concerned line departments
- Budget for Response (Relief, rescue and rehabilitation) shall prepared by the concerned departments
- Budget for Mitigation and Preparedness of School Safety to be prepared by each School/College
- Budget for Hospital Disaster Management Plan.

At present, the departments do the damage assessment and estimate the requirement of the funds following an event. For example the Agriculture Department in the District and Taluka level prepares the damage assessment report and submit the same to the DC of the District and in turn submit it to the State Government and Central Government. This procedure of assessment of damage and loss and subsequent demand from the State and Central Government is practiced only after the disaster events. Similarly other concerned departments viz., PWD for Buildings and Infrastructure, Animal Husbandry for Animal loss, Irrigation department for Canals and dams, Forest fires and wild animals conflicts in case of forest department. All the 23 departments of GoK need to prepare financial requirements for mitigation, prevention, preparedness and response before the disaster strikes. Such estimates in anticipation of disasters in the vulnerable areas would help the district administration and individual departments to take up mitigation and preventive measures. The estimated funds can be generated well in advance from all sources. This task has to start in the month of December every year by the district administration under the supervision of DC and members of DDMA and responsibility shall be fixed on every departmental head at the district level.

12.3 State Disaster Response Fund (SDRF)

Section 46(I) and Section 48(I) of the Disaster Management Act, 2005 stipulate the constitution of a National Disaster Response Fund (NDRF) and State Disaster Response Fund (SDRF) at the National and State levels respectively. Government of India will contribute 75% of the total yearly allocation for general category states and 90% for special category States in the form of a Non-Plan grant. During the year 2017-18 a total amount of Rs. 246.97 crores was released by SDRF in the ratio of 75:25 i.e., 75% by GoI and 25% by the State.

Besides this for any major disasters/calamities, the State submits a memorandum to the Government of India to the Ministry of Home Affairs in case of drought for grant of special assistance under NDRF. The following are the details of memorandums submitted to the center seeking additional funds.

1. Hailstorm during February-March 2014 - Rs.963.44 crores.
2. Floods during 2014 - Rs.615.39 crores.
3. Drought during 2014 - Rs.779.20 crores.
4. Hailstorm during April-May 2015 - Rs. 963.44 crores.

5. Drought during Kharif 2015 - Rs.3830.84 crores.
6. Drought during Rabi 2015 - Rs.1416.93 crores.

Memorandum Submitted to Government of India seeking central assistance for natural calamities and amount released, amount spent by State Government							
Year	Calamity	Estimated loss	Amount Sought from GOI	Amount Released by GOI (NDRF)	Amount Released by GOI (SDRF)	Total Amount Released by GOI(5+6)	Amount Released by GOK (Including GOI Share)
1	2	3	4	5	6	7	8
2017-18	Drought 2016 (Kharif)						963.49
	Flood 2016 *			117.50*		117.50	117.50
	Natural Calamities (SDRF)				228.75	228.75	246.97
	Drought Rabi 2016			795.54*		795.54	624.54
	Total			913.04	228.75	1141.79	1952.56
2018-19	Flood (8 Dist - 45 Tq)	3709.89	720.53	525.22		525.22	525.22
	Drought 2018 (Kharif) (100 Tq)	16662.48	2434.00	434.62	-	434.62 *	Nil
	Drought 2018 (Rabi) 156 Taluks		2064	959.84	288.00	288.00	682.00
	Total	20372.37	5218.53	1919.68	288	1247.84	1207.22
<i>Note: Rs.434.62 crores for Drought Relief was released during March 2019. So this amount was released during the financial year 2019-20.</i>							

Accordingly, Inter Ministerial Central Team (IMCT) visited the state and made recommendations to GOI on the basis of which GOI released

1. Rs. 82.77 crores on 7-4-2014 for 2014 Hailstorm Relief
2. Rs.49.45 crores on 13-3-2015 for 2014 Flood relief
3. Rs.139.16 crores on 13-3-2015 for 2014 Drought relief
4. Rs. 105.33 crores on 20-8-2015 for 2015 Hailstorm relief
5. Rs.1540.20 crores on 7-1-2016 for 2015 Drought relief
6. Fund is yet to be released from GOI for 2015 Rabi Drought relief.

Further, 5% of SDRF annual allocation is available for the capacity building.

Training & Capacity Building: Center for Disaster Management, Administrative Training Institute, Mysuru

Center for Disaster Management, ATI, Mysuru under the supervision of Revenue Department (DM), has been identified as nodal training institute for conducting workshops, courses, training programmes including preparation of hand books, workbooks, modules, case studies, action research on various issues of disaster management.

Year-wise Budget required for 5 years. (2018-19 to 2022-23)

Budget Component	2018-19	2019-20	2020-21	2021-22	2022-23
One time approximate expenditure on training support materials and IT	2,00,00,000/-	0	0	0	0
Salary Component of Officers, Faculty and Staff	1,74,48,000/-	1,74,48,000/-	1,74,48,000/-	1,74,48,000/-	1,74,48,000/-
District and sub-district level training	40.14,000/-	40.14,000/-	40.14,000/-	40.14,000/-	40.14,000/-
State Level Training at ATI Mysuru	1,08,00,000/-	1,08,00,000/-	1,08,00,000/-	1,08,00,000/-	1,08,00,000/-
SATCOM Training and or through Video Conferencing	2797500/-	2797500/-	2797500/-	2797500/-	2797500/-
Action Research, Case study, Handbooks, Plan and Modules	12,00,000/-	12,00,000/-	12,00,000/-	12,00,000/-	12,00,000/-
Total Budget Required per year	5,62,59,500/-	3,62,59,500/-	3,62,59,500/-	3,62,59,500/-	3,62,59,500/-
10% Administrative Cost of ATI	56,25,950/-	36,25,950/-	36,25,950/-	36,25,950/-	36,25,950/-
Total	6,18,85,450/-	3,98,85,450/-	3,98,85,450/-	3,98,85,450/-	3,98,85,450/-

12.4 Funds Allocation from Government of India during Calamities

In case of severe Disaster events of L3 level, the KSDMA submits a memorandum to the Home Ministry at the Centre asking for additional funds. The assessment of losses and requirements is made by the different departments on crop loss from Agriculture Dept., visit the drought and flood affected areas to take stock of the situation. The team will recommend the amount of additional funds to be released. This is followed by the visit of Central monitoring team and on recommendations will decide the amount to be released to the State. The State Govt. then releases funds for relief and rehabilitation management to the district administration to be paid to the beneficiaries as per norms fixed by GoI. The expenditure reports are obtained from the implementing departments and a utilisation certificate is sent to Government of India. The funds raised from funding agencies are usually accompanied by stringent disbursement and usage restrictions. It is therefore important to monitor the disbursement of such funds to ensure that none of the covenants are breached. KSDMA, in conjunction with relevant agencies, shall monitor disbursement of funds by:

- Prioritizing resource allocation across approved projects;
- Establishing mechanisms (like a chain of banks, collection centers, nature of accounts, spread etc) for collection of funds;
- Ongoing monitoring and control of fund usage throughout actual project implementation.

CHAPTER 13

STANDARD OPERATING PROCEDURE (SOPS) FOR OFFICERS

13.1 Introduction

The DM Act-2005 provided for systematic devolving of roles and responsibilities at every level up to the local authority. At the state level, the SDMA and the Department of Disaster Management are the apex bodies for policy, planning and management of natural and man made disasters in the state. At the district, DDMA headed by the DC and line departments have been assigned the powers and functions for effective Disaster Management. The local bodies such as PRIs and ULBs are responsible for local level disaster management. However, provision for convergence in the matters of resources, coordination and response among various levels has been laid down. In this chapter the SOPs and Roles and responsibilities of various levels of functionaries are delineated.

Revenue Authorities

- 1) Activating DCR/EoC and Officers and Heads of Departments in the District
- 2) Setting up IRS and SoC
- 3) Activating of various NGOs/Voluntary Organizations for necessary materials.
- 4) Providing adequate compensation to loss of life and property.

To effectively manage the emergency without ambiguity, it is required to entrust individual responsibility and describe them in brief.

13.2 SOP FOR SECRETARY REVENUE (DISASTER MANAGEMENT)

The Secretary Revenue (DM) is the member secretary of the SEC (State Executive Council) and is overall in-charge of DM in the state. He/She works as a link between the DDMA's/ district administrations, Line Departments, the KSDMA, SEOC and other organizations responsible for DM. He/She has the responsibility for coordinating and monitoring the implementation of the National Policy, the National Plan and the State Plan as provided under section 22 of the Act. He/She shall give directions to the concerned department and district authority or other authority to take steps for rescue, evacuation, or providing immediate relief saving lives or property and direct to the departments make available resources for emergency response, rescue. He/She carries out the preparation of memoranda on loss and damage to be submitted to the GoI for claiming relief, compensation, and other support. He/She has to monitor the up-dation of DDMPs and ensure preparedness in all the districts.

<p>Dr Rajkumar Khatri, IAS. Additional Chief Secretary, Revenue Department (DM) Room No. 546-547, 5th Floor, 2nd Stage M.S. Building, Dr.B.R.Ambedkar Veedhi, Bangalore- 560 001 Ph No.: 080- 2235 3980, 2232 0582 Fax: 080- 22354321 E-mail: secyrelif-rev@karnatka.gov.in</p>
--

<p>State Emergency Operating Centre Toll Free No. 1070 Website : ksdma.co.in</p>

13.3 SOP FOR DEPUTY COMMISSIONER

The Deputy Commissioner is the chairperson of the DDMA and has all the powers and functions entrusted to him and the DDMA under Chapter-IV of the DM Act-2005. He/She shall function as Incident Commander for management of disasters in the district. The responsibility include initiating and maintaining co-ordination and co-operation with various agencies involved and provide prompt information, decisions and infrastructure facilities as requested. He/She should also mobilize, direct, and co-ordinate the emergency management staff during emergency.

Following are the main functions during any emergency

- Declaration of emergency after confirming the magnitude of the disaster with the consent of the state government.
- Activate the Emergency Control Room at Deputy Commissioner's office and make it functional.
- Co-ordinate and establish contact with all agencies involved in the emergency actions.
- Establish Incident Response System (IRS) by assigning designations and responsibilities as per the NDMA IRS guidelines.
- Establish DEOC in the DC office with modern communication facilities working 24/7
- Conduct regular DM meetings calling the DDMA members and key district level officers to assess the disaster risk, mitigation and preparedness.
- Ensure setting up of Local Emergency Control Room close to the scene of accident or at Taluk headquarters where the disaster has struck.
- Ensure actions have been initiated to contain the emergency.
- Have overall supervision of all the emergency relief operations.
- Initiate evacuation of people from affected area with the assistance of police, fire and other agencies.
- Depending on type of emergency, mobilize additional resources like heavy lifting gears line cranes, bulldozers for rescue and mitigation operation.
- Identify and Set-up safe shelters for evacuated people and ensure they are provided with food and medical attention as the need be.
- Monitor progress or disaster especially in case of natural disasters like cyclone or floods by getting information from various agencies involved and mobilize additional support to mitigate the effects of disaster.
- Keep the State Administration informed regarding the disaster and the steps taken to contain the same.
- Manage media appropriately and issues statement to the press (both print and electronic media) on the prevailing conditions and the steps being taken by the District Administration to mitigate effects of the disaster.
- Get mutual aid from neighbouring districts, the Major Hazard Industries or seek the assistance of voluntary organization.
- If required, set-up mobile first aid centre or temporary health centres in the affected area or in the safe shelters.
- Visit the scene of the disaster to have first hand information about the rescue or mitigative operations that are being carried out.
- In case of floods, carry out aerial survey of the affected area to have preliminary estimates of the extent of damage caused.
- To co-ordinate with the state government through Principal Secretaries of Depts. mobilize the help of Army/Navy/Air force/NDRF or other agencies required.
- Call off emergency after confirming that all the actions have been taken to normalize the conditions and it is safe for people to re-enter the affected areas

ROLE OF THE DEPUTY COMMISSIONER BEFORE, DURING AND AFTER DISASTER

Phase	Activities	Other officials to be involved	Resources/ Equipments to be procured from
Pre-Disaster	Preparedness before the disaster	All district level officials	The Secretary, Dept. of Disaster Management.
During disaster	Reviewing and analyzing the calamity situation in the district over the next one year through a meeting at the district level involving all the departments of the district as well as sub division and GP levels and	All ACs; All Tahsildars; All Panchayats(CEO, TPEO, PDOs etc)	Police/Fire/Fisheries/RTO/ Civil Defence.

	the locally active NGOs/CBOs		
	✓ Identifying disaster prone zones and strategies to stay prepared for the worst.	Field functionaries, District Information Officer.	Commandant/Co-Coordinator of NCC/NSS/NYKS
	✓ Ensure IEC through Emergency section/ Panchayats/NGOs/AW centers/Street plays/ workshops	District Fisheries Officer Leading NGO/CBOs	
	✓ Reviewing the DCR and making it functional as per SOP fixed by him (SOP to be prepared earlier)	NSS/NCC/NYKS/ Police	VHF from the Police/Mike set/ batteries/generators available in the district office from the private parties on requisition.
	✓ Making the DCR well equipped and depute senior officers from time to time to review the receipt of information and dissemination.	Fire, Civil Defence	
	✓ Calling a meeting of officers/NGOs/CBO co-ordination and discuss issue such as capacity assessment of different NGOs/CBOs and ask them to adopt certain vulnerable areas to avoid overlapping and duplicity.	All district level officials. All ACs/Tahsildars	
	✓ Preparing a checklist (containing the dos and don'ts) and pass that on to the NGOs/CBOs.	All Panchayats District Fisheries Officer Leading NGOs Police	Power boats/country boats/ vehicle/rope/rescue kits and trained resource personnel from DEOC/District Administration/SSC/Army/unit/Civil Defense/Hired from the private parties according to the requirement.
	✓ Ensuring/installing communication system to the inaccessible villages	Police Fire Brigade, Leading NGO, Panchayats, Field functionaries programme co-coordinators of NSS/NCC.	
	<ul style="list-style-type: none"> ✓ Checking stock of the public distribution system and arrangement of temporary godown. ✓ Checking the resources with other department such as Police, Fire and of NSS/NCC/NYKS. 		ACs/Tahsildars, TPEO, DHO, CDPO, DDs, Panchayat Field functionaries Medical Officers, Police, KUWSDB, Municipality, RTO/ Leading NGO.
	✓ Preparing a list of vehicles/ ambulance already		

	deployed and/or to be deployed on hire during crisis.		
	✓ Keeping stock of road cleaning equipments and vehicles for relief operation.		
	✓ Assigning specific duties to different officers/ Sr. Officers at headquarters.		
	✓ Staying in constant touch with other line departments.		
	✓ Ensuring proper functioning of warning systems & communication systems.		
	✓ Ensuring mock drill of the rescue and relief teams	Home guards, Police.	
	<ul style="list-style-type: none"> ✓ Preparing a map showing the location of temporary shelter camps with accessibility. ✓ Identifying shelter/temporary shelter in high elevated places and arrangement of tents etc. ✓ Identifying and mapping of disaster (of all kinds) prone areas <p>Ensuring formation of village level Disaster Management Committee through Panchayat Development Officers</p>		
	<p>Dissemination of warning: -</p> <ul style="list-style-type: none"> ✓ Receiving warning from reliable sources and cross checking them for authenticity. ✓ Disseminating warning to District Level Officials/ Revenue/Field Functionaries/ PRIs and Co-ordination with the Revenue control room. ✓ Keeping the control room active round the clock. ✓ Disturbing duties to the district level officials, ACs Panchayats and Field functionaries. 		
	✓ Arranging vehicles and public address systems for information dissemination.		
	✓ Establishing coordination with the NGOs/CBOs and the village communities and assigning them duties.		
	Asking the people in the vulnerable areas to move to the shelters and to move their domesticated animals to safer places and to cooperate with the volunteers and other officials engaged in similar activities.		
	<p>Search, Rescue and Evacuation:-</p> <ul style="list-style-type: none"> ✓ To coordinate with NGOs/ CBOs/Police for support. ✓ Arrangement & deployment of vehicles etc., for evacuation. <p>Evacuating people from marooned areas and administer emergent relief</p>		
	<ul style="list-style-type: none"> ✓ Organizing trained taskforce members and deputing to be marooned and cut-off areas for evacuation. ✓ Deployment of police for maintaining discipline and peace keeping during evacuation. ✓ Mobilizing people to move to safe shelters. ✓ Deployment of police/Fire Brigade for search and rescue. ✓ Ensuring proper utilization of the rescue materials. ✓ Providing rescue kits at the affected areas. 		
	<p>Distribution of Relief Materials: -</p> <ul style="list-style-type: none"> ✓ Keeping a record of the affected area and people so as to account 		

	<ul style="list-style-type: none"> for the relief materials needed. ✓ Procurement and transportation of relief materials to affected areas. 		
	<ul style="list-style-type: none"> ✓ Arrangement of free kitchen in the shelter camps & affected areas and assigning the responsibilities to officials for proper distribution. 		
	<ul style="list-style-type: none"> ✓ Coordinating with the NGOs/ CBOs. ✓ Encouraging other voluntary organisations from outside for rescue and relief operation. ✓ Distribution of basic medicines and disinfectants to prevent epidemic. ✓ Ensuring health care activities by the DHO in the shelter camps & through mobile units/temporary health in regular intervals. ✓ Ensuring cattle health activities by the DD AH through Mobile units/ temporary health camps in the affected areas. ✓ Ensuring that there is enough storage of food and pure water in the shelters. 		
	<ul style="list-style-type: none"> ✓ Monitoring all the activities in the affected areas. 		
Post disaster	<p>Short term measures: -</p> <ul style="list-style-type: none"> ✓ Formation of special task force with required equipments ✓ Assigning responsibilities for specific areas. ✓ Emergency cleaning of debris to enable reconnaissance. 		
	<ul style="list-style-type: none"> ✓ Cleaning fallen trees and branches from the roads to facilitate local relief work. ✓ Forming a work team carrying emergency tool kits. ✓ Deployment of towing vehicles, earth moving equipments, cranes. ✓ Construction of temporary roads. ✓ Keeping national and other highways clear from disaster effects. 		
	<ul style="list-style-type: none"> ✓ Assessment of damage. ✓ Temporary supply of flood drinking water and medicines to the shelters and affected areas. 		
	<ul style="list-style-type: none"> ✓ Arrangement for safe shelter for animals. ✓ Providing the lighting facilities for shelter places. ✓ Deployment of home guards and constables to maintain law and order. ✓ Providing temporary arrangements for income generation for the affected people. ✓ Drought resistance short duration paddy seeds to be made available to farmers. 		
	<ul style="list-style-type: none"> ✓ Encouraging NGOs/INGOs from outside to carry out restoration and reconstruction works. ✓ Ensuring crop insurance. ✓ Supervising all the activities. 		
	<p>Long Term Measures: -</p> <ul style="list-style-type: none"> ✓ Immediate restoration of road communication, irrigation system, educational institutions, Government institutions, electrical installation, drinking water supply, construction of IAY houses for the BPL families and massive area plantation to maintain ecological balance. 		
	<ul style="list-style-type: none"> ✓ Meeting with district level officials/Officials at Headquarter and chalk out emergency plan with vulnerable areas and resource list. ✓ Co-ordination meeting NGOs/ PRIs and assignment of duties. ✓ Pre-positioning of staff in the likely cut off areas. 		

	<ul style="list-style-type: none"> ✓ Arrange food and other basic requirement for emergency response. ✓ Collect information from different areas and to act accordingly. 		
	<ul style="list-style-type: none"> ✓ Co-ordination meeting with officials at Headquarters by 12 hours intervals and 24 hours intervals with the field officials. ✓ Regular collection of situation report of the risk and vulnerable areas from the officers assign for the purpose. 		
	<ul style="list-style-type: none"> ✓ Provision for administering emergent relief and the other basic needs. ✓ Contact with DEOC/District administration for supply of temporary shelter materials. ✓ Keeping in touch for supply of food articles procuring whole sellers. ✓ Deputation of volunteers to different probable affected areas. 		
	<ul style="list-style-type: none"> ✓ Helping the evacuees for returning to their houses. ✓ Immediate arrangement of free kitchen in the cut off and inaccessible areas. ✓ Relief distribution. ✓ Monitoring of relief distribution. ✓ Provision of drinking water. 		
	<ul style="list-style-type: none"> ✓ Provision of medical facilities. ✓ Repair/restoration of roads. ✓ Transportation of relief and human resources. 		

13.4 SOP FOR SUPERINTENDENT OF POLICE (SP)

After receiving instructions from the Deputy Commissioner, the Superintendent of Police will rush to the DEOC and establish contact with the local police station. He would then direct implementation of the action plan through the police station nearest to the scene of the disaster.

ROLES AND RESPONSIBILITIES OF THE SP

Phase	Activities	Other officials to be involved	Resources/ equipments to be procured from
Pre-Disaster	Preparedness and warning dissemination of warning: - <ul style="list-style-type: none"> ✓ Reception of warning from the DCR. ✓ Communication establishment with district and sub-division/ GP control rooms and departments offices within the division. ✓ Alerting the team force for deployment at the time of calamity. ✓ To issue directive to police field functionaries to co-operate with revenue personnel in management of relief operation 	Home guard/Police forces, AC/ Tahsildars, SIs	VHF, other improved telecommunication systems.
During disaster	Rescue and Evacuation: - <ul style="list-style-type: none"> ✓ Clearance of roads and other means of transportation. ✓ Traffic management and patrolling of all highways and other access roads to disaster sites. ✓ Making sure that discipline is maintained. ✓ Assistance to district authorities for taking necessary action against hoarders, black marketers and those found manipulating relief materials ✓ Co-ordination with fire personnel. 	Home guard/Police forces, AC/ Tahsildars, NCC, NSS, trained volunteers local youth, NGOs/CBOs	VHF, other improved telecommunication systems. Rescue kits, vehicles equipments for clearance of roads and other related stuffs.

	<ul style="list-style-type: none"> ✓ Provision of security in transit camps/feeding centers/relief camps/cattle camps/co-operative food stores and distribution centers. ✓ Safe guarding of belongings of evacuees. <p>Distribution of Relief: -</p> <ul style="list-style-type: none"> ✓ Maintaining laws and order at the shelters and the relief camps. ✓ Co-ordination with military service personnel in the area. ✓ Deploying officers/police personnel to record death cases. ✓ Assisting the community in organizing emergency transport. ✓ Assisting the District Officials/NGOs in distribution of relief materials. ✓ Providing escorts in transit of relief materials to the relief camps/affected areas. 		
Post disaster	<p>Short term measures: -</p> <ul style="list-style-type: none"> ✓ FIR of the disasters, the damages and the death cases. ✓ Assisting in collection of damage statistics of private properties. ✓ Maintaining law and order. <p>Long term measures: -</p> <ul style="list-style-type: none"> ✓ Close co-ordination with district administration and local/external NGOs in reconstruction and rehabilitation process. ✓ Assisting the district authority whenever the need arises. ✓ Periodical visits to the affected areas to ensure law and order 		Vehicle communication systems.

13.5 SOP FOR DISTRICT HEALTH OFFICER (DHO)

- 1) District Health Officer (DHO) will be overall in charge of health and medical services to be rendered at the site of emergency or at various rescue shelters, affected places, hospitals, pathology laboratories, etc.
- 2) On receiving the information from DC, he will contact all Hospital Superintendents, Drug Controller, Blood Banks for mobilization of required ambulances/Doctors/Nurses/Medicines/life saving drugs, blood etc.
- 3) Rush to the site, assess the extent of severity and establish adequate (Temporary Medical Centre). Ensure hygienic conditions at the rescue shelters cum rallying posts, temporary medical centers. Take appropriate action in shifting affected persons to proper hospitals and provide appropriate treatment.
- 4) Arrange for removal of dead bodies, if any, after post-mortem and disposal of the same.
- 5) Render advice on precautionary measures to be taken by public in affected sites/villages, rescue shelter cum rallying posts to prevent the outbreak of epidemic diseases.
- 6) If necessary, he should undergo training to handle the wireless apparatus for effective communications.

ROLE AND RESPONSIBILITIES OF THE DISTRICT HEALTH OFFICER (DHO)

Phase	Activities	Other officials to	Resources/ equipments
-------	------------	--------------------	-----------------------

		be involved	to be procured from
Pre-Disaster	<p>Preparedness and warning dissemination: -</p> <ul style="list-style-type: none"> ✓ Stock piling of life saving drugs/ ORS packets/Halogen tablets on receipt of warning from the Deputy commissioner/DCR. ✓ Transmission of messages to all PHCs to stock medicines and keep the medical staff ready. ✓ Disease surveillance and transmission of reports to the higher authorities on a daily basis. ✓ Vaccination. ✓ To obtain and transmit information on natural calamities from the DCR. ✓ Ensuring distribution of areas of operation among the mobile team. ✓ Pre distribution of basic medicines to the people who are likely to be affected. ✓ Shifting the patients who are in critical situation to the district hospital. ✓ Awareness messages to stop the outbreak of epidemics. ✓ Conducting mock drills. 	DHO, Medical Officers of PHCs/ ICDS, CDPOs, NGOs, CBOs, private practitioner in the locality/ first aid trainers.	Medicines, required medical equipments, First aid kits, ambulances, public address systems, mobile vans, tents.
During disaster	<p>Rescue and Evacuation: -</p> <ul style="list-style-type: none"> ✓ Constitute mobile teams and visit the worst affected areas. ✓ Disinfection of drinking water sources. ✓ Opening of site operation camps. ✓ Regular health check-up at shelter camp & affected areas. ✓ Assigning responsibilities to the medical officers for close monitoring of health camps. 	DHO, Medical officers of PHCs, ICDS, CDPOs, NGOs, CBOs, private practitioner in the locality, first aid trainers Rescue team, volunteers at the shelters, police, fire officers, trained volunteers.	Medicines, required medical equipments, first aid kits, ambulances, ambulances, public address systems, mobile vans, tents
Post disaster	<p>Restoration and rehabilitation: -</p> <ul style="list-style-type: none"> ✓ Organization of health camps. ✓ Deploying mobile fully equipped and manned medical vans. ✓ Close monitoring of health camps. ✓ Ensuring adequate quantities of medicine/disinfectants. 	DHO, Medical officers of PHCs, ICDS, CDPOs, NGOs,	Medicines, required medical equipments, first aid kits, ambulances, ambulances,

	<ul style="list-style-type: none"> ✓ Making sure that there is no outbreak of water borne diseases/malnutrition. ✓ Co-ordination with the District Rehabilitation Committees, other line departments, NGOs/ICDS projects, village Committee, etc. 	<p>CBOs, private practitioner in the locality, first aid trainers</p> <p>Rescue team, volunteers at the shelters, police, fire officers, trained volunteers.</p>	<p>public address systems, mobile vans, tents</p>
--	---	--	---

13.6 SOP FOR ASSISTANT COMMISSIONER

He will be the overall in charge of Rescue and Relief shelters.

- 1) He will ensure adequate food and clothing in co-ordination with Dy. Director, Food and Civil Supplies, Voluntary Organizations, Individual Persons as deemed necessary in his option.
- 2) He will also ensure proper medical aid (first aid as well as shifting of affected persons to hospitals, etc) in co-ordination with District Health Officer and District Drug Controller.
- 3) He will ensure adequate security and safety in co-ordination with SP (Law & Order), and Dy. SP as the case may be.

In addition to these responsibilities, the AC will assist the DC and others in all other matters as the case may be. The concerned Assistant Commissioner is the Disaster Manager and he would rush to the Local Emergency Control Room (LECR) which is set up at the taluk headquarter of the affected taluk. He would function as the link between the affected area and the Deputy Commissioner based at the main ECR located in the Deputy Commissioner office.

Following are the main functions during any emergency: -

- Set up the LECR at the concerned Taluk headquarters or at a safe place close to the scene of the disaster.
- Depending on the nature of emergency, co-ordinate with the various agencies at local level.
- Initiate the rescue operation with the help of local police, fire or other voluntary organisations and mutual aid members.
- Have close interaction with the Site Controller to ensure proper actions have been taken.
- Visit the affected area to gain first hand information of various steps being taken to mitigate the effects of the disaster.
- Keep the main Emergency Control Room at district head quarters informed about the developments on a regular basis and request for additional help by way of resources or specialized manpower or equipment.

13.7 SOP FOR TAHSILDAR

He will look after all the facilities required at rescue and relief shelters like food, clothing, medical aid, water, electricity, sanitation and other basic necessities in co-ordination with respective Government Agencies as well as voluntary organizations.

- 1) He will manage and arrange for any other requirements on need basis at that point of time in co-ordination with respective government authorities.
- 2) He will alert all his sub ordinates and utilize their services to manage the rescue and relief shelters.
- 3) His actions will be in concurrence from AC/DC.

The Site Controller would be at the scene of the disaster or accident and would be reporting to the Disaster Manager located in the Local Emergency Control Room. He is the person who is dealing with the disaster directly in association with the various other emergency services. He would be in direct contact with the Disaster Manager based at the Local Emergency Control Room (LECR). His responsibilities vary widely depending on the type of emergency. It could be a natural disaster like flood the effects are wide spread where rescue work would be of main concern. It could be a road accident involving a tanker carrying hazardous chemical where quick action has to be taken to arrest the leakage, if any, followed by evacuation of people if required.

Following are the main functions during any emergency

- Take measures to mitigate the emergency in association with various emergency services like fire and police
- Keep in constant touch with the Local Emergency Control Room at taluk headquarters with available means of communication and keep Disaster Manager informed about the developments on regular basis.
- Request for additional help like specialized manpower or equipment to effectively handle the emergency.
- Rescue and evacuate the people from affected area and shift them to safe shelters.
- Ensure setting up of safe shelters with basic amenities for food sanitation.
- Mobilize medical professional with the help of ECR or LECR and ensure the affected persons are given medical attentions.
- Arrange to shift the injured or sick to specialized hospitals if need be.

13.8 SOP FOR DEPUTY SUPERINTENDED OF POLICE

The DySP of the sub-division where the disaster has struck would get in touch with the nearest police station and ensure the police team is rushed to the scene of the emergency. His main function would be to act as link between scene of the accident and the Emergency Control Room

- On receiving information from the Emergency Control Room, he would rush to the site, assess the situation, obtain first hand information, take control of the overall situation.
- Alert district administration to mobilize Reserve Police personnel for deployment for traffic regulations, supervision of evacuation and security duties.
- Alert area District Commandant of Home guards to mobilize home guards, as necessary (and keep the SP informed).
- Arrange for necessary transportation vehicles for rescue operation in consultation with RTO.
- Arrange for necessary ambulances and other medical facilities for the affected persons in co-ordination with various government and non-governmental agencies.
- Arrange for removal of the dead bodies, identifications and proper preservation.
- Prepare list of missing persons and take immediate steps to trace them.
- Communicate the information to other agencies through police control room.
- Keep in constant touch with ECR to ascertain latest status and intimate police personnel with upto date information regarding response actions and further instructions.
- Arrange for relief to policemen handling the emergency situation.

13.9 SOP FOR CIRCLE INSPECTOR (LAW AND ORDER)

- 1) The office will be overall in charge of the functions of Police Department in case of offsite emergency. He will receive the communication and instructions from DC/SP from time to time.
- 2) On receiving the information about the emergency from DC/SP, the officer will rush to the incident spot and oversee law and order, organize for additional requirement of men and Home Guards if required.
- 3) Receive information from the site in charge and divisional fire officer or his deputy available at site for appropriate and necessary rescue operation.
- 4) Arrange for necessary transportation of vehicles in co-ordination with RTO and in charge of parking yard for evacuation of people as well as critical cases.

- 5) Ensure that adequate numbers of vehicle are provided, fitted with public address system and wireless to the convoy team.
- 6) Arrange for necessary ambulance/medical facilities in co-ordination with District Health Officer/Deputy Director, Animal Husbandry for evacuation of people and livestock respectively.
- 7) In confirmation with DC/SP, arrange for removal of dead bodies (if any) and will pass on the information to the relatives of the decease and will ensure disposal of dead bodies after conducting postmortem in co-ordination with DHO.
- 8) Arrange for maintaining law and order at the site of emergency, rescue shelter parking yards, main roads leading to emergency site, etc., pass on the information to the DC/SP about actions on various fields.

The Circle Inspector of the concerned area would also rush to the scene of the accident and direct the various operations like maintaining law and order, barricading and diversion of traffic away from the scene of accident. His main functions would include

- Maintain direct contact with the local police station through the police mobile van.
- Keep monitoring the progress of various rescue measures being undertaken.
- Ensure police personnel are given updated information for announcement during the emergency.
- Mobilize government and private buses through RTO for evacuation.
- Ensure that the bus/vehicle drivers are properly instructed regarding areas to be visited and routes to be taken during evacuation.
- Ensure security duty personnel are at their posts and that only authorised personnel/vehicles are allowed to enter the emergency/affected area with proper identity cards.

Police Inspector will assume the charge of DSP in the absence of the DSP till such time the superior officer arrives at the place of accident and takes control then onwards, he will continue to receive the orders from the superior officers and act accordingly

13.10 SOP FOR INSPECTOR (TRAFFIC)

- 1) The SP(Traffic) will be the overall in charge of traffic management who is assisted by Dy. SP(Traffic) in case of offsite emergency.
- 2) Receive the communication of offsite emergency from Emergency Control and disseminate the information to all the functionaries and mobilize required force and put them into action for managing various traffic points, routes, etc.
- 3) For each industry, separate routes are identified as normal route and emergency route.
- 4) Mobilize necessary police personnel/vehicles to man and control traffic on various roads identified as safe routes and also take measures to divert normal traffic away from the emergency routes identified.
- 5) Ensure available of adequate number of vehicles fitted with public address system/wireless etc. and directly supervise manning of routes and parking yards.
- 6) Initiate action to ensure adequate number of skilled drivers in consultation with RTO, KSRTC, Home guards and Truckers Association etc.
- 7) The SP will initiate action on his own only under exceptional circumstances; However, his action shall be communicated to his superiors and should be confirmed with Emergency control.
- 8) Any other action as deemed necessary base on the circumstances.

Depending on the type of disaster, the traffic police would take control of the traffic movement in the district. During a natural disaster like cyclone or floods the roads may be cut off for a longer period and hence traffic police play a very important role in handling any such emergencies. Their duties would include

- Stop traffic approaching the affected area and advise the crew regarding the impending danger.

- Ensure tankers containing hazardous chemicals are parked in safe places.
- Check for alternate routes and divert the traffic in a controlled manner to prevent congestion in diversions.
- Keep close liaison with other police agencies and assist in crowd control around the affected area.
- Make way for emergency and relief vehicles on priority basis.
- Monitor the condition of the blocked road and resume normal traffic only when the affected area is declared safe.

13.11 SOP FOR DY. DIRECTOR OF FACTORIES

Factory Inspectorate plays an important role during any industrial and transportation disaster in which there is large-scale release of hazardous chemicals. In case of such disaster, the Dy. Chief Inspector of Factories or Sr. Inspector of Factories would position themselves in the ECR and help the District Administration by providing expert advice for minimizing the effect of such a disaster.

Main functions: -

- Ensure the on-site emergency management plan of the affected industry (in case of an industrial disaster) has been activated and the mitigative measures are taken to safeguard the people present in the premises.
- Visit the site of accident to ensure proper measures are taken to control the situation.
- Speed up help from mutual aid members, if required to contain the emergency.
- Mobilize the technical experts for advice if required.
- Inspect the area along with the tech. Co-coordinators and report to Deputy Commissioner for giving all clear signals.

13.12 SOP FOR THE REGIONAL FIRE OFFICER

He will place himself in the main Emergency Control Centre and maintain continuous contact on VHF with the Station Officer at the site. Depending on the need, the Regional Fire Officer will place himself at the site and maintain contact with the Deputy Commissioner in the Main Emergency Control Centre.

The Station Officer/ Sub-Officer/Asst. Sub-Officer of the fire station closest to the scene of disaster will direct fire-fighting operations at the site and keep the Regional fire officer/station officer informed of the developments at the site.

Main functions: -

- Initiate rescue and fire fighting operation with available means. Ensure that all fire fighters use proper personnel protective equipment while fighting a fire or controlling gas leak.
- Help the District Administration in evacuation of people from affected zones using escape routes decided in advance depending on the wind direction.
- Continuously evaluate the situation and decide the necessity to call in additional Fire Engines from neighbouring taluks/district.
- Mobilize the services of the home guards for fire-fighting through the police.
- He will advise the Deputy Commissioner on the extent of evacuation necessary.
- Preserve valuable evidences, which may be useful for investigation later on.
- Ensure availability of water and make arrangement for private water tanker carriers.
- When the emergency is over, carry out joint inspection of affected areas along with site controller and Technical experts to ensure the emergency is under control.
- Send the message of "SAFE" to DC/SP etc to enable him to officially call off the emergency.

Take any other appropriate actions as deemed necessary in control of emergency.

13.13 SOP FOR FIRE STATION OFFICER

The Fire Station can cater to the immediate need of the plant, but certainly not adequate to manage the emergency assumed in this document. Therefore,

- 1) On receipt of fire call, rush to the site of incident with all crewmembers and equipment and start fighting the fire.
- 2) Immediately send distress call to all other fire stations for additional reinforcement. Contacts the Divisional Fire Officer and informs him about the severity of the fire, the kind of assistance required, etc.
- 3) Continue to receive the necessary information from his superior officers and the DSP and adhere to the instructions.
- 4) Assist the police, Home guards and other Rescue Team the rescue evacuation of persons, salvage, etc.
- 5) Continue to be inaction till such times the divisional fire officer or his deputy arrives at the place of incident and takes charge. From there onwards, he will continue to assist the officials.

13.14 SOP FOR HOME GUARDS COMMANDANT

District Commandant/Dy. Commandant will position themselves in the Emergency Control Room and assist the District Administration in mitigating the emergency. They would be continuous in contact with the field officer/units.

Main functions: -

- Assist the Police or Fire personnel in carrying out their duties.
- Carry out rescue and evacuation operation in close association with other emergency agencies.

Evacuated areas would need to be guarded against theft

13.15 SOP FOR SUPERINTENDENT ENGINEER PUBLIC WORKS/HIGHWAY

Depending on type and location of the disaster, the in-charge of the PWD/Highway or Irrigation department representatives would make themselves available at the ECR and maintain close contact with their engineers who would be at the scene of the disaster.

Main functions: -

- Help the police to divert traffic away from the scene of accident along all the major roads.
- Ensure diversion routes are in good condition and traffic does not get jammed.
- Exhibit proper diversion signs conspicuously at suitable places.
- Provide the mobile crane/heavy earthmoving equipment for the purpose of salvage operation.
- Provide necessary assistance as required and directed by Deputy Commissioner/Superintendent of Police.

13.16 SOP FOR DEPUTY DIRECTOR OF ANIMAL HUSBANDRY

1. Deputy Director of Animal Husbandry will be the overall in charge for treatment of affected animals at site/hospital in co-ordination with police/voluntary organizations and revenue authorities.
2. On receiving information from DC, he will rush to the site and activate the Temporary Medical Centre (TMC) at appropriate places in consultation with DC.
3. Dy. Director will also co-ordinate with Assistant Commissioner/RTO/DCP /Inspector of Police (Traffic), for arranging necessary vehicles for shifting of animals, if required.
4. The officer will be provided with one Police Officer with adequate number of Police Personnel and Home guards to ensure the orderly treatment and management of the Temporary Medical Center.
5. The officer will identify the drug stores and ensure the supply of adequate and necessary drugs through the Drug Control Authorities.

13.17 SOP FOR RTO

1. The RTO will be the overall in charge for providing number of rescue vehicles like trucks, buses, cars or any other type of transportation vehicles to emergency site, rescue shelter cum rallying post etc., for transportation of human beings as well as animals.
2. Receive information from DC and act accordingly.
3. Mobilize all possible resources is arranging transportation vehicles in co-ordination with KSRTC, Truckers Association, Travel Agencies, etc, also ensure availability of adequate number of skilled drivers and advise the Inspector (Traffic).
4. Workout the requirement of heavy earth moving equipment like cranes etc., and mobilizes the same in co-ordination with such agencies/parties.
5. Depute adequate numbers of Motor Vehicle Inspectors for assisting Inspector of Police, Traffic (in charge of parking yard), and Rescue Shelter cum rallying post, at the site of emergency.

The transportation department plays an important role during any type of disaster as it would involve large-scale evacuation of people in the affected area. RTO/ARTO would be based at ECR and assist the District Administration in mitigating the emergency.

Main functions

- Deploy required number of buses with drivers to evacuate people to safe shelters.
- Mobilize various earth moving equipment and other heavy machinery from different sources required for rescue operation.
- Provide mobile workshop if required for urgent repairs/breakdown.
- Provide assistance as required and directed by Superintendent of Police/Deputy Commissioner.

13.18 SOP FOR ENVIRONMENTAL OFFICER POLLUTION CONTROL BOARD

1. On receiving information from DC, the Environmental Officer will mobilize all possible resources at his disposal and keep the laboratory functioning for analysis of pollutants, emissions, etc.
2. Rush to the site, collect the samples, analyze the pollutants and the likely effect on human life/environment and inform the DC about the same and the corrective actions to be taken to prevent further damage.
3. Act as an expert and advice the DC about the kind of message to be disseminated to the public and press, etc, on pollution matters.

The representative of the Pollution Control Board would be based in the Emergency Control Room during any disaster and ensure the environmental damage is kept minimum.

Main functions: -

- Mobilize all possible resources at his disposal and keep the laboratory functioning for analysis of pollutants and emissions.
- Rush the team to the affected area for collection of samples and analyze the same.
- Keep the Emergency Control Room informed about the possible effect on human life as well as environment and corrective actions taken to minimize the same.

13.19 SOP FOR EXECUTIVE ENGINEER KPTCL

1. The Executive Engineer will be responsible for all electrical power supplies and illumination of places like site of incident, rescue shelter, rallying posts, parking yard, temporary medical centers, emergency route, etc.
2. In case of need to establish the temporary power supply points he will do so as advised by DC and ensure adequate continuous power supply.
3. Assist any other agency such as water works, PHE as and when needed.

13.20 SOP FOR EXECUTIVE ENGINEER OF PANCHAYAT RAJ ENGINEERING

1. The Executive Engineer will be over all in charge for providing adequate sanitation facilities such as dry latrines, soak-pits, etc. at the temporary rescue shelters.
2. Ensure maintenance of hygienic conditions at all such places including the site of incidence.

3. Ensure adequate supply of potable water to all places such as rescue shelters cum rallying post, parking yard, and temporary medical centers.
4. Assist other agencies as advised by DC as and when needed.

13.21 SOP FOR DY. DIRECTOR, FOOD AND CIVIL SUPPLIES

He would be based in the Emergency Control Room and assist the District Administration in running the safe shelters and relief centres set up during the disaster.

Main functions: -

- Will ensure emergency supply of food materials to the relief shelters
- Will be overall in-charge of Relief and Rehabilitation activities.
- Identify the rehabilitation centre in advance and establish them in shortest possible time.
- Arrange for orderly transportation of population from the emergency zone and adjacent villages in case evacuation has been ordered by Deputy Commissioner.
- Co-ordinate with the other departments connected with relief measures.
- Provide basic amenities such as food, drinking water and sanitation at the rehabilitation centres.
- Distribute food packets at the affected areas to the people, emergency services agencies such as police, fire fighting personnel and others.
- Exercise any other powers to seek any assistance from the local authorities in achieving this objective.
- Establish contact with the voluntary organisations for assistance.
- To ensure that necessary arrangements are made for the orderly return of all villagers to their respective places once the Deputy Commissioner informs about the termination of the emergency.

13.22 SOP FOR DISTRICT INFORMATION AND PUBLIC RELATIONS OFFICER

The District Information and public relations Officer would be based in the Emergency Control Room during any disaster and assist the district authorities in smooth operation.

Main functions: -

- Upon receiving the information from District Administration, the information officer should co-ordinate with media for giving information regarding emergency.
- Co-ordinate with the affected victims' families for giving information of their dear ones if they were affected.
- Officers shall prepare for a media van, which can be used as media centre, HAM radio operator, UPS, Generators etc during disaster situations
- Set up information dissemination centre with suitable communication tools at the disaster sites like electronic display, social media, internet, helplines etc

RESPONSIBILITIES OF OTHER LINE DEPARTMENTS: -

Designation of the officer	Duties to be performed in normal time	Duties to be performed after receiving 1 st warning	Duties to be performed after the disaster
Asst. Engineer/ AEE, Electrical, KPTCL/ PWD	He should see that the field staff checks the electrical line and replace old materials used in the power supply. He should see that all had wiring in service connections are rectified. He should enumerate the diesel sale available and	On receipt of the 1 st warning it should be communicated to all the sub ordinates staff. He should see that all the vehicles under his control be kept in perfect order. Alert the entire staff to return their headquarters and get in touch with immediate requirement.	Restoration of power lines on priority to: 1) Hospital, water supply 2) Control room 3) Railway station and 4) To other office on priority as per list appended. Live wires on ground should

	<p>his jurisdiction and keep it available.</p> <p>He should see that trees, branches etc., fall on electrical lines are out and removed.</p> <p>The field staff should see that electrical supply in the places where landslides may be serving is cut off.</p> <p>The field staff should be in touch with local panchayats and inform the situation at frequent intervals.</p> <p>To provide diesel generators to hospital water works, control room deputy commissioner's office in case of failure of powers.</p>	<p>They should give wide publicity that houses consumers should arrange lanterns and battery light for use in case of power is out off.</p>	<p>be removed promptly.</p> <p>Damaged or felled electrical poles should be immediately replaced and obstructions on roads should be get removed.</p>
<p>Asst. Engineer/ AEE, Irrigation</p>	<p>The branches to canal drain to be closed.</p> <p>The embankments should be strengthened.</p> <p>It should be checked whether the passage bridge and channels are in good condition.</p> <p>The obstruction in the canals if any should be got removed immediately to be enabling free flow of water.</p> <p>The bocks and shutters of the canals are to be checked and satisfied that they are in good condition.</p> <p>Water supply into canals should be out off by closing the sluices.</p> <p>The canals and drains should be free from constructing and they should be made available for free discharge of drain water.</p>	<p>1st warning should be communicated to all the sub ordinate staff and employees.</p> <p>They should be alerted to check whether the canals and drains are in proper condition to allow free flow of water.</p> <p>The situation tour should take their duty places and be readily available.</p>	<p>Damages due to hazards to government properties, lives of man and cattle etc., should be assessed and reported to Panchayats, Sub-deputy commissioner concerned immediately.</p>
<p>Fire Officers</p>	<p>The Fire Engineers should alert and other vehicles</p>	<p>The 1st warning should be immediately communicated</p>	

	<p>should be kept in good working condition.</p> <p>Materials required for use in emergency should be indented for and kept in reserve.</p> <p>Message received from public on disaster for help should be immediately attended.</p> <p>Keep in touch with each of the other fire stations in the district.</p>	<p>to fire stations.</p> <p>The staff should be called on for duty. Full complement of the staff should be available for the vehicles should be obtained and kept in reserve.</p>	
Executive Engineer, Roads and Buildings	<p>Government buildings should be inspected and necessary repairs to be got executed to withstanding hazards affected.</p> <p>Script for slides, pamphlets and cultural programmers should be got prepared immediately.</p> <p>Arrangements should be made to obtain poster and films by addressing the Director through the Deputy commissioners.</p> <p>Public addresses equipment should be obtained kept ready.</p> <p>The community radio sets available in the villages should be ascertained.</p> <p>The names of hamlets where they are not available to be reported.</p> <p>The public should be fully educated regarding the precautionary measures and after disaster through available media.</p> <p>Specific duties should be assigned to the field staff.</p> <p>The field staff should proceed to the place of work allotted.</p>	<p>The 1st warning should be communicated immediately to all sub ordinate officers.</p> <p>Wide propaganda should be arranged.</p> <p>The sub divisional public relation officer should be available at their headquarter and got ready for disaster duty with short notice.</p> <p>Ensures that all community radio sets are in working condition.</p>	<p>Photographs of damages should be taken. The field staff should conveying formation regarding the quantum of disaster, loss of property, lives of men and cattle.</p> <p>They should be posted with up-to-date information and the information should be passed to the Deputy commissioner immediately.</p>
Regional	List of vehicles running	Availability of petrol, oils	Electricity department for

Transport Officer	condition to be requisitioned kept ready.	should be ensured.	restoration.
Motor Vehicle Inspector	The MVI/AMVI will report before ADC(Relief)	The RTOs and MVIs should be asked to serve requisition orders on owners of vehicles for duty.	Roads and buildings for clearance.
Civil Supplies Officers	The Asst. Engineer and Junior Engineers will remain alert.	Soon after receipt of 1 st warning all the public call officers to be informed to instruct the village panchayats, Post Master for dissemination of warning in the villages.	Restoration of Telephone lines to control room to Deputy commissioner, Hospital, Fire Station, SP and other offices as per the list appended.
Divisional Manager, Telephone	Based on the experience on the previous disasters sufficient number of vehicles should be procured and kept in district headquarters To contact all sub division control room and Deputy commissioner's Office.	All telephone sets to be informed of disaster warning soon after the receiver is lifted from the book as in the case of new year's greetings and to request to telephone users to convey disaster warning to other public. Provision of vehicles	
	Identification and supply of availability of potable water sources, water purification tablets, construction of temporary shelters and maintenance		ZP/PWD/ULBs
	Identification of safe shelters for animals		DD, Veterinary Dept.
	Deployment of Home guards and constables to maintain law and order.		Police, Dy. Commandant, Home guards
	Encouraging NGOs to carry restoration and reconstruction works.		Revenue
	Supervising all the activities		Secretary Revenue/CS
	Collection of progress reports and furnishing report to the Government.		Secretary Revenue/CS

Chapter 14

Standard Operating Procedures for Departments

14.1 Introduction

Traditionally, the community provide the first humanitarian response. Responding to a sudden disaster is difficult and may become chaotic and complicated for the authorities and community. Disaster events during night time, rainy season or winter season with collapse of communication & transport network may further complicate the response. The first reaction is to act spontaneously. The district administration headed by Deputy Commissioner provides first organised response to any disaster calamity or crisis. Immediate response to any disaster is to launch rescue operations aimed at saving human lives animals lives and property in order of priority. The rescue operations are to be carried out over a short period of time ranging from few hours to few days. During this period depending upon intensity, mobilisation of all possible resources is to be done. As the rescue operation is on, the process of providing relief such as food, clothing, shelter, security, first aid, sanitation etc. also starts and this phase may last for few days.

14.1.1 Response

Immediately on receiving information about the disaster that strikes any area the trigger mechanism is activated either from 'TOP' or from the 'BOTTOM' depending upon the situations the following actions will be initiated:

- Generation of event scenario report to be sent as per the trigger mechanism.
- Preparation of current status on life line facilities and infrastructure.
- Rapid visual assessment of damage to buildings.
- Assessment of Casualities.
- Assessment of number of displaced persons.
- Assessment of transport requirements
- Assessment of requirement of shelters
- Assessment of basic need requirement of displaced persons.
- Status of search and rescue operations.
- Details and listing of missing persons.
- Assessment of type & extent of medical support for undertaking emergency operation.
- Status of identification of stakeholders and role players for providing supporting response and recovery operations.
- Status of activating call centre for providing multiple pieces of information to callers and relatives of victims.

Primary tasks during this phase would be

- Proper need assessment through village response
- Deployment of resources to all affected sections in an equitable manner
- Besides food, cloth and shelter facilities such as public health and sanitation is to be provided in shelters or camps.
- Ensuring total transparency in distribution of relief material
- Putting in place an objective method of assessing damage

14.1.2 Role of Specialised agencies

- Civil defence organisations will be involved in organising relief & rescue operations
- Recognising the fact that police are among the first responders in any crisis all police stations in the State would be further trained for ensuring effective response rescue in the wake of disaster or crisis situation. As first responder police normally communicate information and mount rescue and relief operation with whatever rescue available at their disposal.

- Specific rescue teams will be constituted at State, District and Sub Division level to serve as an auxiliary to Police & Fire teams. Home guards will also assist the police in maintaining law and order.

14.1.3 State EOC

Getting early warning and alerts are critical to mount timely and appropriate response. The unified SEOC located in the Disaster Management Secretariat will handle information related to disaster management. The state EOC would provide necessary information and coordination to all nodal departments and ESF. The SEOC with robust communication system will be handled by concerned nodal departments by deploying their specialist at the time of crisis.

14.1.4 Sequence of Action at the State Level:

On receipt of information either from NEOC from DEOC or from early warning agencies at national or state level or from any other reliable source the following action will be taken:

- Ñ SEOC shall bring the information to the notice of SEC
- Ñ Issue alerts / warnings to all concerned DDMA's / Nodal Departments ESF and all other designated Departments in the State.
- Ñ Release the information for public through AIR, television and Press.
- Ñ Establish contact and provide status report to NEOC, MHA
- Ñ Collect, collate and synthesise information for consideration of SEC & SDMA
- Ñ Provide regular appraisal and status reports to all designated authorities in the State.
- Ñ Arrange meetings of SEC
- Ñ Activate ESFs if situation warrants.

14.1.5 State Disaster Management Authority (SDMA):

- Meeting of SDMA shall be convened on the direction of chairperson.
- SDMA will take stock of the situation
- SDMA shall assess level of disaster and outside assistance and cooperation required.

14.1.6 State Executive Committee (SEC):

- Pr- Secy. Department of Revenue(Disaster Management) shall convene the meeting of SEC
- SEC shall assess the situation and level of disaster
- Based on the assessments SEC shall give directions for handling the situation and measures to be taken by role players in response to any specific situation or disaster.
- SEC shall review and coordinate response from all departments.
- SEC shall call for NDRF, ARMY, AIRFORCE or any other outside support warranted for handling the situation.

SEC may depute team for on the spot situation assessment and need assessment.

- Sec shall mobilise resources and dispatch them to concerned districts.
- SEC shall review the situation regularly as per demand of the situation.
- SEC shall maintain close liaison and contact with NDMA/MHA and keep them abreast of the situation.
- SEC shall constantly evaluate their own capabilities to handle the situation and project the anticipated requirements central resources.
- SEC will take necessary steps to pool the resources for better management of crisis situation.

14.1.7 Role of Key Departments:

- At the time disaster and on activation of State ESF plan, all the departments shall deploy nodal officers to SEOC for coordination measures.
- All concerned departments shall coordinate with their national counterparts and mobilise specialist resources and assistance as per requirement.
- All departments and organisation of the state shall place the resources at the disposal of DDMA during disaster situation.

14.1.8 District Emergency Operation Centre (DEOC):

- District Emergency Operation Centre located in the office of Deputy Commissioner shall discharge the following functions:
- On receipt of information from SEOC/SEC or from any field office or Panchayat or from any other reliable source, DEOC will bring this in the notice of DDMA.
- DEOC shall issue necessary alerts to all authorities in the district or at state level depending on the situation.
- DEOC will send regular status and appraisal reports to SEOC.
- DEOC shall maintain all records.
- DEOC shall collate and synthesise information for consideration of DDMA.

14.1.9 District Disaster Management Authority:

- DDMA shall assess the situation and give directions to the concerned department heads in the district for better handling of the situation.
- DDMA shall assess the situation by taking into consideration reports from all formal and informal sources and decide upon the level of the disaster.
- Issue necessary direction for handling the response, relief & restoration measures.
- Call for outside support if necessary
- Keep the SDMA /SEC informed about the situation
- Raise demands for support and assistance
- Assess the resource availability and issue necessary direction for pooling resources for speeding an effective response.
- Process requests for NDRF/Army or any other specialised help.
- Coordinate with NGOs and Civil Society for supplementing the efforts of Govt.
- Monitoring and reviewing the situation on a regular basis.
-

14.1.10 First Response:

At the local or village level, when disaster is sudden and no early warning signals are available community members and specially the village disaster response team comprising Gram Panchayath Adhyakshya, PDO, Village Accountant, Supervisory level staff of GP & elected members, Civil Defense, nearest police station, Home-guards, Fire, Health and Family welfare, NCC, NSS, NYKS, Ex-servicemen volunteers shall be the first responder.

14.1.11 First information report:

- District Emergency Operation Centre shall prepare and send first information report to SEOC/summarising the following :
- Severity of the disaster
- Action being taken
- District resources available and coping capacity.
- Need assessment for relief along with quantities.
- Logistics for delivering relief.
- Assessment on future development including new risks.
- FIR should be sent within 24 hours of occurrence of calamity as per the standard format.

14.1.12 Daily Situation Report:

Daily situation report is to be submitted by DEOC for the consideration of DDMA/SDMA/SEC. The report is to be submitted in a standardized form. SOEC shall submit similar report to NDMA/MHA.

Air dropping of food in inaccessible areas:

DDMA/SDMA/SEC shall decide about air dropping of essential commodities in cut off and inaccessible pockets. SEC will liaise with AIR Force or Govt. of India for requisition the helicopters. Food and Civil Supplies Department shall arrange preparation food packets for airdropping as per the advice of DDMA/SDMA.

Rapid Damage Assessment:

Teams of officials drawn from various sector and with the support of local Tahasildar shall make first hand ground assessment of the damage & loss for deciding upon the rescue & relief operations. Preliminary report should be available within 24 hours of the calamity. Proformas for FIR, Daily situation report and Damage assessment are placed at Annexure II- IV.

Immediate restoration basic facilities & repair of infrastructure:

KPTCL and KUW S & DB will ensure the restoration and repair for providing electricity and drinking water. IT department through BSNL and other concerned agency shall ensure the communication for smooth operation of rescue and relief works.

Disposal of dead bodies:

District hospital, Police and District administration and forest department shall facilitate the disposal of bodies in event of mass casualties. The process of identification and handing over to next of kin shall be followed. Mass burial/disposal of bodies shall be the last resort. The bodies shall be disposed in honourable manner by observing religious and cultural practices in the area. NDMA guidelines in this direction would be followed. Brief guidelines are at Annexure – V.

Disposal of Carcasses:

Department of Animal Husbandry in association with the local administration shall be responsible for disposal of carcasses in the event of mass destruction. (As per the procedure in Annexure - VI).

Information & Media Management:

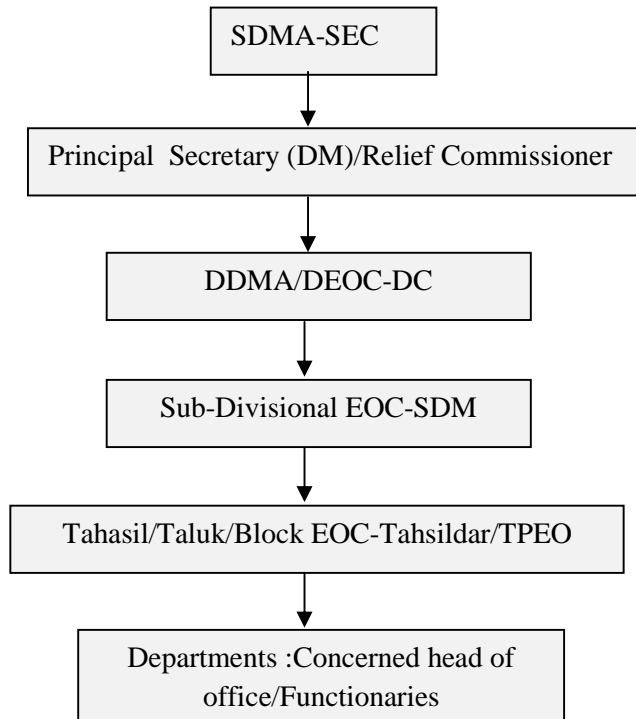
Department of Information and Public Relations in consultation with SEC/DDMA shall be responsible for dissemination of information to electronic and print media. Press briefing shall only be given by a person authorised by DDMA/SEC

Institutional Mechanism

The State Government has adopted the Disaster Management Act 2005 as enacted by the Govt. of India for providing effective mechanism for Disaster Management in the State.

14.2 State Disaster Management Authority:

The State Disaster Management Authority (SDMA) has the mandate to lay down the state policies and approval of State Disaster Management Plan, with the assistance of SEC. Roles and Responsibilities explained in Chapter 4.



The information flow when warning signals available shall be as follows:

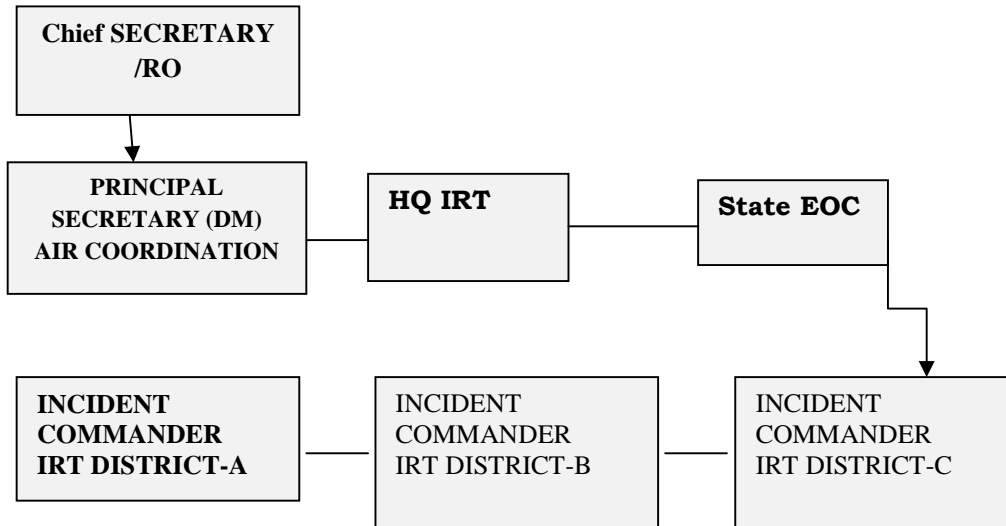
- ↓ Central nodal agency (IMD-CWC)
- ↓ NEOC/NDMA/MHA
- ↓ Chief Secy. /Pr-Secy. Revenue(DM)/ SEOC
- ↓ DEOC/Deputy Commissioner/DDMA
- ↓ AC
- ↓ All nodal Departments-ESF
- ↓ TPEO / Tahasildar
- ↓ GP Adhyaksha / Village Disaster Management Committee
- ↓ All nodal Departments
- ↓ All nodal Functionaries

When Disaster occurs without early warning:

- The village response team or any other functionary at the village level shall inform the Tahasildar/AC/TPEO/DEOC about the incidence
- Tahasildar/AC/TPEO/DEOC shall apprise the DDMA and activate the operations of rescue & relief with whatever resources at their command.
- DDMA shall assess the situation and declare the level of disaster i.e. L0, L1, L2, L3.
- DDMA shall identify the support requirement and seek assistance if required.
- SEC and SEOC are activated and NEOC/NDMA/MHA informed.
- SEC shall assess the situation and mobilise external resources if required.
- DDMA shall constantly assess and review the situation and activate coordination, command and control.
- DDMA shall deploy teams for rapid assessment of damage.
- Line department teams shall begin work for restoration of power, water supply telecommunication and road connectivity.

14.3 Trigger Mechanism and Incident Response System (IRS):

The Trigger Mechanism prescribes the manner in which the disaster response system shall be automatically activated after receiving early warning signals of a disaster happening or likely to happen or on receipt of information of an incident. Activities envisaged in the SOPs under the response phase shall be initiated simultaneously without loss of time to minimize the loss and damage and mitigate the impact of disaster. The Incident Response Systems at District and State Level are explained in Chapter 4.



As per the DM Act-2005, CS is the Chief Executive Officer (CEO) of the SDMA as well as

Chairperson of the SEC and Deputy Commissioner is the Chairperson of the DDMA and has been assigned all encompassing role of planning, coordination and execution of DM in his jurisdiction assisted by all line departments and local bodies. As per the Incidence Response System (IRS) the chief Secretary shall function as RO at the State level and Deputy Commissioner at district level.

14.4 Roles and Responsibilities of Chief Secretary as RO of the State:

1. The CS who is the head of the State administration and also chairperson of SEC and CEO of SDMA, will perform responsibilities laid down under clause 22 (2) and 24 of the DM Act, 2005;
2. Ensure that IRTs at State, District, Sub-Division, and Tahsil/Taluk Panchayat are formed and IRS is integrated in the State and District DM Plan;
3. Ensure that a reasonable amount of interest fund is sanctioned clearly delineating the procedure for emergency procurement;
4. Ensure funds of Finance Commission (FC)/SDRF/NDRF for capacity building of administrative machinery in DM is spent appropriately;
5. Ensure that IRS and all key issues of DM are covered in the training conducted by ATI and other training institutions of the State;
6. Ensure that effective communication and Web based / online Decision Support System (DSS) is in place in the SEOC and connected with District, Sub-Division, Tahsil/Taluk level IRTs for support;
7. Ensure that toll free emergency numbers existing in the State for Police, Fire and Medical support and are linked to the EOC for response, command and control;
8. Activate IRTs at State headquarters when the need arises and issue order for their demobilization on completion of response;
9. Set overall objectives and incident related priorities;
10. Identify, mobilize and allocate critical resources according to established priorities;

11. Ensure that local Armed Forces Commanders are involved in the Planning Process and their resources are appropriately dovetailed, if required;
12. Ensure that when NDRF, Armed Forces arrive in support for disaster response, their logistic requirements like, camping ground, potable water, electricity and requirement of vehicles etc. are taken care of;
13. Coordinate with the Central Government for mobilization of Armed Forces, Air support etc. as and when required;
14. Identify suitable nodal officer to coordinate Air Operations and ensure that all District ROs are aware of it;
15. Consider the need for the establishment of AC, if required;
16. Establish Unified Command (UC) if required and get the approval of Chief Minister;
17. Ensure that telephone directory of all ESF is prepared and available with EOC and IRTs;
18. Ensure use of Global Positioning System (GPS) technology in the vehicles (Police, Fire, Ambulance etc.) To get connectivity for their effective utilization ;
19. Keep the chairperson of SDMA informed of the progress of incident response;
20. Ensure that the Non-Governmental Organizations (NGOs) carry out their activities in an equitable and non-discriminatory manner;
21. Conduct post response review on performance of IRTs and take appropriate steps to improve performance; and
22. Take such other necessary action as the situation demands.

14.4.1 Coordination of Response at the State Level:

The State Government / CS will designate various officers of line departments for the corresponding IRS positions to perform their duties. She/he may delegate some of the functions to the Principal Sec/ Secretary(DM)of the State, for the day to day supervision and management of the incident. She/He will however remain fully briefed by SEOC and IC and be aware of all developments and progress of response activities at all times. In case an incident is beyond the control of a District administration or a number of Districts are affected, the RO of the State will consider setting up of an Area Command and designate an Area Commander (AC). He may consider the Divisional Commissioner to act as AC or may deploy appropriate/suitable officer irrespective of seniority. The RO may also deploy some supporting staff to assist him.

14.5 Roles and Responsibilities of Deputy Commissioner as Responsible Officer (RO):

- Ensure that IRTs are formed at District, Sub-Division, Tahasil/Taluk levels and IRS is integrated in the District DM Plan as per Section 31 of the DM Act, 2005. This will be achieved by issuing a Standing Order by the RO to all SDMs and Tahasildars/ TPEOs;
- Ensure web based / on line Decision Support System (DSS) is in place in DEOC and connected with Sub-Division and Tahasil / Taluk level IRTs for support;
- Ensure that toll free emergency numbers existing for Police, Fire and Medical support etc. are linked to the DEOC for response, command and control;
- Obtain funds from State Government as recommended by the 13th FC and ensure that a training calendar for IRTs of District is prepared and members of IRTs are trained through ATIs and other training institutions of the District;
- Delegate authorities to the IC;
- Activate IRTs at District headquarter, Sub-Division, Tahasil / Taluk levels, as and when required;
- Appoint / deploy, terminate and demobilize IC and IRTs as and when required;
- Decide overall incident objectives, priorities and ensure that various objectives do not conflict with each other;
- Ensure that IAP is prepared by the IC and implemented;
- Remains fully briefed on the IAP and its implementation;
- Coordinates all response activities;

- Give directions for the release and use of resources available with any department of the Government, Local Authority, private sector etc. in the District;
- Ensure that local Armed Forces Commanders are involved in the planning process and their resources are appropriately dovetailed, if required;
- Ensure that local Armed Forces Commanders are involved in the planning process and their resources are appropriately dovetailed, if required;
- Appoint a nodal officer at the District level to organize Air Operations in coordination with the State and Central Government NO. Also ensure that all ICs of IRTs of the District are aware of it;
- Ensure that the NGOs carry out their activities in an equitable and non- discriminatory manner;
- Deploy the District Headquarter IRTs at the incident site, in case of need;
- Ensure that effective communications are in place;
- Ensure that telephone directory of all ESF is prepared and available with EOC and members of IRTs;
- Ensure provision for accountability of personnel and a safe operating environment;
- In case the situation deteriorates; the RO may assume the role of the IC and may seek support from the State level RO;
- Mobilize experts and consultants in the relevant fields to advise and assist as he may deem necessary;
- Procure exclusive or preferential use of amenities from any authority or person;
- Conduct post response review on performance of IRTs and take appropriate steps to improve performance; and
- Take other necessary action as the situation demands.

14.6 Area Command (AC):

In the event of disaster involving more than two districts the Commissioner of the respective zone will act as Area Command. Area Command will be activated when span of control becomes very large either because of geographical reasons or because of large number of incidents occurring at different places at the same time. Area Command may also be activated when a number of administrative jurisdictions are affected. AC will facilitate closer supervision, support to the IRTs and resolution of conflicts locally. In such eventualities the District Magistrate (RO) of the District will function as the IC. Similarly the District RO may introduce it Sub-Division wise when a large number of Tahasils / Taluks in different Sub-Divisions get affected. The RO will ensure adequate supporting staff for the AC. The roles and responsibilities of AC are as follows:

- Ensure that incident management objectives are met and do not conflict with each other;
- Allocate critical resources according to identified priorities;
- Ensure proper coordination in the management of incidents;
- Ensure resolution of all conflicts in his jurisdiction;
- Ensures effective communications;
- Identify critical resource needs and liaise with the SEOC for their supply;
- Provide for accountability of personnel and ensure a safe operating environment;
- Perform any other tasks as assigned by the RO.

14.6.1 Unified Command (UC):

In an incident involving multiple agencies, there is a critical need for integrating resources into a single operational organization that is managed and supported by one command structure. This is best established through an integrated, multi-disciplinary organization. In the IRS this critical need is addressed by the UC.

UC is a framework headed by the Governor / Administrator / CM and assisted by the CS that allows all agencies with jurisdictional responsibilities for an incident, either geographical or functional, to participate in the management of the incident.

UC will incorporate the following components:

- A collective approach for developing strategies to achieve incident goals;
- Improved information flow and inter-agency coordination;
- Familiarity with responsibilities and constraints of other agencies;
- Respect for the authority or legal responsibilities of all agencies;
- Optimal synergy of all agencies for the smooth implementation of the IAP; and
- Elimination of duplication of efforts.

14.7 Local Authorities PRIs and ULBs:

The DM Act, 2005 has defined the roles of Municipalities, Municipal Corporations, Municipal Councils and PRIs under section 41 (1) (2). These bodies will ensure that their officials and employees are trained in DM and resources relating to DM are also maintained in order to be readily available for use in any threatening disaster situation. These bodies will carry out relief activities in the affected areas in accordance with State and District DM Plans.

14.7.1 Community Participation in Disaster Response (CBDM):

A number of community based organizations like NGOs, Self Help Groups (SHGs), Youth Organizations, Volunteers of NYK, Civil Defence (CD) & Home Guard, etc., and workers of different projects funded by Government of India like National Rural Health Mission (NRHM), Integrated Child Development Services (ICDS), etc., would be required to act as volunteer in the aftermath of any disaster.

In the IRS structure, the skills of these organisations shall be utilised as Single Resource. The ROs of the State and District will ensure that such resources at village, ward or Gram Panchayat levels are organized with the help of leadership of PRIs and other community leaders. Their resources would be identified as per hazard and they would be encouraged and trained to be a part of the IRT. As a part of Plan one NGO for each Taluk/block as lead NGO shall be identified and whose capacity will be developed to coordinate response.

14.7.2 Role of Village Disaster Response Committees (VDRC):

The plan envisages constituting village response committees in each Panchayat comprising Panchayat President, Panchayat Secretary/PDO and village Accountant besides ward members. The village committees will constitute response teams from amongst the villagers by taking in to consideration the local needs vis-a-vis the hazard and vulnerability assessment. These response teams will be trained as first responders to garner disaster response in the absence of outside emergency responders. The plan envisages covering all Panchayats. The capacity building would involve awareness raising (about hazard, risks, disaster response) organising training (medical first aid search & rescue extrication from damaged buildings, road clearance, fire fighting) equipping (first aid kit, radio, extrication equipment) and networking. The plan also envisages establishing and strengthening local warning systems holding community drills through VDRCs. The committee would be responsible for:

- Developing the village Disaster Mitigating Plan
- Keeping contact with Taluk/sub-district and District level committees and all other agencies related with the issue.
- Constituting response teams for search& rescue, medical aid, extrication of bodies, fire fighting or for any other purpose as per village specific needs.
- Ensuring house hold preparedness to village specific hazards.
- Identification of safe locations for temporary shelters
- Training and capacity building of all teams
- Resource inventory and gap identification with respect to the needs
- Identification of vulnerable groups

14.8 State Emergency Operations Centre (SEOC)

SEOC is an offsite facility which will be functioning from the DM Department Secretariat which actually is an augmented control room having communication facilities and space to accommodate the various ESFs emergency supports functions. It will be manned by various line departments of Government and other agencies, whose services are essentially required during incident response. It will allow all agencies and departments to share information, make decisions, activate plans, deploy IRTs, perform and log all necessary response and relief activities and make the EOC effective.

Functioning of SEOC:

- Secretary(DM) Revenue, shall be overall in charge;
- Nodal officers of all concerned line departments will be the member of EOC and will have authority to quickly mobilize their departmental resources;
- The SEOC will have communication facilities with connectivity to Block, Taluk & Village level;
- SEOC will be equipped with a vehicle mounted with HF, VHF and satellite telephone for deployment in the affected site to provide immediate connectivity with the headquarters and ICP;
- SEOC will have connectivity with NEOC & National & State warning facilities;
- It will have well defined provision and plan for dovetailing the NDRF, Armed Forces and communication capabilities with the local communication set up. There will be proper plan so that all are able to connect with each other in case of large scale disasters or failure of the local communication systems;
- SEOC will have connectivity with KSNDMC and KARSAC for data and information.
- SEOC will have DM plans of all line departments incorporating the following:
 - Directories with contact details of all emergency services and nodal officers;
 - Connectivity with all District headquarters and police stations;
 - Database of NGOs working in different geographical areas;
 - Demographic details of the State and Districts;

Online /Web based DSS (Decision Support Systems) with the availability of at least the following components:

- Standardization of Command Structure with the details of the earmarked and Trained personnel in IRS;
- Proactive planning facilities;
- Comprehensive resource management system;
- Geographic Information System (GIS) for decision support; and
- Socio-economic, demographic and land use data for planning;
- Resource inventories of all line departments and connectivity with database of India Disaster Resource Network (IDRN) India Disaster Knowledge Network (IDKN) and Corporate Disaster Resource Network (CDRN);

14.8.1 Incident Response Team (IRT):

The ROs of the State and Districts will constitute IRTs from among officers at the State and District level respectively. The members of IRTs will be properly trained and sensitised regarding their roles during the pre-disaster phase itself. The SEOC & DOEC will provide continuous support to the on-scene IRT(s) and if required join them or take over response on the directions of the RO.

14.8.2 Incident Response System (IRS) Facilities:

For effective response the following facilities will be established depending on the needs of the incidents.

Incident Command Post (ICP):

The ICP is the location at which the primary command functions are performed. The IC will be located at the ICP. There will be only one ICP for each incident. This also applies to situations with multi-agencies or multi jurisdictional incidents operating under a single or Unified command will be located with other incident facilities like Incident Base.

The ICP may be located at Headquarters of various levels of administration and in case of total destruction or non availability of any other space, the ICP will be located in a vehicle, trailer or tent with adequate lighting, effective communication system.

Deployment of IRT:

On receipt of information regarding the impending disaster, the EOC will inform the RO, who in turn will activate the required IRT and mobilize resources. The scale of their deployment will depend on the magnitude of the incident. In the event of occurrence of disaster without warning local IRT (District, Sub-Division, Tahasil /Taluk/ Village) will respond and inform the higher authority and if required seek reinforcement and guidance.

14.9 Roles and Responsibilities of Nodal Departments/ Agencies

State Disaster Management Authority	Lay down policies and plans for disaster management in the State. Declare emergency situation in case of State level disaster and the end of it. Provide policy directions and integration of Disaster Management programmes in the state development framework.
State Executive Committee for Disaster Management (SEC)	Implementation of the State Plan and monitoring body for management of disasters in the State.
ATI Mysuru (Centre for Disaster Management)	Primary agency responsible for conducting and coordinating training to all government officials involved in the planning and implementation of preparedness, mitigation response and relief work.
State Technical Committee(s)	Responsible for ensuring community participation in the disaster management activities. They will also advise the SEC on implementation of activities at State level.
Department of Revenue (Disaster Management)	Member Secretary of SDMA. Member of SEC, Overall coordination, implementation of the EOC activities and documentation and reporting to the SEC
Department of Public Works (PWD)	Primary agency for maintenance of public infrastructure identifies safer places, assess physical damage, identify safer routes, and provide necessary reconstruction and rehabilitation support. Ensure hazard resistant features as per all building by laws and maintain all National & State roads.
Department of Town and country planning	Primary agency responsible for evolving policy and ensuring land use, hazard wise zonation and implementation building by laws.
Department of Urban development	Main agency to ensure repair and maintenance in the urban areas. Implementing disaster resistant Building Codes and Designs
Department of Education	The department will prepare curriculum related to disaster management and conduct training programme for teachers and children. The department will coordinate with the local authority and arrange for mock drills, search and rescue drills. Awareness campaigns, Volunteer Teams. Ensuring maintenance and retrofitting of school buildings/school safety.

Department of Home	Be the primary agency responsible for “Urban Fire”, “Village fire”, Nuclear disasters, Serial Bomb blasts and Festival related disasters. And also for Security, evacuation, emergency assistance, search and rescue, first aid, law and order, communication, shifting of people to relief camps, traffic management. Burial work of dead bodies, Fire management.
Department of Forest	Be the primary agency responsible for “Forest Fire” and Man-Animal conflicts.
Department of Energy	Primary agency responsible for electrical disasters and fires. It will ensure power supply for public facilities such as hospital, police stations, telecommunication building and meteorological stations. Coordination with Hydro Power Projects.
Department of Science & Information Technology , KARSAC	Responsible for the fail proof communication. Maintenance of IT infrastructures, maintain communication and satellite links.
Department of Irrigation	Primary agency responsible for Floods, Water supply and Drought, Issue flood warnings, identification of safer places, construct embankments, arrangement of boats and pump sets, swimmers and divers and communication.
Department of Health	Be the primary agency responsible for “Biological Disasters and Epidemics”. First aid, health and medical care, ambulance arrangements, preventive steps for other diseases, establishment of health camps. Providing Trauma Centres and all other health related support.
Department of Information and Public Relations	Communicate warnings to the public, relay announcements issued by SEC, telecast special programmes for information and actions, education and awareness messages for preparedness actions and coordinated response. Promote disaster related polices, provide emergency communication systems, enable critical communication links with disaster sites and coordinate with media.
Department of Rural Development	Primary agency to implement vulnerability reduction projects to alleviate poverty and improve people’s livelihoods. Ensure Rural development schemes implemented in the State incorporating disaster reduction measures. Assists in rehabilitation of the victims.
Department of Agriculture	Primary agency for hailstorms, droughts and pest attacks. To provide seeds and necessary planting material and other inputs to assist in early recovery. Information to farmers on rainfall and cropping methods to avoid drought situations
Department of Finance	Arrange necessary funds and ensure equitable distribution, manage accounts.
Department of Planning	Allocation of funds on priority basis for disaster mitigation and rehabilitation projects
Department of Transport	Primary agency for Road accidents. Arrange for sending personnel and relief material to the disaster affected area, relocate the affected people, keep access routes operational and inform about alternate routes. Keep an inventory of resources available with Govt. & private operators.
Department of Technical Education and vocational training	Be the primary agency responsible to conduct certificate training programmes for construction workers. To create a pool of qualified masons to ensure safe construction practices in construction work.
Department of Food, Civil Supplies and	Plan for food storage locations keeping in view the necessity. Primary agency responsible for identifying the basic needs of food in the aftermath of a disaster or emergency, to obtain appropriate supplies and transporting

Consumers Affairs	such supplies to the disaster area.
Department of Women and Child Welfare	Primary agency for building capacities and increasing awareness of disabled persons, children, old aged, third gender and women. implement Government schemes meant for this target group Organizing special camps for the disabled, widows, children and other vulnerable groups. It will also provide necessary help and assistance for socio-economic rehabilitation.
Department of Industries	Ensure industrial safety and provide skill training to employees, masons, technical staff etc.,
Department of Factories and Boilers	Ensure that all factories have onsite and offsite DM Plans. initiate safety training to all employees of these factories. conduct mock drills.
Department of Horticulture	The primary agency for management of horticulture crops, hailstorm and Pest Attack. Support in crop damage assessment due to disasters.
Department of Animal Husbandry	Primary agency for Animal epidemics. Responsible for fodder assessments, supply and management during disasters and disposal of dead animals.
Department of Panchayati Raj	Ensure training of Panchayati Raj Institutions on disaster management and also ensure that all the development schemes of the department have the component of disaster mitigation as an integral part.
International Agencies / NGOs	Provide relief, coordinate with Government, and conduct awareness and capacity building programmes, preparedness activities at community level, assist in reconstruction and rehabilitation.
Department of Tourism	Coordinate in providing temporary shelters, food packages for air dropping.
Department of Disaster Management, KSNDMC	Monitoring natural disasters such as drought, flood and advise farmers about cropping pattern, drought/flood situations, giving early warning to officers and departments concerned regarding disaster events.

14.9.1 Standard Operating Procedures for Responsible Departments/Agencies

These procedures shall be updated and revised every six month incorporating the new insight experience and understanding of vulnerability & risk perceptions and disaster that take place with the passage of time.

The departments, divisions and agencies will organize proper training of officers and staff so that they can help in rescue, evacuation and relief work at different stage of disaster. Emergency responses teams will be kept ready by each department so that they can move to disaster site/affected area on short notice. The Standard operating procedure shall be followed during normal times, warning stage, disaster stage and post disaster stage.

14.9.2 Department of Revenue (Disaster Management)

<p>Primary Tasks:</p> <ul style="list-style-type: none"> • To coordinate with Govt. of India & National Disaster Management Authority. • To function as a secretariat of the State Disaster Management Authority. • To coordinate the relief recovery operations in the wake of disasters. • To declare and notify Disaster Situation.
<p>Preparedness function</p>

- Establish infrastructure for state EOC and maintain it in state of readiness with all equipment in working order and all inventories updated.
- Train personnel on operations of EOC.
- Ensure basic facilities for personnel who will work at district level for disaster response.
- To coordinate the preparedness functions of all line departments.
- Establish disaster management funding mechanisms to ensure adequate resources for preparedness work, and quick availability of resources for relief and rehabilitation when required.
- Help DDMA with additional resources for disaster preparedness.
- On annual basis report to the SEC of the preparedness activities.
- Establish and activate help lines through police and health departments and district public relations office.
- Prepare a list of potential shelters with clearly specifying their capacity and check upon their suitability for accommodating people with varying social behavior.
- Prepare a plan for the disposal of dead bodies and carcasses.
- Constitute / activate Village-level Preparedness Teams with the help of PRIs local NGOs and revenue officials.
- Prepare & update inventory of resources every quarter.
- Coordinate with National & International Institutions
- Development of policies
- Facilitate convening the meeting of District Disaster Management Authority
- Annually update the District Disaster Management Plan.
- Maintain and activate the District level EOC.
- Establish communications with state EOC and all stakeholders at all levels for purpose of receiving and sending warning and information exchange through district control room.
- Ensure collation of expense accounts for sanctions and audits.

Mitigation

- Ensure that funds are being allocated under the State Mitigation Fund.
- Ensure that structural and non-structural mitigation measures are taken by all its department offices.
- Establish warning system between State – District and in high risk zones.
- Monitor implementation of construction norms for all types of buildings and infrastructure.

Alert and Warning Stage

- Maintain contact with forecasting agencies and gather all possible information regarding the alert.
- Ensure activation of State level EOC in standby mode.
- Instruct all ESFs to remain in readiness for responding to the emergency.
- Advise concerned DDMA to carry out evacuations where required, and to keep transport, relief and medical teams ready to move to the affected areas at a short notice.
- Dispatch field assessment teams, if required.
- Provide assessment report to the SDMA.

Response

- Activate EOC in full form
- Coordinate and plan all activities with the ESFs
- Conduct Rapid Assessment and launch Quick Response.
- Conduct survey in affected areas and assess requirements of relief

- Distribute emergency relief material to affected population.
- Coordinate all activities involved with emergency provisions of temporary shelters, emergency mass feeding, and bulk distribution of coordinated relief supplies for victims of disasters.
- Coordinate with NDRF, Army, and Indian Air Force as per the demand of the situation.
- Prepare an evacuation plan for villages which are devastated or affected.
- Ensure the supply of food grains through the Public Distribution System.
- Prepare a list of relief items to be distributed.
- Formulate sector specific teams such as transport, material and equipment for responding to the disaster incident.
- Prepare a transportation plan for supply of relief items.
- Convene meetings of all NGOs, Youth Clubs, and Self Help Groups operating in the district and assign them unambiguous responsibilities for relief, recovery and rehabilitation.
- Ensure to establish and manage relief camps through key departments responsible for ESF.
- Call for emergency meeting to take stock of the situation. Develop an action plan.
- Appoint In-charge Officers of Response base.
- Ensure damage and need assessment through teams formed through concerned department.
- Commence functioning of IRS and ESF systems.
- Recall important functionaries from leave; communicate to the staff to man their places of duties like the ward and divisional offices and respective departments.
- Ensure that panic does not occur.
- Activate all emergency communications.
- Coordinate NGO, INGO and international agencies interventions/support.
- Ensure media briefing through a DPRO or an officer specifically designated for the purpose.

Recovery and Rehabilitation

- Ensure preparation of rehabilitation plan for displaced population through ULBs/PRI's etc.
- Organise initial and subsequent technical assessments of disaster affected areas and determine the extent of loss and damage and volume and nature of relief required.
- Keep the SDMA informed of the situation.
- Ensure supply of food, drinking water, medical supplies and other emergency items to the affected population.
- Visit and coordinate the implement of various rehabilitation programmes.
- Coordinate the activities of NGOs in relief and rehabilitation programmes.
- Allocate funds for the repair, reconstruction of damaged infrastructure after considering their overall loss and damage.
- Ensure Provision of Nutritional aspects of food for disaster victims.
- Prepare an evacuation plan for population from the dangerous area / buildings as per the advice of agencies identified for issuing warnings before, during & after the incident.
- Ensure immediate disbursal of compensation.

Checklist:

Sl. No.	Preparedness Measures	Action Taken/Remarks
1	Update District Disaster Management Plan twice a year specifically with reference to the resources and improved HVRA.	
2	Check upon communication network; phones, wireless, fax, internet, HAM network every month.	
3	Identify and determinate Hazard wise most vulnerable & risk prone pockets quarterly.	
4	Activate District Control Rooms establish communication with sub- division, block & village level functionaries in the close proximity affected area.	
5	Fix the location of Response base	
6	Designate In-charge officials of the response base.	
7	Check the availability and deployment of resources and mobilize them.	
8	Convene meetings of District Disaster Management Authority once in three months	
9	Convene civil defence, NGOs, PRIs and ULBs meetings prepare a list of NGOs, PRIs and ULBs with their Functional Specialization and Geographical Coverage.	
10	Check the availability of Food Grains in PDSs shops and other stocking and distributors in the district	
11	Prepare a list of relief items for distribution division wise keeping in view the food habits of people	
12	Determine quantity of relief items as per minimum standards and expenditure to be incurred in it.	
13	Prepare a transport and alternate transport plan for evacuation and distribution of relief	
14	Prepare a plan for VIP's movement.	
15	Prepare a media plan for dissemination of information to the people of the district; local newspaper , radio, TV and cable, etc	
16	Ensure appropriate stocking of relief material received from outside.	

Department of Home

Department of Home has an important role of providing security, logistics, and if necessary, assistance in distribution of relief items and provision of equipment for emergency response.

<p>Primary Tasks:</p> <ul style="list-style-type: none"> • Maintain Law & Order • Facilitate the evacuation of affected people • Undertake search & rescue • Ensure protection safety of relief & rehabilitation efforts.
<p>Preparedness function</p> <ul style="list-style-type: none"> • Designate one Liaison Officer in the department as the Disaster Preparedness Focal Point. • Prepare an operational Plan for responding to any type of disaster.

- Establish, maintain and train state search and rescue response team.
- Impart training to the members of Police Force in first aid, evacuation, rescue and relief operations.
- To conduct Search and Rescue training to local volunteers.
- Prepare an inventory of all man power and equipment available.
- To prepare an inventory of volunteers who have already completed training courses successfully and can be utilized in the search and rescue operations.
- Identify the 'High Risk' and 'Risk' areas for different disasters and instruct the existing police installations located in those areas for keeping themselves in readiness for undertaking emergency rescue, evacuation relief operations.
- Arrange drills for fire extinguishing, rescue, evacuation and transportation of injured persons and prepare coordinated Action Plans in cooperation with District administration and concerned local agencies
- Constitute district wise 'Search & Rescue' Teams from the Police and arrange training for these units.
- Hold quarterly mock drills on disaster preparedness and response.
- Installation of radio communication at-
 - **District Police Control Room and SP Office.**
 - **Control room at affected site.**
- Keep the police vehicles and other transport in readiness for deployment of the police.
- Make an inventory of resources.
- Review quality maintenance of equipment & machinery constitution.
- Identify most vulnerable areas/pockets in each police districts.
- Ensure the availability of adequate warning mechanism for evacuation
- Identify alternative routs in hotspots.
- Identify the departmental needs for dealing with the disaster.
- Prepare a Deployment Plan for Police force, based on the needs of the most vulnerable areas.
- Ensure that a sufficient number of Police force is available for responding to disaster situation.
- Organize training for police officer to handle disaster/crisis situation.

Mitigation function

- Make departmental mitigation plan and ensure its implementation

Alert and Warning Stage

- Depute one liaison officer for the SEOC.
- Issue written cautionary instructions to all concerned.
- Maintain communications with the police installations in the areas likely to be affected by disaster.
- Inform nearest police station (from the likely disaster affected area) for dissemination of warning.
- Instruct all concerned to accord priority to disaster related wireless messages if required by appropriate officials.
- On receipt of directives from the SEOC for evacuation - organize personnel and equipment for evacuation and undertake evacuation operations.
- Earmark a reserve task force, if needed.
- Move task forces to the convenient positions, if needed.

Response

- Call for emergency meeting to take stock of the situation. Develop an action plan.
- Designate an area, within Police Station to be used as help line center for public.
- Send task forces in disaster affected areas.
- Carry out search and rescue operations.

- Carry out fire fighting operations
- Maintain law and order, especially during relief distribution.
- Keep close watch for any criminal and anti-state activity in the area.
- Keep direct contact with different officers like District EOC for taking any steps to combat any situation.
- Dispatch situation reports to the DEOC and SEOC.
- Provide guards wherever needed particularly for staging area of cooperative food etc food stores and distribution centers.
- Provide convoys for relief materials.
- Establish coordination with the Fire Services.
- Coordinate with military service personnel on the area.
- Evacuation will be ordered by Deputy Commissioner/Addl. Deputy Commissioner

Recovery and Rehabilitation

- Assist local administration in removing the dead bodies and debris in affected areas.
- Assist in Setting up field hospital if required.
- Participate in reconstruction and rehabilitation operation if requested.
- Arrange security of government property and installations damaged in a disaster.
- Coordinate with other offices for traffic management in and around damaged areas.
- Assist the local administration in putting a stop to theft and misuse in relief operation.
- Provide security in transit and relief camps, affected villages, hospitals and medical centers and identify areas to be cordoned off.
- Provide security arrangements for visiting VVIPs and VIPs.
- Assist district authorities to take necessary action against Hoarders, Black Marketers and those found manipulating relief material.
- In conjunction with other government officers, activate a public help-line to:
- Respond to personal inquiries about the safety of relatives in the affected areas.
- Respond to many specific needs that will be given.
- Serve as a rumor control center.
- Confidence building among the public.
- Make officers available to inquire into and record deaths, as there is not likely to be time or personal available, to carry out Standard Post-mortem Procedures.
- Monitor the needs and welfare of people sheltered in relief camps.
- Adequate Security to International Agencies/Countries personnel for Search & Rescue Medical Assistance and Security for their relief material and equipment etc.
- Manage Traffic/Crowd. Recall important functionaries from leave, communicate to the staff to man their places of duties like the ward and divisional offices and respective department

Superintendent of Police.

- Patrolling for checking looting by antisocial elements.
- Dispatch Police to systematically identify and assist people and communicate in life-threatening situation.
- With the assistance of health professional, help injured people and assist the community in organizing emergency transport of seriously injured to medical treatment centers.
- Assist and encourage the community in road cleaning operation.
- Review & Draw the traffic plan and assess and identify road for the following conditions/facilities.
 - One Way
 - Blocked
 - Alternate route
 - Overall Traffic Management
 - Other access roads
- Under appropriate security, Law and Order, the evacuation of community and livestock should be

<ul style="list-style-type: none"> undertaken with assistance from community leaders. All evacuation must be reported to Deputy Commissioner and Superintendent of Police immediately

Checklist:

Sl. No.	Preparedness Measures	Action taken
1	Prepare a deployment plan for police forces	
2	Check the availability and readiness of the search and rescue teams within the district police	
3	Check adequacy of wireless communication network and setup links with the SEOC DEOC and at Sub-divisional level to reach out the affected area.	
4	Develop a traffic plan for contingencies arising out of disasters – alternative routs and traffic diversion etc.	
5	Develop a patrolling plan for controlling the activities for controlling the activities of anti social elements, critical infrastructure and affected villages/locality/shelters/relief camps.	
6	Keep the police vehicles and other modes of transport available in readiness.	
7	Prepare a Plan for VIP movements to the disaster affected areas.	
8	Identify anti social elements that could take undue advantage and take suitable preventive actions.	
9	Coordinate with NGOs and provide them with adequate security	

14.9.3 Department of Transport

<p>Primary Tasks:</p> <ul style="list-style-type: none"> Arrange and organize transport for ensuring supplies to the affected villages and evacuation of the victims. Facilitating the movement of Emergency teams. Facilitate evacuation of people Grant Transport of relief material to the affected area
<p>Non Disaster Time – Preparedness</p> <ul style="list-style-type: none"> Designate one Liaison Officer of the department as the Focal Point and inform all concerned. Develop disaster management plan for the department. Carry out survey of condition of all highway systems at state and district level. Carry out survey of condition of all aircraft landing facilities. Prepare an inventory of vehicles trucks, buses, jeeps, tractors etc of government and private agencies district wise and provide the list to the State EOC and District control room. Issue standing instructions to the State transport department for providing buses for evacuation and relief.
<p>Non Disaster Time – Mitigation</p> <ul style="list-style-type: none"> Make departmental mitigation plan and ensure its implementation.

<p>Alert and Warning Stage</p> <ul style="list-style-type: none"> • Depute an officer at the SEOC. • Ensure availability of fuel, recovery vehicles and equipment. • Take steps for arrangement of vehicles for possible evacuation of people
<p>During Disaster – response</p> <ul style="list-style-type: none"> • Call for emergency meeting to take stock of the situation. Develop a strategy and objectives. • Establish contact with the SEOC. • Take steps for transportation of relief personnel and material to affected areas. • Take steps for movement of affected population to safer areas. • Collate and disseminate information regarding operational and safe routes and alternate routes, fuel availability etc. to personnel operating in the field. • Launch recovery missions for stranded vehicles. • Launch repair missions for damaged critical infrastructure and routes. • Recall important functionaries from leave, communicate to the staff to man their places of duties like the ward and divisional offices and respective departments. • Provide trucks, buses, jeeps, tractors etc for evacuation and for ensuring supply chain continuity.
<p>After Disaster – Recovery and Rehabilitation</p> <ul style="list-style-type: none"> • Assess damage to transportation infrastructure. • Take steps to ensure speedy repair and restoration of transport links

14.9.4 Department of Public Works

<p>Primary Task:</p> <ul style="list-style-type: none"> • To ensure the trouble free road communication. • To evolve and implement earthquake design of building design of building. • To evolve appropriate code and guidelines. • To inspect buildings & critical buildings for their safety. • To ensure appropriate designs of structures in areas of operation such as roads, bridges & buildings.
<p>Non Disaster Time – Preparedness</p> <ul style="list-style-type: none"> • Designate one Liaison Officer in the department as the Disaster Preparedness Focal Point. • Take precautionary steps for the protection of government property against possible loss and damage during disaster. • Formulate guidelines for safe construction of public works. • Prepare list with specifications and position of heavy construction equipment in the state. • Organize periodic training of engineers and other construction personnel on disaster resistant construction technologies. • Procure HRV analysis of PWD. • Based on HRV analysis, prepare a Contingency Action Plan division wise and vulnerable

zone wise plan.

- Establish communication with State Emergency Operations Centre, District Control Rooms and departmental HQ within the division and state.
- Create an inventory of earth moving machinery available with each division and with private contractors.
- Create linkage and communication with power project authorities and identify resources available with them.
- Make an unambiguous written agreement for mobilization of private resources at the time of crisis.

- Officers at Taluk and Sub-Divisional level should be familiar with pre-disaster precautions and during and post-disaster procedures for road clearing and for defining safe evacuation routes.
- Review and update measures and procedures taken for the maintenance and protection of equipment.
- Clear areas beneath bridges to ensure smooth flow of water and especially prior to the monsoon season.
- Undertake rapid visual inspection of critical buildings and structures of the state government (including hospital buildings) by a specialized team and identify structures which are endangered requiring retrofitting or demolition.

Emergency tools kit should be assembled for each division and should include:

- Crosscut saws
- Axes
- Power chain saw with extra fuel, oil
- Sharpening files
- Chains and tightening wrenches
- Pulley block with chain and rope
- Cutters and Cranes
- Routes strategic to evacuation and relief should be identified and marked in close coordination with police and DEOC.
- Within the cities establish priority listings of roads which will be cleared and opened, among the most important are the roads to hospitals and main trunk routes.
- Identify locations for setting up transit and relief camps, feeding centers.

Non Disaster Time – Mitigation

- Actively work to develop a sustainable state-wide hazard mitigation strategy.
- Repair, Maintenance and retrofitting of public infrastructure.
- Identify / prioritize mitigation activities of lifeline buildings and critical infrastructure and coordinate with the Departments and SDMA for its implementation.
- Report to SDMA about mitigation plans.

Alert and Warning Stage

- Establish radio communications with State Emergency Operations Centre
- Instruct all officials at construction sites to keep manpower and materials prepared for protection and repair of public works.
- Direct construction authorities and companies to pre-position necessary workers and materials in or near areas likely to be affected by disaster.
- Vehicles should be inspected, fuel tanks filled and batteries and electrical wiring covered as necessary.
- Dispatched extra vehicles from headquarters to be stationed at safe strategic spots along

routes likely to be affected.

- Move heavy equipments, such as front-end loaders, to areas likely to be damaged.
- Inspect all roads, road bridges by a bridge engineer, including underwater inspection of foundations and piers. A full check should be made on all concrete and steel works.
- Secure works under construction ropes, sandbags, and cover with tarpaulins if necessary.
- If people are evacuating an area, the evacuation routes should be checked and people assisted.
- Identify locations for setting up transit and relief camps, feeding centres and quantity of construction materials and inform SEOC accordingly.

During Disaster – Response

- Provide assistance to the damage assessment teams for survey of damage to buildings and infrastructure.
- Adequate road signs should be installed to guide and assist the drivers.
- Begin clearing roads. Assemble casual labourers to work with experienced staff and divide into work gangs.
- Mobilize community assistance for road clearing by contacting community organizations.
- Undertake repair of all paved and unpaved road surfaces including edge metal ling, pothole patching and any failure of surface, foundations in the affected areas and keep monitoring their conditions.
- Undertake construction of temporary roads to serve as access to temporary transit and relief camps, and medical facilities for disaster victims.
- As per the decisions of the State Emergency Operations Center and DEOC undertake construction of temporary structures required, for organizing relief work and construction of relief camps, feeding centres, medical facilities, cattle camps and SOC/s.
- Take steps to clear debris and assist search and rescue teams.
- Provide sites for rehabilitation of affected population
- The concerned Executive Engineer will be responsible for mobilizing staff and volunteers to
- clear the roads in case of any blockage.
- All response at district level teams should be provided with two way communication link.

After Disaster – Recovery and Rehabilitation

- Carry out detailed technical assessment of damage to public works.
- Assist in construction of temporary shelters.
- Organize repairs of buildings damaged in the disaster
- Prepare detailed programs for rehabilitation of damaged public works.
- Arrange technical assistance and supervision for reconstruction works as per request.
- Mobilize community assistance for road clearing by contracting community organizations.
- Undertake clearing of ditches, grass cutting, burning or removal of debris and the cutting of dangerous trees along the roadside in the affected area through maintenance engineer's staff.
- As per the decisions of the DDMA , undertake construction of temporary structures required for organizing relief work and construction of relief camps, feeding centres , medical facilities, cattle camps and Site Operations Centres.
- An up-to-date report of all damage and repairs should be kept in the Executive Engineer's office and communicate the same to the District Control Room & SEOC.

14.9.5 Department of Irrigation

primary Tasks:

- To act as nodal agency for floods.
- To ensure the availability of water supply.
- To ensure the operation of irrigation system.
- To undertake necessary steps for flood protection and management.
- To undertake drought management measures.

Non Disaster Time – Preparedness

- Designate one Liaison Officer in the department
- Ensure efficient management of flood forecasting and warning centres and improve procedure of flood forecasts and intimation to appropriate authorities.
- Identify flood prone areas and activate flood monitoring mechanisms.
- Coordinate with KSNDMC Bengaluru in the flood season every year.
- Collect all the information on weather forecast, water level of all principal reservoirs.
- Keep in readiness essential tool kits and protection material at critical places for emergency deployment. These may include:
 - Empty Cement Bags
 - Boulders
 - Ropes
 - Sand
 - Wire mesh
 - Shovels
 - Baskets
 - Lights
 - First Aid Kit
- Materials likely to be damaged by rains, such as cement bags, electric motors, office records etc should be covered with plastic even though stored inside.
- Coordinate with KSNDMC for rain gauge data
- Procure / prepare HRV analysis for water resource management and flood protection.
- Based on HRV analysis, prepare department specific Contingency Action Plan.
- Review and update precautionary measures and procedures and review with staff the precautions that have been taken to protect the equipment and machinery in the wake of any disaster.
- Keep Standby diesel in petrol pumps or generators in damage- proof buildings.
- A standby water supply plan should be available in the event of damage or pollution of the regular supply sources in disaster prone areas.
- Establish procedures for the emergency distribution of water if existing source of supply is disrupted.
- Make an inventory provisions to acquire tankers and establish other temporary means of distributing water on an emergency basis.
- Make an inventory provision to acquire containers and storage tanks, required for storing water on an emergency basis.
- Prepare a plan for upkeep and maintenance of equipment.
- Where ever possible make sure auxiliary generators and standby engines are in good working order.

Non Disaster Time – Mitigation

- Make departmental mitigation plan and ensure its implementation.
- Review and update precautionary measures and procedures.

Alert and Warning Stage

- Alert SEOC in the event of floods.
- Since flash floods get triggered within short time-spans, take steps to alert all through telephone and wireless according to needs.
- Organize on the receipt of flood warning or any other disaster continuous monitoring of
 - Wells
 - Intake structures
 - Pumping stations
 - Buildings above ground
 - Pumping mains
 - The treatment plant
- Mount watch on flood protection works and irrigation and water supply systems.

During Disaster – Response

- Transportation of water with minimum wastage (in coordination with local administration).
- Locate drinking water facilities separate from sewer and drainage facilities
- Ensure that remaining or unaffected sources of water do not get contaminated and the distribution of water is equal to all victims in the area affected.
- Identify and mark damaged water pipelines and contaminated water bodies and inform disaster victims against using them.
- Recall important functionaries from leave communicate to the staff to man their places of duties like the ward and divisional officers and respective department.
- Repair damaged pipes, blocked sewages and salvage important and damaged facilities.
- Organize round the clock inspection and repair of :
 - Dams, Check dams
 - Irrigation Channels
 - Control gates
 - Overflow channels
- Organize round the clock inspection and repair of:
 - Pumps
 - Generators
 - Motor equipment
- Make sure the water supply to key establishment such as fire hydrants and hospital storage tanks is full and the hospital is conserving water.
- Inform people to store an emergency supply of drinking water.
- Establish emergency works gangs for immediate post-disaster repairs.
- After any repair on the distribution system, the required main should be flushed and disinfected with a chlorine solution of 50mg/litre for a contact period of 24 hours. After which the main is emptied and flushed again with potable water.
- If the demand for water is urgent or the repaired main cannot be isolated, the concentration of the disinfecting solution may be increased to 100mg/liter and the contact period reduced to 1 hour.
- At the end of disinfection operations, but before the main is put back into services, samples should be taken for bacteriological analysis and determination of chlorine residue.
- Recall important functionaries from leave: communicate to the staff to man their places of duties like the ward and divisional offices and respective departments.
- Call for emergency meeting to take stock of the situation. Develop a strategy and objectives.
- Identify unacceptable water sources and take necessary precautions to ensure that no water is accessed from such sources, either by sealing such arrangements or by posting the department guards.

After Disaster – Recovery and Rehabilitation

- Carry out Environmental Impact Assessment of the disaster.
- Take up sustained programs for rehabilitation of flood protection works, water supply schemes, check dams.
- Take up afforestation drives for rehabilitation of vegetative cover lost in disaster.
- Protect pump stations from water ingress in the stream beds or banks.
- Repair sewage lines where damage is detected.
- Repair water pipelines wherever damaged.
- Ensure that potable water supply is restored as per the standards and procedures laid down in ‘Standards for Potable Water’.

14.9.6 Department of Agriculture

Primary Task:

- To act as nodal department for drought related disasters
- To undertake need & damage assessment with respect to crops of all types.
- To ensure the uninterrupted functioning of all infrastructures related to agriculture sector.
- To assist the farming community in restoration & relocation efforts.

Non Disaster Time

- Designate an RO for DM within the department.
- Procure HRV analysis for the State and Identify most vulnerable areas
- Identify areas likely to be affected.
- Organize distribution of seeds, seedlings, fertilizer and implements to the affected people.
- Arrange for keeping stock of seeds, fertilizers and pesticides.
- Develop district contingency action plan based on HRV.
- Establish communication with SEOC, DDMA, Deputy Commissioner and District Control Room and Agriculture Universities.
- Review and update preventive measures and procedures
- Check available stocks of equipment and materials which are likely to be most needed during disaster like floods and droughts.
- Determine the type of damage, pests or disease may cause crop wise and identify the insecticide required for the purpose, in addition to requirement of setting up extension teams for crop protection and accordingly ensure that extra supplies and materials be obtained quickly.
- All valuable equipments and instruments should be packed in protective coverings and stored in room the most damage-proof.
- Suggest variety of seeds and cropping pattern, which can reduce losses and reduce the risks to farmers.
- Ensure that certified seeds of required varieties are available in adequate quantities..

<ul style="list-style-type: none"> • Develop a pest and disease monitoring system so that timely steps can be taken to reduce damage to crops.
<p>Warning</p> <ul style="list-style-type: none"> • Check available stocks of equipments and materials which are likely to be most needed after the disaster. • Stock agricultural equipments which may be required after a disaster • Provide information to all concerned, about disasters, likely damages to crops and plantations, and information about ways to protect the same. • All electrical equipments should be unplugged when disaster warning is received and especially in flood prone areas
<p>During Disaster</p> <ul style="list-style-type: none"> • Depute one liaison officer to the SEOC. • Monitor damage to crops and identify steps for early recovery. • Estimate the requirement of <ul style="list-style-type: none"> - Seeds - Fertilizers - Pesticides and Labour • Organise transport, storage and distribution of the above with adequate record keeping procedures. • Ensure that adequate conditions through cleaning operations are maintained to avoid water-logging and salinity. • Print and widely distribute the list of points where certified seeds are available along with names of varieties and rates. Notices may be affixed at public places such as bus stands, on buses themselves, PHCs, Block headquarters, Tahasils etc. • Recall important functionaries from leave: communicate to the staff to man their places of duties like the local and divisional offices and respective departments. • Call for emergency meeting to take stock of the situation. Develop a strategy and objectives. • Establishment information centres through Raitha Samparka Kendras and extension network and assist in providing an organized source of information.
<p>After Disaster</p> <ul style="list-style-type: none"> • Quantify the loss and damage within the quickest possible time and finalizes planning of agriculture rehabilitation. • Ensure availability of adequate supply of seeds, seedlings, fertilizers, pesticides and agricultural implements. • Assist farmers to re-establish their contacts with agriculture produce market and ensure that appropriate prices be offered to them. • Provide information to NGOs and other organization about the initiative and resources of the department. • Assess the extent of damage to soil, crop, plantation, micro-irrigation systems and storage facilities and the requirements to salvage or replantation

Checklist:

	Preparedness Measures	Action Taken/ Remarks
1	Check the availability of seeds and disseminate information about the outlets where seeds can be made available.	
2	Set up a public information centre for providing information	

	sowing of crops, alternative crops, pests and application of fertilizers.	
3	Prepare a schedule for spray of pesticides and insecticides after the disaster.	

14.9.7 Department of Animal Husbandry

Primary tasks:

- Provide necessary assistance in ensuring the protection of animal stock of the state.
- Develop strategy and plan for animal related issues vis-à-vis disasters.
- Control & check any outbreak of epidemics.
- Make an inventory of all veterinary centers and assess their capacity to handle disaster situation.
- Develop protocol for disposal of bodies of dead animals
- Develop protocol for tranquilisation of wild animals during conflicts

Non Disaster Time

- Designate a focal point for disaster management within the department.
- Procure / Prepare HRV Analysis of Animal Husbandry sector in the state & District wise.
- Identify areas likely to be affected.
- Identify disaster prone areas, livestock population at risk, requirement of medicine, vaccines, equipments, disinfectants and other materials material require any material during disaster in prone area.
- Prepare inventory of human recourses along with their contact number (Veterinary Doctors, Para Vets, and Class-IV).
- Based on HRV analysis, prepare state wise & district wise plan for feed procurement
- Identify shelters for animals.
- Review and update precautionary measures and procedure for equipments protection.
- Prepare a list of water borne diseases that are preventable by vaccination. Publicize the information about common diseases afflicting livestock and the precautions that need to be taken.
- Stock emergency medical equipment which may be required during and post disaster.
- Determine what injuries / illness may be expected, and what drugs and other medical items will be required, in addition to requirements of setting up cattle camps.
- Check stocks of equipment and drugs which are likely to be most needed during and after disaster.
- Capacity building of all veterinary hospitals staff in dealing with likely damages and effects in the aftermath of disaster.
- Prepare kits for veterinary diseases, which could be provided to veterinary doctors at the block level and extension officers at the village level. The kits may also be provided to village level veterinary volunteers.
- The provision of medical services should be coordinated by the District Animal cattle camps.
- An injury and disease monitoring system should be developed, to ensure that a full picture of risk is maintained.
- Identify sites for cattle camps by ensuring the following:
 - Cattle sheds constructed should not exceed 20 sq. feet per animal.
 - There is adequate supply of drinking water.
 - There is sufficient shade for cattle to rest during the afternoon.
 - They are accessible.
 - They are conveniently located to be as close as possible to the affected villages

Warning

- Check available stocks of equipments and materials which are likely to be most needed after the disaster.
- Stock veterinary equipments which may be required after a disaster
- Determine what damage, pests or diseases may be expected, and what drugs and other insecticide items will be required, in addition to requirements of setting up extension teams for animal protection, and accordingly ensure that extra supplies and materials, be obtained quickly.
- All valuable equipments and instruments should be packed in protective coverings and stored in room the most damage-proof.
- Check the emergency electrical generator, to ensure that it is operational and that a buffer stock of fuel exists.
- Fill department vehicles with fuel and park them in a protected area.
- Fill hospital water storage tanks and encourage water savings. If no storage tanks exists water for drinking should be drawn in clean containers and protected.
- Prepare an area of the hospital for receiving large number of livestock.
- Develop emergency admission procedures (with adequate record keeping)
- The sterilized surgical packs must be stored in protective cabinets to ensure that they do not get wet. Covering the stock with polythene is recommended as an added safety measures.
- All valuable equipments and instruments should be packed in protective coverings and stored in room the most damage proof.
- All electrical equipments should be unplugged when disaster warning id received especially in flood prone areas.

During Disaster

- Depute one liaison officer to the SEOC or DEOC as the case to facilitate quick coordination between SEOC and parent department.
- Rush Rapid Assessment Team to Incident site to assess the quantum of damage and immediate requirement for relief and rescue
- Rush IRT along with the needed medicines equipments and other materials for relief and rescue operation at disaster site to minimize further loss and damage.
- Arrange for quick and proper disposal of carcasses with disinfection of the premises with the help of local people, other line department in coordination with SOEC or DEOC to check the spread of epidemic.
- To take immediate preventive measures like quarantine, immunization and culling etc. as per requirement of the situation.
- Develop a strategy for rehabilitation of affected animals.
- Establish radio communication with
 - SEOC and DEOC
 - Deputy Commissioner
 - District Control Room
 - Veterinary aid centers and hospital (including private practitioners) within the division

- Arrange for emergency supplies of anaesthetic drugs.
- Provide information to the local police and rescue groups about the resources available with veterinary aid centres and hospital.
- The minimum number of cattle in the camp should be about 50 and the maximum 300.
- Make provision for 6kg per cattle head per day of fodder, and 1 to 1.5kg per cattle head per day or any other concentrate
- Organize vaccination campaigns in disaster prone villages
- Cattle camps and hospitals administrators should

<ul style="list-style-type: none"> • Establish work schedules to ensure that adequate staff are available. • Set up teams of veterinary doctors and assistants for visiting flood affected sites. • Organize transfer of serious injured livestock from villages to veterinary aid centres wherever possible. • Establish cattle camps and additional veterinary aid centres at affected sites and designated an Officer In-charge for the camp. • Estimate the requirement of water, fodder and animal feed, for cattle camps and organize the same. • Ensure that adequate sanitary conditional through cleaning operations are maintained in order to avoid outbreak of any epidemic.
<p>After Disaster</p> <ul style="list-style-type: none"> • Quantify the loss and damage within the quickest possible time and finalizes planning for rehabilitation. • Coordinate with revenue Department to ensure relief distribution as per direction of the State Govt./ already laid down norms by the Govt.

Preparedness Checklist for Animal Husbandry:

Sl. No.	Preparedness Measures	Action Taken/ Remarks
1	Prepare and publicize the list of common disaster specific ailments and possible precautions for the farmers to observe.	
2	Organize vaccination for cattle in disaster villages.	
3	Prepare a plan for setting up cattle camps and cattle feeding centers.	
4	Prepare kits which could be given to Veterinary doctors and Animal Husbandry workers/volunteers.	
5	Prepare a plan for disposal of dead animals	
6	Prepare a plan for feed storage centers.	

14.9.8 Department of Education

<p>Primary tasks:</p> <ul style="list-style-type: none"> • The department will prepare curriculum related to disaster management and conduct training programme for teachers and children. • The department will coordinate with the local authority and arrange for mock drills, search and rescue drills
<p>Non Disaster Time – Preparedness</p> <ul style="list-style-type: none"> • Identify one Liaison Officer in the department as RO for DM. • Develop a safety plan for the department • In consultation with SDMA, include disaster related subjects in the curricula in schools, and colleges. • Arrange for training of teachers and students of disaster prone areas about the steps to be taken at different stages of disaster and organise them, in coordination with volunteers and inspire them for rescue, evacuation and relief works. • Ensure that all schools and colleges develop their disaster management plans. • Ensure that construction of all educational institutions in earthquake zones is earthquake resistant and disaster resistant
<p>Non Disaster Time –Mitigation</p>

<ul style="list-style-type: none"> • Identify structural and non structural mitigation measures. • In coordination with the SSA and/or Public works department assess schools and colleges buildings conditions. • Make departmental mitigation plan and ensure its implementation. • Ensure that earthquake multi-hazard resistant features are included in new school buildings.
<p>During Disaster – response</p> <ul style="list-style-type: none"> • In the event of disaster, place required number of education institutions and their buildings, under the SEOC for use as emergency shelter and relief centre if necessary. • Students and staff can provide local voluntary assistance for distribution of relief material and assistance to special needy people in the locality
<p>After Disaster – Recovery and Rehabilitation</p> <ul style="list-style-type: none"> • Determine the extent of loss in educational institutions and prepare plans for their rehabilitation

14.9.9 Department of Technical Education

<p>Primary tasks:</p> <ul style="list-style-type: none"> • The department will play a vital role in the State mitigation strategy. Its main role will be to conduct training programs to the construction workers, involved at the community level.
<p>Non Disaster Time – Preparedness</p> <ul style="list-style-type: none"> • In consultation with SEC, include disaster related subjects in the curricula. • Arrange for training programs and certificate course of construction workers. • Prepare a disaster management plan for the department
<p>Non Disaster Time –Mitigation</p> <ul style="list-style-type: none"> • To prepare an inventory of volunteers who have already completed training courses successfully and can be utilized in implementation of mitigation measures and new construction.
<p>During Disaster – Response</p> <p>Within the department, respond as per the departmental response plan</p>
<p>After Disaster – Recovery and Rehabilitation</p> <p>Coordinate with SDMA and DDMA for the recovery and rehabilitation</p>

14.9.10 Department of Health & Family Welfare

- The department of Health has a responsibility in the reduction and prevention of suffering during natural and man-made disasters.
- During emergency department is responsible for prevention and response of natural disasters and man-made disasters, as well as in the investigation and response to outbreak of communicable diseases.

Primary Task

- To provide overall medical and health service
- Check the spread of epidemics.
- To provide Trauma services.
- To provide MRHS.
- To create awareness

• Non Disaster Time – Preparedness

- Procure Hazard Vulnerability and Risk Map for each District.
- Ensure disaster management plans are developed in health centres and hospitals.
- Ensure that all hospital staff has been informed about the possible disasters in the district, likely damages and effects, and information about ways to protect life, equipment and property.
- Ensure that orientation and training for disaster response plans and procedures are undertaken. Special skills required during disaster situations are imparted to the officials and the staff.
- Ensure adequate availability of Emergency Health Kits in high risk areas
- Train volunteers on emergency preparedness programmes such as first aid and preventive measure against diseases in disaster prone areas.
- Prepare a list of medical and Para-medical personnel in disaster prone areas and make available to DDMA
- Establish and operate an early warning system for health threats based on the routine health information and in collaboration with other departments.
- Identify likely disease associated with each disaster prepare a health contingency plan keeping in view the threat perception and vulnerability.
- Based on HRV analysis, obtain a list of Response Base from the DDMA office and assign the medical personnel to each of these Response Base to the extent possible. Keep essential medicines and first aid facilities with each Response Base.

- Constitute mobile response units consisting of a doctor, health workers and ANMs and prepare a deployment plan such that each mobile unit is able to cover at least one Response Base in a day.
- Review and update precautionary measures and procedures.
- Review with staff, the precautions that have been taken to maintain and protect equipments.
- Stock emergency medical equipment which may be required in Disaster Management.
- Determine type of injuries/illness expected and drugs and other medical items required and accordingly ensure that extra supplies of medical items are obtained quickly.
- Check stocks of equipment and drugs which are likely to be most needed in disaster management. These can be categorized generally as :
 - Drugs used in treatment of wounds and fractures such as tetanus toxoid analgesics, antibiotics, dressing material and splint.
 - Drug used for treatment of diarrhoea, water borne diseases influenza malaria, infective hepatitis.
 - Drug required for treating snake bite and fighting infection
 - Drug needed for detoxication including breathing equipments.
 - Intravenous fluids

Non Disaster Time – Mitigation

- In coordination with the SEC, conduct building assessments, identification of structural and non structural mitigation activities.
- Prioritize mitigation activities and ensure budget allocation to such mitigation activities.

Alert and Warning Stage

- To prepare and keep ready Mobile Hospitals and stock them with emergency equipment that may be required after the disaster.
- Assess likely health impacts and share with SEOC for planning purpose
- To ensure pre-positioning of Emergency Health Kits and Personnel.
- Direct the activation of health/medical personnel, supplies and equipment as required.

During Disaster

- Designate one liaison Officer to be present at the SEOC.
- Mobilise medical teams and Para-medical personnel to go to the affected areas as part of the Rapid Assessment and Quick Response Teams.
- Provide medical assistance to the affected population
- Carry out technical assessment on health infrastructure availability and need
- Non-ambulatory patients should be relocated to the safest areas within the hospital.
- Dressing pads should be assembled sterilized. A large enough number should be sterilized to last for four to five days.
- Secure medical supplies in adequate quantity for dealing with these situations, which may include:
 - Oral Rehydration Solutions
 - Chlorine Tablets
 - Bleaching Power
 - Anti diarrheal and Anti emetic medicines
 - Intravenous fluids
 - Suture materials
 - Surgical Dressings
 - Splints
 - Plaster rolls
 - Disposable Needle and Syringes
 - Local Antiseptics
- All valuable instruments such as surgical tools, ophthalmoscopes, portable sterilizers, ECG machine, dental equipments, Ultra sound machine, analyzer, computer hardware etc should be packed in protective coverings and stored in rooms considered to be the most damage proof.
- The safest rooms are likely to be :
 - On ground floor.
 - Rooms in the center of the building away from windows.
 - Rooms with concrete ceilings.
- Protect all immovable equipment such as X-ray machines, Sterilizer, Dental chair by covering them with tarpaulins or polythene.
- Ensure adequate supplies of blood in each district.
- Keeps one operating facility in each Response Base in readiness. Maintain all the equipment necessary for operations.
- Prepare a maternity facility for pregnant women in every Response Base/ Advance Medical Post.
- All electrical equipment likely to be affected should be marked & unplugged when flood warning is received.
- Check the emergency electrical generator to ensure that it is operational and that buffer stock of fuel exists. If an emergency generator is not available at the hospital, arrange for one.
- Request central warehouse immediately to dispatch supplies likely to be needed in hospitals,

on an emergency priority basis.

- Fill hospital water shortage tanks, if no storage tanks exists; water for drinking should be drawn in clean containers and protected.
- Prepare an area of hospital for receiving casualties.
- Develop emergency admission procedures
- Orient field with standards of services, procedures including tagging

Field Office Priorities

- Transport is arranged for transfer of seriously injured/ill patients from villages and peripheral hospital to general hospitals. If roads are blocked helicopter transportation should be ensured.
- Establish health facilities and treatment centers at disaster affected site.
- The provision of medical services will be coordinated by the CMO with District EOC and site operation centers.
- Procedures should be clarified between
 - Health Services of Govt. , Private and other established at transit camps, relief camps and affected site / villages.
 - PHCs
 - CHCs
 - Civil Hospital
 - Private Hospitals
 - Blood Banks
- Maintain check posts and surveillance at railway stations, Bus Stands and all entry and exit points of the affected area, especially during the threat or existence of an epidemic.
- An injury and disease monitoring system should be developed to ensure that a full picture of health risk is maintained. Monitoring should be carried out for portable water and quality of food and disposal of waste in transit and relief camps, feeding centers and affected villages.
- Plan for emergency accommodations for auxiliary staff from outside the area.
- Information formats and monitoring checklist must be used for programme monitoring and development and for reporting to emergency operation center at state level.
- Seek security arrangements from Senior Superintendent of Police to keep curious persons from entering hospital areas and to protect staff from hostile actions.
- Establish a 'Health Helpline' with means of communication to assist in providing the organized source of information. The hospital is responsible for keeping the community informed of its potential and limitations in disaster situations, list of admitted patients and dead persons etc.
- The local police, rescue teams and ambulance teams should be aware of the resources of each hospital.

Checklist:

Sr. No.	Preparedness Measures	Action Taken/ Remarks
1	Prepare a Health Contingency Plan for deployment of health and medical personnel.	
2	Obtain a list of respondent Base from district administration and assign mobile health units and medical staff to each Response Base.	
3	Organize vaccination in Disaster affected area.	
4	Ensure necessary stock of medical supplies and blood.	
5	Organize maternity care centers in every Advance Medical Post.	
6	Keep operative facilities in readiness.	
7	Seek mutual aid arrangement with private hospitals and other dispensaries existing in the area	

14.9.11 Department of Environment and Forests

<p>Non Disaster Time – Preparedness</p> <ul style="list-style-type: none">• Develop a disaster management plan for the department.• Designate one Liaison Officer of the department as the Focal Point and inform all concerned.• Establish contact with KSNDMC and IMD for receiving alerts and warnings.• Conduct community capacity building and awareness programs• Conduct HRV of forest fires and wild animal conflicts
<p>Non Disaster Time – Mitigation</p> <ul style="list-style-type: none">• Develop and upgrade risk assessment and vulnerability analysis at state and district level in GIS format.• Research on avalanche, earthquake and landslide mitigation/technology methods and share them with the State Mitigation task force.• Research on climate change impacts in the State and recommend adaptation strategies.• Vulnerability assessment of the State and GIS mapping
<p>Alert and Warning Stage</p> <ul style="list-style-type: none">• Share the findings related to hazard and vulnerabilities studies taken up by the department.• Provide information to all concerned.
<p>During Disaster</p> <ul style="list-style-type: none">• Respond within the department as per the departmental disaster management plan.
<p>After Disaster</p> <ul style="list-style-type: none">• Carry out environmental impact assessment of the disaster.• Update risk and vulnerability assessment of the state.• Provide specialised inputs for damage and loss assessment.

14.9.12 Department of Forest

<p>Primary Task:</p> <ul style="list-style-type: none">• Create provision for permitting grazing in the forest land in the event of disaster when enough fodder is not available.• Extraction and transportation of fodder from forest areas, when the fodder is not freely available.• Provide wooden poles and bamboo for relief and reconstruction at subsidized rate to the inhabitants of affected villages.
<p>Non Disaster Time – preparedness</p> <ul style="list-style-type: none">• Prepare a department disaster management plan.• Forest Fire prone areas should be identified and extra vigilance be ensured in such cases.• Organise community awareness programs• Depute one liaison officer within the department, who will be in contact with the SEOC during disasters• Conduct/Procure HRV analysis of Forest resources in the state.

<ul style="list-style-type: none"> • Based on HRV analysis, prepared district wise Contingency Action Plan of the department. • Create task forces for forest fire fighting. • Draw district specific action plan
<p>Non Disaster time - Mitigation</p> <ul style="list-style-type: none"> • Prepare and maintain forest lines • Prepare mitigation plan for the department buildings and infrastructure.
<p>Alert and Warning Stage</p> <ul style="list-style-type: none"> • A rapid response team will be established at division/sub-division level, which will have all tools and equipment readily available. • Information dissemination to the people likely to be affected.
<p>During Disaster</p> <ul style="list-style-type: none"> • Recall important functionaries from leave: communicate to the staff to man their places of duties like the ward and divisional offices and respective departments. • Call for emergency meeting to take stock of the situation. Develop a strategy and objectives. • Respond within the department as per the department disaster management plan • The liaison officer will coordinate with SEOC for information exchange and also for requirements of resources to and from SEOC • Ensure supply of wood for disposal of dead bodies.
<p>After Disaster</p> <ul style="list-style-type: none"> • Damage assessment and sharing of reports with SEOC • Ensure plantation of fodder trees to maximum possible extent

14.9.13 Department of Urban Development

<p>Preparedness function</p>	
14	Designate one Liaison Officer in the department as the Disaster Preparedness Focal Point.
15	Develop a disaster management plan for the department, including the identification of location of camps for different type of disasters, existing locations that can be used as shelters, inventories of agencies that can be used for tent establishment.
16	To conduct regular training of the staff on minimum standards for shelter, relief camps and tent structures.
<p>Mitigation</p>	
17	Designate one Liaison Officer in the department as focal point for the mitigation activities.
18	Coordinate with the SDMA/SEC and HoDs for implementation of mitigation activities in the urban areas.
19	Prepare and implement departmental mitigation plan
<p>Alert and Warning Stage</p>	

20	Locate adequate relief camps based on survey of damage
21	Quick assessment of functional and stable building structures.
22	Clear areas for setting up relief camps
23	In case of damage to offices, assist local authorities to establish and house important telecom equipment and officials at the earliest
24	Develop alternative arrangements for population living in structures that might be affected after the disaster.
25	Establish water point in key locations and in relief camps
Response	
26	Quick assessment of damaged areas and areas that can be used for relief camps for the displaced population
27	Locate relief camps close to open traffic and transport links
28	Set up relief camps and tents.
29	Provide adequate and appropriate shelter to the entire population
30	Coordinate with other ESFs in equipping shelter and relief sites with basic needs of communication and sanitation.
31	Maintaining provide and procure clean water
32	Coordinate with SEOC for proper disposal of dead bodies in the urban areas
Recovery and rehabilitation	
33	Implement recovery and rehabilitation schemes through municipalities for urban areas

14.9.14 Department of Food, Civil Supplies and Consumer Affairs

Primary Tasks:	
34	To arrange uninterrupted supply of food, essential articles and to meet the requirements of all in affected areas.
35	To ensure the supply of POL, LPG.
36	To check black marketing and hoardings.
Non Disaster Time – Preparedness	
37	Develop a disaster management plan for the department and update it half yearly.
38	Develop a plan that will ensure timely distribution of food to the affected population.
39	Maintain a stock of food relief items for any emergency.
40	Identify and delineate vulnerable areas.
41	Prepare departmental contingency plan
42	Make an inventory of storages & godowns
43	Assess and ensure the safety of storage places.
44	Constitute district wise/ vulnerable zone wise response teams and delineate roles & responsibilities.
45	Estimate the quantity and nature of supplies required district / vulnerable zone wise.
Non Disaster Time – Mitigation	
46	Prepare and implement department's mitigation plan
Alert and Warning Stage	
47	Determine the critical need of food for the affected area
48	Catalogue available resources of food
49	Ensure that food distributed is fit for human consumption
50	Ensure quality and control the type of food.
51	Allocate food in different packs that can be given to families at household and distributed in relief camps
52	Arrange and the transport system in readiness
53	
During Disaster	

54	Coordinate with local authorities and other ESFs to determine requirements of food for affected population
55	Mobilise and coordinate with other Department of Revenu(DM) for air dropping of food to affected site.
56	Control the quality and quantity of food that is distributed to the affected population.
57	Ensure that special care in food distribution is taken for women with infants, pregnant women and children.
After Disaster	
58	Establishment of PDS points as per the changed scenario/resettlements (If any)
59	Issuing of duplicate ration cards to the disaster victims, who lost their papers.

14.9.15 Department of Rural Development & Panchayat Raj

Non Disaster Time – Preparedness	
<ul style="list-style-type: none"> • Develop a disaster management plan for the department and update it annually. • Analyse the training needs of the department’s personnel, which include its officials and elected representatives of Gram Panchayat, Taluk Panchayat and Zila Panchayat and organise trainings with the help of ATI/DTI or any training institute. • Conduct gram Panchayat level mock drills as part of preparedness. • Assist in establishing village disaster management teams. 	
Non Disaster Time – Mitigation	
<ul style="list-style-type: none"> • Prepare and implement department’s mitigation plan • Ensure that all the developmental schemes have a mitigation component as an integral part. 	
During Disaster	
<ul style="list-style-type: none"> • Coordinate with local authorities and support the response efforts. • Coordinate the support from unaffected Gram Panchayats. 	
After Disaster	
<ul style="list-style-type: none"> • Ensure proper distribution of reconstruction schemes and monitoring of the same through Block development committee and Zila Panchayat meetings. 	

14.9.16 Department of Information and Public Relations

The Department has to play a major role in education and awareness programmes for better organized preparedness and response at government and community levels. It also plays a main role to collect reliable information on the status of the disaster and disaster victims for effective coordination of relief work at State level.

Non Disaster Time – Preparedness	
<ul style="list-style-type: none"> • Develop a disaster management plan for the department. • Designate one Liaison Officer of the department as the Focal Point and inform all concerned. • Conduct education and awareness for local community • Popularize the techniques for preparedness and survival during pre-disaster, disaster and post-disaster period through television, radio and other publicity media. • Ensure strict performance of the allotted duties by radio, television, news media, films and publications related departments. • Take proper and adequate security steps for the protection of own installations and properties. 	

<ul style="list-style-type: none"> • Prepare guidelines / policy for necessary action by mass media on reporting disasters.
<p>Non Disaster Time – Mitigation</p> <ul style="list-style-type: none"> • Prepare and implement department’s mitigation plan • Prepare and implement public awareness on mitigation activities
<p>Alert and Warning Stage</p> <ul style="list-style-type: none"> • Acquire accurate scientific information from the nodal departments • Flash warning signals on all TV and radio networks. Disseminate 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.
<p>During Disaster :</p> <ul style="list-style-type: none"> • Coordinate with the EOCs for required information for relief workers. • Provide information of emergency numbers and other key contact numbers on television, through newspapers, loudspeakers and radio networks. • Send news flashes of latest updates / donation requirements for disaster area. • Ensure that the news to be broadcasted reflects the true and clear presentation of the actual position and does not create panic in the minds of the people and also advises them to desist from taking unreasonable steps. • Take steps for publicity of news and directives relating to the situation issued by the SDMA. • Curtail normal programmes to broadcast essential information on disaster if requested by the EOC. • Arrange visit to the affected area by the local and foreign journalists in the interest of publication of accurate and true report in the news. • Help victims as well as emergency workers in providing information regarding hospitals, help desks. • Inform unaffected population about hospitals where they can find victims and where assistance is required.
<p>After Disaster</p> <ul style="list-style-type: none"> • Arrange dissemination of information of the short and long term measures of different departments/agencies for relief and rehabilitation of the affected people.

14.9.17 Department of Energy

<p>Primary Task</p> <ul style="list-style-type: none"> • Ensure uninterrupted power supply in the disaster prone area • Coordination & mobilize the resources with private power developers in different basins. • Protect the infrastructure against impending threats
<p>Non Disaster Time – Preparedness</p>

- Designate one Liaison Officer of the department as the Focal Point and inform all concerned.
- Develop a disaster management plan for the department.
- Carry out survey of condition of all power supply at state and district level.
- Conduct HRV analysis for KPTCL and ESCOMs for installation & implementation in the state.
- Based on HRV analysis, prepare Contingency Action Plan of KPTCL/ESCOMs
- Establish radio communication of key functionaries with State Emergency Operation Center, District Control Room and with Boards and Departments.
- Review and update precautionary measures and procedure and review with staff the precautions that have been taken to protect equipment.
- Ensure that alternate power supply arrangements for emergency supply are available for critical facilities such as:
 - Secretariat Building at State & District level
 - Hospitals
 - IPH installations
 - State EOC/DEOC
 - Police Stations
 - Telecommunication buildings
 - Meteorological stations
 - DC Office
 - Any other place if required
- Check whether emergency tool kits are properly assembled and if any additional equipment needed.
- Protect Power Stations from disaster. Raise the height of compound walls

Non Disaster Time – Mitigation

- Designate one Officer as nodal officer for mitigation activities...
- In coordination with the SEC, conduct building assessments, identification of structural and non structural mitigation activities.

Alert and Warning Stage

- Establish radio communications with the SEOC.
- Prepare a First assessment report in conjunction with other ESFs for the SEOC to take further decision.
- Check emergency toolkits.
- Keep alternate power supply systems and generators in state of preparedness.
- Immediately undertake inspection of
 - High tension lines
 - Towers
 - Sub-stations
 - Transformers
 - Insulators
 - Poles and
 - Other equipments

During Disaster – Response

- Establish contact with the SEOC.
- Assist authorities to reinstate generators for public facilities such as Hospital, water supply, police stations, telecommunication building and meteorological stations.
- Dispatch emergency repair teams equipped with tools, tents and food.

- Establish temporary electricity supplies for relief material warehouses.
- Instruct district staff to disconnect the main electricity supply for the affected area.
- Provide accurate & regular information to the people about the state of power supply.
- Call for emergency meeting to take stock of the situation. Develop a strategy and objectives.
- Establish temporary electric supplies to transit camps feeding centers, relief camps and Site Operation Center, District EOC and on access roads to the same.
- Assist hospital in establishing an emergency supply by assembling generators and other emergency equipment if necessary.
- Establish temporary electric supplies to other key public facilities, public water system etc, to support emergency if necessary.

After Disaster – Recovery and Rehabilitation :

To facilitate restoration of energy systems after a natural /manmade disaster

- Review total extent o damage to power supply installations.
- Take steps to ensure speedy repair and restoration of power supply installations
- Begin repair/reconstruction.
- Compile an itemized assessment of damage from reports made by various electrical receiving centers and sub-centers.
- Report all activities to the head office and EOC at state and district level.

14.9.18 Departments of Industries, Factories and Boilers

Non Disaster Time

- Designate one Liaison Officer in the department as RO for Disaster Management
- Prepare and revise on-site and off-site DM Plan for all MaH units and other factories
- Conduct regular safety drills on the site of factory
- Ensure all possible steps for the security of manpower, implements, stock, installations/factories etc.
- Prepare listing and locations of industries and establishments for possible sourcing of relief material during disasters.
- Ensure training on preparedness programmes to be adopted at different levels for all manpower employed in factories and establishments in disaster vulnerable areas.
- Promote the preparation of implementation of emergency preparedness plans by all industrial units
- Implementing the existing laws for preventing environmental disaster in chemical industry or industries emitting toxic gases and effluents.
- Issue detailed instructions to the employees about their duties and responsibilities in precautionary, disaster and post-disaster stages of normal disaster.
- Arrange regular training for employees and contractors in the disaster prone areas on disaster issues.

Alert and Warning Stage

- Evacuation of the workers from the factories on the receipt of early warning

During Disaster

- Request industries to provide emergency relief material such as food products, temporary shelter, medicines and medical equipment and search and rescue equipment.

After Disaster

- Take steps to plan for rehabilitation of industries adversely affected by disasters

14.9.19 Department of Labour & Employment**Non Disaster Time**

- Designate a liaison officer as a focal point and inform all concerned.
- Issue disaster management guidelines to all the industries and ensure on-site and off-site plans for all industries.
- Prepare and disseminate guidelines for the labour security and safety.
- Prepare and implement rules and regulations for industrial safety and hazardous waste management.
- Prepare and disseminate public awareness material related to chemical accidents

During Disaster

- Provide labour to other departments for relief supply and distribution.
- Provide skilled labour for maintenance of equipment and tools.
- Help in establishment of camps.
- Ensure minimum wages to labour during relief work in drought or other disasters

After Disaster

- Take appropriate steps to provide labour assistance to concerned ministries in reconstruction and rehabilitation programmes.
- Assist in employment generation and alternate livelihoods for affected populations

14.9.20 Department of Finance

- Beside normal duties, the department of finance will perform the following responsibilities

Non Disaster Time

- Designate one Liaison Officer in the department as the Disaster Management Focal Point.
- Arrange for the necessary funds as per decision of the State Government

During Disaster

- Ensure quick allocation of funds for meeting relief operations.
- Control all accounts under the responsibility of the Government
- Start mobilizing resources for construction of infrastructure, public facilities and structures required for recovery.

After Disaster

- To monitor international loans and aid assistance to the state.
- To allocate and monitor government plan expenditure towards relief and rehabilitation of Disaster affected areas.

The Emergency Support Functions (ESF)

Disaster response is a multi-agency function. The Department of Revenue(DM) is the lead and nodal department responsible for managing and coordinating the response while other agencies will support and provide assistance in managing the incident. These ESFs will form integral part of the Emergency Operation Centres (EOCs) and each ESF would coordinate its activities from the allocated EOC. Extension teams and workers of each ESF will be required to coordinate the response procedures at the disaster affected site.

Alert Mechanism – Early Warning System

- In most disaster situations, the experience has shown that loss of life and property could be significantly reduced if preparedness measures are taken and appropriate warning systems are put in place. With respect to every disaster the following procedure will be used to issue warning and alerts:
- The District Disaster Management Authority will be the prime agency responsible for issuing the disaster warning at the district level and similarly at state level the State Executive Committee will be the prime agency.
- Technical State agencies authorized to liaison with national agency will receive warning and also communicate the same to the District Emergency Operation Center and State Emergency Operation Centre for further dissemination.

Agencies responsible to issue the warnings are as follows:

Hazards	Agencies (National Level)	Agencies (State Level)
Drought	Department of Agriculture	Department of Agriculture and KSNDMC
Floods	Central Water Commission	Department of Water Resources and KSNDMC
Human Epidemics	Ministry of Health	State Department of Health & Family Welfare
Animal Epidemics	Ministry of Animal Husbandry	Animal Husbandry
Road Accidents	MHA	State Department of Home
Industrial and Chemical Accidents	Ministry of Industry	Department Factories and Boilers and Dept.,of Industries
Fires	MHA	Department of Home (Fire), Department of forest
Heat and Cold waves	Indian Meteorological Department	Department of Revenue(DM)

- During non disaster time, the SEC will ensure that the following activities are being carried out in coordination with the concerned line departments:
- ***Pre-Disaster Warning and Alerts***
- For any information received on likelihood of disasters the SEC shall carry out the following activities
- Activate the SEOC
- Based on early warning received, prepare initial information report with estimation of likely severity and scale of disaster.
- The ESF will be asked to conduct a review of the preparedness level of the districts likely to be affected by the disaster, by calling a meeting of District Crisis Management Committees
- Prepare a team for deployment to assess damage and need.
- Inform respective departments to activate respective SOPs
- Inform the recognized national and international organizations if necessary.
- Provide appropriate warning to general public and carry out evacuation.
- Request Home Department to be on standby for rescue and relief operations.
- If required, declare de-warning

Relief and Rehabilitation

- In the aftermath of disasters the affected people must be looked after for their safety, security and the well being and provided food, water, shelter, clothing, medical care etc. so as to ensure that the affected people live with dignity.
- ***Guiding Principle of this phase would be “To build back better”***
- The Department of Revenue(DM) through SEOC will coordinate the recovery and rehabilitation activities in the disaster affected areas under the aegis of SEC by undertaking the following activities.

- Declaration of end of Disaster Situation by the SEC under the directions of SDMA.
- Submission of the recovery and rehabilitation plan by the SEC as per the disaster specific emergent situational needs, to SDMA.
- Declaration of Compensation, which will be done by Department of Revenue(DM) under the directions of the State Government as per relief manual.
- Declaration of Rehabilitation Schemes by the SDMA under the directions of the State Government.
- Coordination with respective departments for implementation of rehabilitation programme
- Pooling of resources including external loans and funds if required.
- Implementation of the recovery and rehabilitation activities in the affected villages through existing mechanism and lessons learnt under the administration control of DDMA.
- Documentation of the disaster based on experiences and lesson learnt of all the involved departments/agencies by DDMA and submission of the report to the SEC for review and revision of the State Disaster Management Plans based on the report findings.

Food and Civil Supplies

People during disaster situation normally experience shortage of food. In order to ensure adequate availability to sustain life the following measures shall be taken:

- Free distributions of food shall be made to those who need the food most.
- The food distribution will be discontinued as soon as the situation comes to normal.
- Preferably dry rations shall be provided for home cooking.
- Community Kitchen for mass feeding shall be organized for an initial period following a major disaster and in situation where affected people do not have the means to cook.
- While providing food assistance, local food habits and preferences shall be kept in mind.
- Foods provided shall be of good quality, safe to consume, appropriate and acceptable to recipients.
- Rations for general food distributions shall be adopted to bridge the gap between the affected population requirements and their own food resources
- Food shall be stored, prepared and consumed in a safe and appropriate manner at both household and community levels.
- Food shall be distributed in a responsive, transparent, equitable manner.
- Local voluntary groups, NGOs and other social organizations shall be involved for supplementing the efforts of the Government.
- The nutritional needs of the population shall be ensured.

Water:

Water supply is invariably affected in natural disasters. Availability of Safe drinking water becomes doubtful particularly in hydro-meteorological disasters.

The following measures shall be taken by the State Governments/District Administration:

- The Water Resources Department and KUWS&DB shall identify alternative sources of water and make necessary arrangements for supply to the affected population.
- The Water Resources Department and KUWS&DB shall ensure that affected people have adequate facilities and supplies to collect, store and use sufficient quantities of water for drinking, cooking and personal hygiene.
- Drinking water supplied shall conform to the prescribed quality standards for domestic consumption.

Health:

During post disaster phase many factors increase the risk of diseases and epidemics. These include poverty, insecurity, overcrowding, inadequate quantity and quality of water, poor environmental and sanitary conditions, inadequate shelter and food supply.

Medical Response:

Medical response has to be quick and effective. The execution of medical response plans and deployment of medical resources warrant special attention at the State and District level in most of the situations. The following measures shall be taken by the Department of Health & Family welfare:

- A mechanism for quick identification of factors affecting the health of the affected people shall be established for surveillance and reporting.
- An assessment of the health and nutritional status of the affected population shall be done by medical teams to be constituted by DHOs of each district.
- The deployment of the nearest medical resources to the disaster site, irrespective of the administrative boundaries shall be ensured by DHOs.
- Ensuring the availability of adequate supply of medicines, disinfectants etc.
- Protocol for inoculation shall be developed.
- Vaccination of the children & pregnant women shall be undertaken.
- Vector control measures shall be undertaken.
- To prevent outbreak of water borne diseases appropriate measures shall be taken.

Mental Health Services:

Disasters cause tremendous mental trauma to the survivors. Psycho-social support and mental health services would be made available immediately in the aftermath of disaster so as to reduce the stress and trauma of the affected community and facilitate speedy recovery. The following measures shall be undertaken by department of Health & Family welfare:

A Nodal Mental Health Officer shall be designated for each affected District.

- Rapid needs assessment of psycho-social support shall be carried out by the Nodal Officer/ Health Department.
- Trained man power for psycho-social and mental health services shall be mobilized and deputed for psycho-social first aid and transfer of critically ill persons to referral hospitals.
- Psycho-social first aid shall be given to the affected community/ population by the trained community level workers and relief and rescue workers.
- Psycho-social first aid givers shall be sensitized to local, cultural, traditional and ethical values and practices.
- Psycho-social support and mental health Services shall be arranged in relief camps set-up in the post disaster phase.
- In case of large number of disaster victims psycho-social support through a referral system for long term treatment shall be followed.
- The services of NGOs and CBOs shall be requisitioned for providing psycho-social support and mental health services to the survivors of his disasters
- Community practices such as mass prayers; religious discourse etc. will be organized in addition to medical support.

Clothing and Utensils:

During disasters, people lose their clothing and utensils. The following measures shall be taken by DDMA:

- The people affected by the disaster shall be provided with sufficient clothing as per the weather to ensure their dignity, safety and well-being.
- Each disaster-affected household shall be provided with cooking and eating utensils.

Shelter:

In a major disaster a large number of people are rendered homeless. In such situations shelter becomes a critical factor for survival of the affected people in the initial stages of a disaster. Further, shelter becomes essential for safety and security and for protection from the adverse climatic conditions. Shelter is also important for human dignity and for sustaining family and community life in difficult circumstances. The following measures shall be taken while providing shelter to the affected people:

- Disaster affected people who have lost their dwelling units or where such units have been rendered damaged/useless shall be provided sufficient covered space for shelter.

- Disaster affected households shall be provided access to appropriate means of artificial lighting to ensure personal security.
- Disaster-affected households shall be provided with necessary tools, equipment and materials for repair, reconstruction and maintenance for safe use of their shelter.
- Shelter shall be chosen by taking into consideration the geographical terrain and weather conditions of the affected area.
- Different parts of the state have specific shelter requirements which can withstand severe weather conditions. For instance a simple tent may not work during winter season and hence providing of winterized tents or creation of temporary shelters would be required.
- Provision will be made for keeping the shelter warm during winter season.

Relief Camp:

The following steps shall be taken for setting up relief camps in the affected areas:

- Adequate numbers of buildings or open space shall be available where relief camps can be set up during emergency.
- The use of premises of educational institutions for setting up relief camps shall be bare minimum.
- One member of the Incident Command Team from the district trained pool will manage the relief camps.
- The requirements for operation of relief camps will be worked out in detail by each DDMA.
- Agencies to supply the necessary stores will be short listed in the pre-disaster phase.
- The temporary relief sites will have adequate provision of water for drinking and bathing, sanitation and essential health-care facilities.
- Adequate security arrangements shall be made by the local police
- Adequate lighting arrangements shall be made in the Camp Area including at water points, toilets and other common areas.
- Special task forces from amongst the disaster affected families will be constituted for managing community kitchens.
- The victims will be issued identification cards and if required bank accounts for cash transfers etc.

Chapter 15

Karnataka State Natural Disaster Monitoring Centre (KSNDMC)

15.1 Objectives

Karnataka State Natural Disaster Monitoring Center (KSNDMC), a Registered Society affiliated to Department of Revenue (Disaster Management), Government of Karnataka is the nodal agency in the State to monitor the Natural Disasters in Karnataka. The Center has the mandate to achieve following objectives.

- Hazard mapping and vulnerability studies.
- Strengthening the application of Information Technology for Monitoring & Mitigating Natural Disasters.
- Monitoring and assessing the impact assessment of Natural Hazards.
- Human Resource Development mainly by imparting training to the Stakeholders.
- Developing Natural Disaster Early Warning System.

15.2 Distinct Role of KSNDMC

Karnataka State has the distinction of being the first in the Country to establish Drought Monitoring Cell (DMC) in 1988 as an institutional mechanism to monitor the Drought.

- Activities were broadened to include monitoring of other natural disasters viz Flood, Hailstorm, Storm Surge, Cyclone, Earthquake and Landslide in the State and renamed the Center as Karnataka State Natural Disaster Monitoring Centre (KSNDMC) in 2007.
- The Executive Committee of the KSNDMC is chaired by Principal Secretary, Dept. of Revenue (Disaster Management) with Members from Line Departments and Scientific Organizations.
- Governing Body of the KSNDMC is headed by the Chief Secretary, GoK with ACS & Development Commissioner as Vice President – Members comprising line departments and scientific organizations.
- The Master Control Facility of KSNDMC is established in 10 acres land at Major Sandeep Unnikrishnan Road, Near Attur Layout, Yelahanka, Bengaluru. The Center has state-of-the-art facility to collect data at very high spatial and temporal resolution, data analysis, information and advisory generation and dissemination to the Stakeholders at near-real time through auto-mode. The necessary computer applications were developed indigenously.
- The Centre is operational 24hrs x 7days x 365 days providing information, reports, advisories to the Executives of GoK from State-level to Grampanchayath-level, Communities, Educational and Research Organizations.
- KSNDMC has been serving as a common platform to the various response players in the field of Natural Disaster Management by providing timely proactive Science and Technology based inputs.
- The Centre provides inputs to the farming community, Agriculture and Horticulture based sector, Fisherman, Transport Sector, Power and Electricity sector, State and District level Disaster Management Authorities in Karnataka through state of the art Information and Communication system developed by the Center.

15.3 Real Time Data Base Management Through Network of Weather Monitoring/Rainfall Stations

Installation of Rainfall / Weather Monitoring Stations Network and real time data base management:

- GPRS enabled and solar powered Telemetric Rain Gauges are established and operational at all the 6,000 Grampanchayaths in Karnataka.
- GPRS enabled and solar powered Telemetric Weather Monitoring Stations are installed and operational at all the 747 Hoblis in the State and 173 Micro-watersheds spread across 11 Districts in Karnataka.

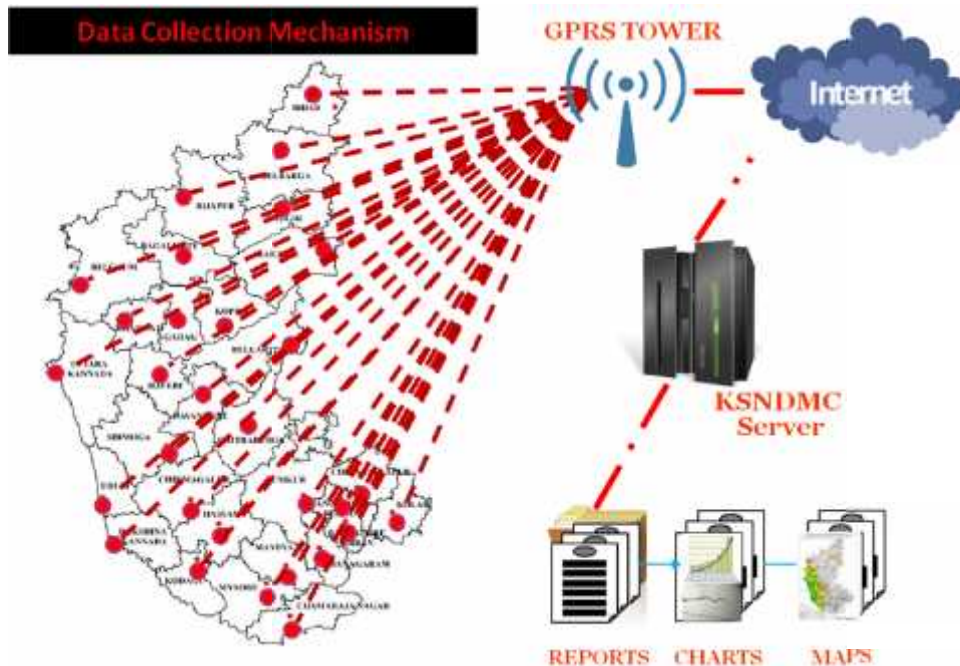


Telemetric Rain gauge



Telemetric Weather Station

- The data from all the Weather Monitoring Stations and Rain Gauges is being collected at every 15 minutes through GPRS Network.
- In collaboration with Space Applications Centre (SAC), Ahmedabad (An ISRO, GoI Organisation) and CSIR-4PI (formerly CMMACS), NAL Campus Bengaluru, KSNDMC has developed Grampanchayath level Rainfall and Weather forecast mathematical models. The Grampanchayath level rainfall and weather forecast is being generated daily at 12 hours format for next three days. This initiative is first of its kind in the Country.
- Information, Alerts and Early Warnings, Reports, Weather forecast and related Advisories are being made available through SMS to the mobile phones, e-mail, Social Media and Web Portal to all the DC's, CEO's, HQA's, AC's, Tahsildars, JD's (Agri), AD's (Agri), Agri Officers, SP's, Raitha Samparka Kendras, Farmers facilitators under Bhoochethana Program, Krishi Vigyana Kendras (KVKs), Agriculture Universities, Civil Defense, Home guards, Print and Electronic Media.



15.4 The Mechanism of customized Grampanchayath level High-Intensity Rainfall (HIRA) and Heavy

Rainfall Alerts generation and dissemination to the Executives of GoK.

- A 24x7 Interactive Help-Desk called “**Varuna Mitra**” has been functioning 24x7 basis on 365 days to directly disseminate Weather related information, forecast and Advisories to the farmers and general public. The farmers have been calling and collecting customized information pertinent to their respective Grampanchayaths and using the information and advisories for planning their agricultural activities like land preparation, sowing, inter-crop cultivation, application of fertilizers, spraying pesticides and harvesting. The number of calls has been increasing every year and lakhs of farmers are being benefitted by the VARUNA MITRA Services.



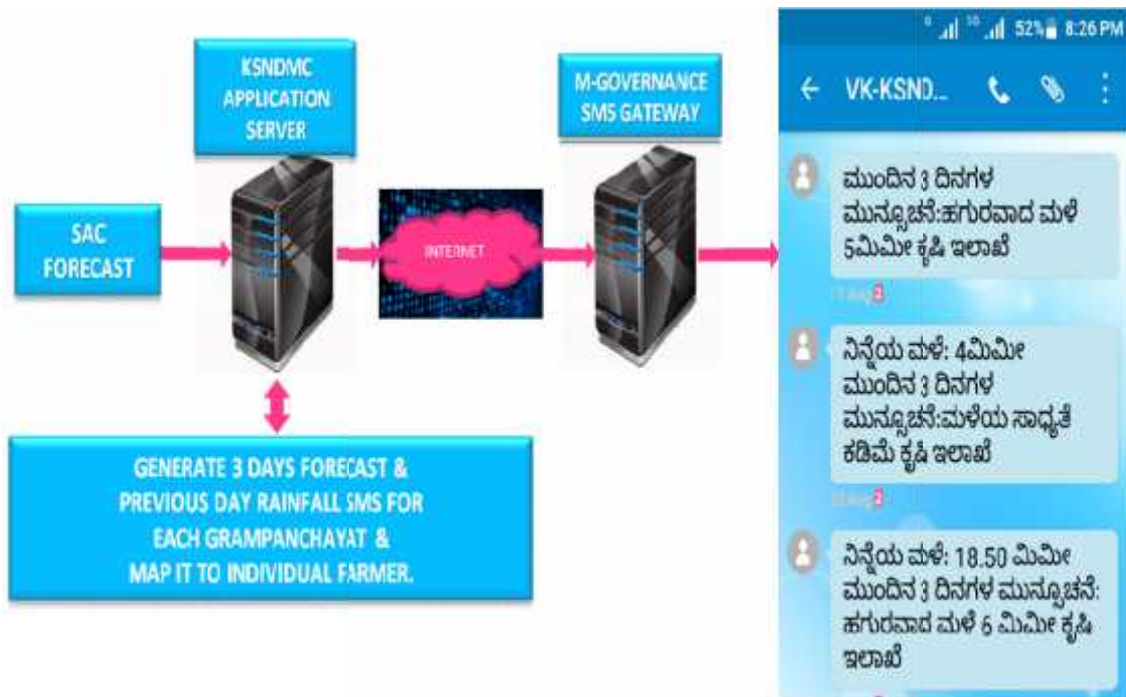
24 x 7 Interactive Help-Desk VARUNA MITRA

- Since July 2016, KSNDMC has been disseminating weather related forecast and advisories through SMS in Kannada directly to about 10 lakh farmers in the state daily.

15.5 The mechanism of customized Grampanchayath level Weather Forecast and Advisory SMS dissemination to the Farmers.

- The centre has been extensively using Remote sensing and GIS applications for development of spatial database related to Natural Disasters Viz., Drought, Flood, Earthquake, Landslide, Hailstorms, Cyclone etc., For the management of natural disasters large amount of multi - temporal spatial data is required. Satellite remote sensing is the ideal tool for disaster management, since it offers information over large areas, and at short time intervals. Although it can be utilised in the various phases of disaster management, such as prevention, preparedness, relief, and reconstruction, in practice up till now it is mostly used for warning and monitoring. During the last decades remote sensing has become an operational tool in the disaster preparedness and warning phases for cyclones, droughts and floods.
- KSNDMC has undertaken a study with multi-pronged / multi component two tier approach to assess the Drought vulnerability at Taluk level in the State. Under this study four major components and twenty eight sub-components / indicators that are relevant to Drought were considered over a period and analysed to develop the composite index of Drought Vulnerability. Drought proofing measures as per the limitations in the taluk, Resilience and its relevance to vulnerability, the severity and the extent of vulnerability in each Agro-Climatic zone has been estimated.

The major component of the study deals with the Climate (CI), Climate – Crop Cover (CCI), Soils (CSI) and Livelihood aspects (LI). Each major and sub-component are selected to study the effect of drought behaviour independently, hence the indices of each major component also express the vulnerability of the Taluk, with respect to this major component. The sub-components of each major component in turn may function positively or negatively towards

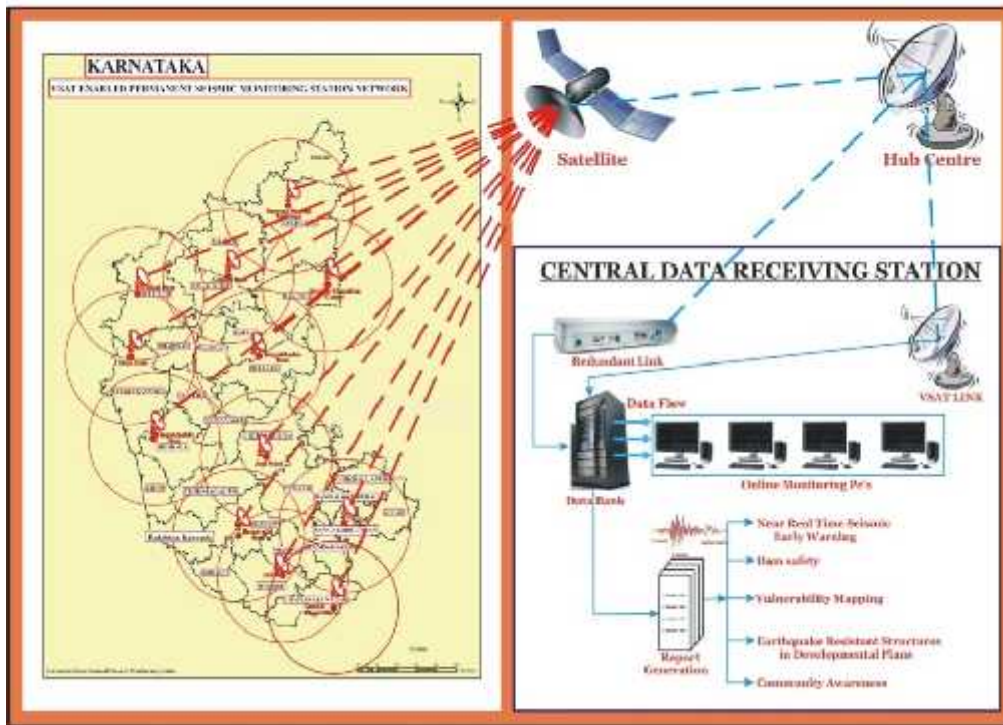


drought within the gambit of the major component.

- Agro-Meteorological Crop Yield Forecast is being developed by using DSSAT model to assess the yield of any crop in a given area during the season in the State. On a pilot basis the model is being used to estimate the yield of a few major crops in the rain-fed and irrigated area

in the State. The forecast estimates of crop yield are very close to the data of DES obtained through the crop-cutting experiments.

- In association with Indian Institute of Science (IISc), Bengaluru and Information Technology Research Academy (ITRA), New Delhi, KSNDMC has taken up Urban Flood Monitoring and Management on pilot basis for Bengaluru City (BBMP). A Hydrological model has been developed for providing the Dynamic Flood Forecast during any rainfall event in Bengaluru city. A network of 100 Telemetric Rain Gauges and 10 Weather Stations has been installed and BBMP area under this project. The dynamic flood forecast system is operational and has been providing flood forecast for BBMP area and related advisories to the concerned Authorities viz. Executives of BBMP, BMTC, BMRCL, BWSSB and Police Department and field level Officers / Engineers of respective Department in the City. The necessary training to understand the flood forecast system and the utility of the information provided through this system has been given to the field level officers of BBMP. The flood forecast and advisories has been of great help for managing flood situation and mitigating losses.
- KSNDMC is implementing the Component 'A' – "Early Warning Dissemination System connectivity to the Last Mile" (EWDS) of the World Bank assisted National Cyclone Risk Mitigation Project (NCRMP) in THREE Coastal Districts of Karnataka. The aim of the EWDS component of project is to disseminate the information and advisories to the people in the vulnerable area along the coastline well in advance before a cyclone approach the coast and enable the community to move to a nearby Multi-Purpose Cyclone Shelters built under this project along the coast line. The Satellite Phones or Digital Mobile Radios to the designated people, Siren Towers at strategic locations and mass messaging (SMS) systems will be utilized to disseminate the information to the stakeholders.
- KSNDMC is a partner in World Bank assisted Karnataka Watershed Development Program SUJALA-III Project. Under this project a network of 173 Weather monitoring and Rainfall monitoring stations have been installed in micro-watersheds spread across 11 Districts (Project area). The weather / rainfall data collected from these Stations are being integrated with the KSNDMC weather monitoring stations network data and the data analysed at near real time to provide necessary information and advisories to the project partners working on water management and crop management in the project area.
- The installation of Digital Display Units has been taken up under this project to disseminate real-time information, forecast and advisories related to weather and crop management to the stakeholders in the project area. The Agro-Met advisories developed in association with other project partners will be displayed in Kannada through these display units.
- KSNDMC is the nodal agency in the state to provide weather data for the implementation of Weather Based Crop Insurance Scheme (WBCIS) in the State. The high temporal and spatial resolution data is being used for designing the crop insurance term sheets and also to evaluate the insurance claims submitted to the Department of Agriculture, GoK.
- VSAT enabled and solar powered Permanent Seismic Monitoring stations were installed and operational at 14 places mostly near major Reservoirs in the State.



15.6 The Network of VSAT enabled and solar powered Permanent Seismic Monitoring stations at 14 places across Karnataka State.

- As a part of Capacity building activities, KSNDMC Scientific Personnel have been Resource persons for several training programmes on Disaster Monitoring and Management organised for State government officers by Administrative Institute (ATI), Mysuru. Several Training programmers on Natural Disaster Monitoring & Preparedness were conducted by KSNDMC to the School Children, Graduate Students of various Colleges, Nursing Students, NCC Cadets, Senior Head Masters & Teachers of Kendriya Vidyalays, Scouts & Guides Association, Home Guards, CRPF, Civil Defence Personnel, Trainees of Watermanship Course etc. Several M. Tech & Engineering students from different colleges & Universities have undergone Internships as a part of their academy at KSNDMC.

15.7 KSNDMC proactively provides Science and Technology based inputs and assistance Line-Departments of Government of Karnataka:

- ❖ **The Department of Revenue, GoK:** This Centre renders support in identifying, mapping vulnerable areas, **providing Alerts and Early Warning to the Revenue functionaries up to Grampanchayath level.** The areas affected by Drought, Floods and other Natural Hazards are identified and mapped on day-to-day / event based. KSNDMC provides the services to the Revenue Department on day-to-day basis and has been successful in integrating with the needs of Revenue Department. Provide technical support in preparing the memorandum submitted to Govt. of India seeking financial assistance for managing Drought, Flood and Hailstorm etc. The technical support is also provided to State-level Weather Watch Committees, Cabinet Sub-Committee meetings on Drought Management, Technical and Legal committees dealing with Inter-State disputes on sharing water from Cauvery, Krishna and Mahadayi Rivers.
- ❖ **The Department of Agriculture, GoK:** KSNDMC participates in the Video-Conference conducted every week and provides information about prevailing Weather conditions along with Weather forecast at Grampanchayath-level. The inputs provided are enabling Agriculture

Department officers to plan their activities and also to evolve contingency plans at appropriate time.

- ❖ **The Department of Water Resources, GoK:** KSNDMC also provides information on anticipated flow in the major river systems in the State.
- ❖ **The Department of Rural Development & Panchayath Raj, GoK:** Providing information on the health of the rural drinking water supply by monitoring and assessing Bore-well and Overhead Tank storages. A pilot study has been taken up in Mulbagal Taluk, Kolar District.

PART II

ANNEXURES

ANNEXURE - I

Format for First Information Report on occurrence of natural calamity

(To be sent to SEOC and NEOC, Government of India within maximum of 24 hours of occurrence of calamity)

From: District/State ----- Date of Report -----

To

- The Relief Commissioner cum Principal Secretary Revenue(DM) (Fax: _____ email: _____)
- JS (DM), MHA (fax : _____ ; email : _____)
- I/c National Integrated Operations Centre, MHA (fax: _____; email: _____)

a. Nature of Calamity

b. Date and time of occurrence

c. Affected area (number and names of affected districts)

d. Population affected (approx.)

e. Number of Persons

- Dead
- Missing
- Injured

f. Animals

g. Affected

h. Lost

i. Crops affected and area (approx.)

j. Number of houses damaged

k. Damage to public property

l. Relief measures undertaken in brief

m. Immediate response and relief assistance required and the best logistical means of delivering that relief

from State/National

n. Forecast of possible future developments including new risks.

o. Any other relevant information

ANNEXURE – II

Rapid Assessment

Disaster brings in its wake damages to life, property, infrastructure, economy and environment. For adequate and effective response to disasters it is of paramount importance to assess the extent of physical harm to assets, property and infrastructure which render them less valuable or less effective. The objective of Rapid Assessment is to determine the precise nature and extent of damage so that Rescue and Relief measures are undertaken in the affected people. The following are the major components to be included in the rapid damage assessment:

- Geographical area impacted
- Structural damage to buildings, Housing stocks
- Damage to roads and bridges, public buildings shops, workshops, stalls etc.
- Damage to water supply lines, electricity supply lines, public utilities
- Damage to agricultural crops, livestock, etc.

Tools for Rapid Assessment

- Aerial surveys
- Photographs, video graph/film of the affected area
- Satellite imagery
- Field reports
- TV/Press coverage

Visual Inspection Checklist:

- Camera
- Laptop
- Notebook
- GIS Map
- GPS

ANNEXURE – III

Situation Report

DATE OF REPORT:

Sl. No.	Category	Report of happenings during the last 24 Hours	Cumulative damage/loss
I - Rainfall and Damage/Loss Position			
1.	Indicate Place and rainfall (in CMs)		
2.	Details of rainfall		
3.	Brief details & cause (s) of flash/riverine floods, landslides, road blocked etc.		
4.	Population affected if any		
5.	Number of human lives lost district-wise (specify the cause of death)		
6.	Number of Cattle/livestock lost/perished.		
7.	Area affected (in hectares)		
8.	Estimated value of damaged crop (Rs. In lakh)		
	i) Fully		
	ii) Partially		
10.	Estimated value of damaged to houses (Rs. In lakh)		
	i) Fully		
	ii) Partially		
11.	Impact of flood on infrastructure (sector-wise i.e. power supply, water supply, road transport, health sector and telecommunication etc. – in physical term)		
12.	Estimated value of damage to public properties-sector-wise in monitoring terms (Rs. In lakh)		
13.	Estimated value of total damage (8+10+12)		
II - Fire Incidents			
1.	No. of domestic fire incidents, causes, with brief details		
2.	Loss of life		
3.	Loss of cattle		
4.	Total loss of property (in lakh)		
5.	No. of wild fire incidents		
6.	Area involved (in hectares)		
7.	Estimated loss of forest wealth (in		

	lakh)		
8.	Estimated value of loss/damage		
III	Accidents –		
1.	No. of accidents – roads and others (Please specify the category)		
2.	Loss of life		
3.	No. of injured		
4.	Cause of accident		
IV	Hailstorm –		
1.	Indicate Place and area of hailstorm (in hectares)		
2.	Estimated Value of loss (in lakh)		
V	Other incidents of loss of life & Property		
	Detail of loss/damage with estimated value		
VI	- Any other relevant information		
1.	Number of persons evacuated (district wise)		
2.	Number of relief camps opened (district wise)		
3.	Number of persons accommodated in the relief camps (district wise)		
4.	Details of distribution of essential commodities		
5.	GR paid, if any specify the items and amount		
6.	Steps taken to prevent outbreak of epidemic including the deployment of medical teams (district-wise). Whether outbreak of any epidemic occurred?		
7.	Whether assistance of from Army, Air Force and Navy sought (Specify details of no. of column/helicopters/ naval divers provided and their place of deployment as well as number of days etc.)		
8.	Whether assistance of NDRF Battalions sought, if so details of deployment.		

9.	Number of cattle camps opened & details of cattle accommodated therein		
10.	Any other relief measures undertaken (give details)		

Signature of officer with Name & Date
Telephone No/Fax No.
Mobile No.

ANNEXURE – IV

**Rapid Assessment Format
[Immediate response of the locality]**

Type of Disaster: _____ Date: _____ Time: _____

1. Name of the location	
2. Administrative Unit and Division	
3. Geographical location	
4. Local Authorities interview(with name, address, designation)	
5. Estimated total population	
6. Worst affected areas/population - No of Blocks - G.P - Village	
7. Areas currently inaccessible	
8. Type of areas affected	
9. Distance from the District Head Quarters(Km) Accessibility of the areas	
10. Effect on population (a) Primary affected population - Children below 1 year - Children between 1 and 5 years old - Women - Pregnant and lactating women - Elderly (above 60) - Disabled (b) Death/Reports of starvation (c) Orphans (d) Injured (e) Missing (f) Homeless - Number of people - Number of families (g) Displaced/Migrated (h) Evacuated (i) Destitute (j) Need of counselling for traumatized population	Number Yes/No

<p>11. Building</p> <p>(a) Building collapsed/wasted away (b) Building partially collapsed/wasted away (c) Buildings with minor damages (buildings that can be retrofitted) (d) Number of schools affected - Gravity of the damages (e) Number of hospitals and Health Centers affected - Gravity of the damages (f) Number of Government buildings affected - Gravity of the damages (g) Any other building affected - Gravity of the damages</p>	<p>Number</p> <p>Scale 1 to 5 where 1 is no damages and 5 is completely destroyed</p>
<p>12. Infrastructure</p> <p>(a) Road Damaged/destroyed - Scale of the damage - Location - Km (b) Railways damaged - Location - Km - Is the railway still working (c) Bridges damaged/collapsed - Locality - Villages isolated (d) Damages to the Communication Network (e) Damages to the Electricity Network (f) Damages to the Telecommunication Network</p>	<p>Scale 1 to 5 where 1 is normal and 5 is completely destroyed/washed away Yes/No Yes/No Yes/No and scale of the damages Scale 1 to 5 where 1 is no damages and 5 is completely destroyed</p>
<p>13. Health Facilities</p> <p>(a) Infrastructure damaged - Hospitals - Health Centers - Vaccination Centers (b) Availability of Doctors - In the area - In the district (c) Availability of Paramedical staff - In the area - In the district (d) Local Staff affected - Doctors - Paramedical Staff (e) Conditions of equipments Specify which equipments (f) Availability of medicines/drugs - Typology (g) Availability of Vaccinations - Typology (h) Any immunization campaign was undertaken before the disaster (i) Possibility of diseases outbreak</p>	<p>Number Scale 1 to 5 where 1 is no damages and 5 is completely destroyed Number Number Number Scale 1 to 5 where 1 is no damages and 5 is completely destroyed Yes/No Yes/No Yes/No Yes/No List</p>

(j) Other health problems	
14. Water Sanitation (a) Availability of safe drinking water (b) Availability of sanitation facilities (c) Availability of Disinfectant - Typology (d) Damages to the Water/Sewage systems (e) Damages to the water supply system (f) Availability of portable water system (g) Agencies participating in WATSAN	Yes/No Yes/No Yes/No Scale 1 to 5 where 1 is no damages and 5 is completely destroyed Yes/No List
15. Crops/Agriculture Damage (a) Crop Damaged - Typology - % Of Hectare damaged - In Upland/medium/low - Paddy or Non paddy - Irrigated or non-irrigated (b) Normal and actual rainfall assessment (c) Livestock loss (d) Availability of Health services for livestock (e) Cattle feed/folder availability (f) Damage to agriculture infrastructure	Mm Number Yes/No Number Tonnes Scale 1 to 5 where 1 is no damages and 5 is completely destroyed
16. Food/Nutrition (a) Availability of food/stocks (1) Family (2) Relief (3) PDS (4) Community Kitchen (b) Expected duration of the food stock (c) Most affected groups - Infant - Children - Pregnant and lactating mothers - Elderly (d) Where are the different groups located? (e) Levels of malnutrition? (f) Type of food required (g) Total quantity/ration levels required (h) How is the food supply and nutrition situation likely to evolve in coming weeks/months?	Yes/No Kg Tonnes Tonnes Kg Days To be ticked Days To be ticked
15. Secondary Threats (a) Potentially hazardous sites (b) Existence of epidemics (c) Scarcity of Food (d) Scarcity of Water (e) Scarcity of Shelter (f) Scarcity of Clothes (g) Any other problem	List
16. Response	

<p>(a) Local: Govt./NGOs/CSOs/Individuals Type of assistance</p> <p>(b) National: Govt./NGOs/CSOs Type of assistance</p> <p>(c) International: Govt./NGOs/CSOs Type of assistance</p>	<p>To be ticked Description To be ticked Description To be ticked Description</p>
<p>17. Logistic and Distribution system</p> <p>(a) Availability of Storage facilities</p> <p>(b) Means of transport available</p> <p>(c) Availability of Fuel</p> <p>(d) Are there any distribution criteria already in place</p> <p>Availability of Manpower</p>	<p>Yes/No List Yes/No Yes/No Yes/No</p>
<p>18. Priority of Needs</p> <p>Search and Rescue:</p> <p>(a) Need of Search and Rescue</p> <ul style="list-style-type: none"> - Locally available - Needed for neighbouring districts - Needed for neighbouring states <p>(indicate from where)</p> <p>(b) Need of transportation and equipment:</p> <ul style="list-style-type: none"> - Boats - Any other transportation(specify) - Special equipment(specify) - Heavy equipment(specify) <p>(c) Need of shelter</p> <ul style="list-style-type: none"> - Temporary - Permanents <p>Clothing:</p> <p>(a) Children Clothing</p> <p>(b) Adult Clothing</p>	<p>Yes/No</p> <p>Estimated Quantity</p>
<p>Winter Clothing</p> <p>(d) Blankets</p> <p>(e) Bed Sheets</p> <p>1.1 Food item:</p> <p>(a) Pulses</p> <p>(b) Grain</p> <p>(c) Baby Food</p> <p>(d) Specialized food</p> <p>(e) Cattle feeds/fodder</p> <p>Water /sanitation:</p> <p>(a) Portable water</p> <p>(b) Chlorine powder and disinfectant</p> <p>(c) Latrine</p> <p>(d) Soap</p> <p>(e) Detergent</p> <p>(f) Insecticides</p> <p>(g) Disinfestations of water body</p> <p>(h) Manpower for carcass disposal</p>	

1.2 Health:

- (a) Medical staff
- (b) Medicines(specify)
- (c) IV fluid
- (d) ORS
- (e) Vitamin A
- (f) Vaccines
- (g) Mobile units(quantity to be specified)
- (h) Cold chain system

1.3 Education:

- (a) Infrastructure temporary / permanent
- (b) Teachers
- (c) Teachers kits
- (d) Reading materials
- (e) Availability of mid-day meal

Crop/Agriculture

- (a) Need of seeds
- (b) Fertilizer , Pesticide
- (c) Type of Seed required
- (d) Availability of local variety
- (e) Availability of resources

Infrastructure:

- (a) Repair of roads
- (b) Repair of railways and bridges
- (c) Power Supply
- (d) Telecommunication
- (e) Equipment required for restoration
- (f) Manpower required

List
Yes/No and specify location
Yes/No and specify location
List
Number of Man days

Observation:

- Source of information:
- Site Visit:
- Interaction with affected population:
- Assessment Carried By:

ANNEXURE – V

Flow Chart for Disposal of Dead Bodies at District Level

- Activate the DM Plan
- Nodal Officer in the incident Response System will activate all other stake-holders associated with Disposal of the Dead.
- Establish an information Centre at the site of Disaster/District HQ.
- Inform all other Stake-holders, both in government and Non-Governmental sector, including the elected, Panchayat Raj functionaries and the community.
- Activate search and Rescue teams of Fire & Emergency Services, Police, SDRF, Civil Defence, NDRF and NGOs for the retrieval of the injured and the dead.
- The injured will get the priority for First Aid and evacuation to hospital.
- Prepare a record of details of the bodies retrieved in the Dead Body Inventory Record Register, allocated individual Identification Number, photographed, and then Dead Body Identification Form initiated.
- Associate relatives and community members for the identification of the bodies.
- Hand over the identified bodies to the relatives or the community, and if necessary after cross-matching Dead Body Identification Form with that of the Missing Person Form, for the last rites as per local, cultural and religious denomination.
- Unidentified or unclaimed dead bodies/body parts shall be transported to the mortuaries for proper preservation and storage at the designated sites.
- Consult relatives, legal and forensic experts for positive identification.
- Final disposal of unidentified bodies/body parts shall be done by District authorities after applying all the possible means of identification as per the legal provisions.
- The bodies of foreign nationals shall be properly preserved either by embalming or chemical methods and then placed in body bags or in coffins with proper labelling. Handing over and transportation of such bodies shall take place through the Ministry of Extern Affairs, in consultation with the Consular offices of the concerned countries and other actors such as International Committee of the Red Cross, if necessary and possible.

ANNEXURE – VI

Guidelines for Disposal of Animal Carcasses

1. Guidelines for Burial

- 1.1. Burial shall be performed in the most remote area possible.
- 1.2. Burial areas shall be located a minimum of 300 feet down gradient from wells, springs and other water sources.
- 1.3. Burial shall not be made within 300 feet of streams or ponds, or in soils identified in the country soil survey as being frequently flooded.
- 1.4. The bottom of the pit or trench should be minimum 4 to 6 feet above the water table.
- 1.5. Pits or trenches shall approximately be 4 to 6 feet deep. They should have stable slopes not steeper than 1 foot vertical to 1 foot horizontal.
- 1.6. Animal Carcasses shall be uniformly placed in the pit or trench so that they do not exceed a maximum thickness of 2 feet. The cover over and surrounding shall be a minimum of 3 feet. The cover shall be shaped so as to drain the runoff away from the pit or trench.
- 1.7. The bottom of trenches left open shall be sloped to drain and shall have an outlet. All surface runoff shall be diverted from entering the trench.
- 1.8. Burial areas shall be inspected regularly and any subsidence or cavities filled.

ANNEXURE – VII

Guidelines for Composting

- a. Select site that is well drained, at least 300 feet from water sources, sinkholes, seasonal seeps or other landscape features that indicate hydrological sensitivity in the area.
Lay 24-inch bed of bulky, absorbent organic material containing sizeable pieces 4 to 6 inches long. Wood
- b. Chips or hay straw work well. Ensure the base is large enough to allow for 2-foot clearance around the carcass.
- c. Lay animal in the centre of the bed. Lance the rumen to avoid bloating and possible explosion. Explosive release of gases can result in odour problems and it will blow the cover material off the composting carcass.
- d. When disposing large amounts of blood or body fluid, make sure there is plenty of material to absorb the liquid. Make a depression so blood can be absorbed and then cover, if a blood spill occurs, scrape it up and put back in pile.
- e. Cover carcass with dry, high-carbon material, old silage, sawdust or dry stall bedding (some semi-solid manure will expedite the process). Make sure all residuals are well covered to keep odours down, generate heat or keep vermin or other unwanted animals out of the window.
- f. Let it sit for 4 to 6 months, then check to see if carcass is fully degraded.
- g. Reuse the composted material for carcass compost pile, or remove large bones and land apply.
- h. Site cleanliness is the most important aspect of composting; it deters scavengers, and helps control odours and keeps good neighbourly relations.

Note: Animals that show signs of a neurological disease, animals that die under quarantine and those with anthrax should not be composted.

Reference: USDA Natural Resource Conservation Service, Arkansas Livestock and Poultry Commission, University of Arkansas.

ANNEXURE – VIII

Disposal of Animal Carcasses at District Level

- a. Activate the DM Plan.
- b. Nodal Officer in the Incident Response System will activate all other stakeholders associated with the disposal of Animal Carcasses.
- c. Establish an Information Centre at the site of Disaster/District HQ.
- d. Inform all other Stake-holders, both in government and Non-Governmental sector, including the elected, Panchayat Raj functionaries and the community.
- e. Activate Animal Carcass Retrieval teams for the recovery and retrieval of the injured livestock and the animal carcasses.
- f. Injured livestock will get the priority for First Aid and evacuation to hospital.
- g. Prepare a record of details of the animal carcasses retrieved.
- h. Associate owners of the livestock, or their relatives and community members for the identification of the animal carcasses.
- i. Hand over the identified animal carcasses to the owners for disposal at the selected site.
- j. All unidentified animal carcasses will be photographed preferably before transportation for disposal.
- k. Unidentified or unclaimed animal carcasses shall be transported to the designated site for disposal by District authorities as per the Disaster Plan.

ANNEXURE – IX

Emergency Support Functions (ESFs) Plan

In the aftermath of a major natural disaster wherein State Government’s assistance is required for the districts, the command, control and coordination will be carried out under the ESFs Plan.

EOC shall activate the ESFs and the concerned Department/Agency of each ESFs shall identify requirements in consultation with their counterparts in affected districts, mobilize and deploy resources to the affected areas to assist the district (s) in its/their response action. The State EOC shall maintain a close link with the District EOCs and NEOC.

ESFs shall be responsible for the following:

- They will coordinate directly with their functional counterpart in districts to provide the state government assistance required. Request for assistance will be channelled from the district both through the Deputy Commissioner and designated departments/ agencies. Based on the identified requirements by the districts, appropriate assistance shall be provided by an ESF Department/ Agency to the district or at the Deputy Commissioner’s request, directly to an affected area.
- The designated authorities for each of ESF shall constitute quick response teams and assign the specific task to each of the member.
- The designated authorities for each of the ESF shall identify and earmark the resources i.e. Manpower and materials to be mobilized during the crisis.
- An inventory of all the resources with details shall be maintained by each of the designated authority for each of the ESF.
- The designated authority for each of the ESF will also enter into pre-contracts for supply of resources, both goods and services to meet the emergency requirements.
- The designated authority for each of the ESF will be delegated with adequate administrative, legal and financial powers for undertaking the tasks assigned to them.

Primary and Secondary Agencies

The designated primary agency, acting as the State agency shall be assisted by one or more support agencies (secondary agencies) and shall be responsible for managing the activities of the ESF and assisting the district 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 needs of the affected districts.

Agency for Each Emergency Support Functions and Roles to be performed

ESF No.	ESF	Primary Agency	Secondary Agency	Responsibilities of Primary Agency	Activities for Response	Role of Secondary Agency
1.	Communication	BSNL	Police Units of Armed Forces in the area	Coordination of national actions to assure the provision of telecommunication support the state and district; Coordinate the requirement of temporary telecommunication in the	Responsible for coordination of national actions to assure the provision of telecommunication support the state and district response elements; Coordinate the	Make available police wireless network at the affected locations; Coordinate for the other networks available such as Ham Radios or HPSEB

				affected areas.	requirement of temporary telecommunication in the affected areas.	network etc.; The units of armed forces in the area would provide communication network on the request of the competent authority.
2	Public Health	Department of Health and Family Welfare	Department of Ayurveda	To coordinate, direct and integrate State 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; To network with private health service providers; To provide for mass decontamination; Check stocks of equipment and drugs.	Provide systematic approach to patient care; Perform medical evaluation and treatment as needed; Maintain patient tracking system to keep record of all patients treated; Mobilization of the private health services providers for emergency response. In the event of CNBR disaster to provide for mass decontamination of the affected population; Maintain record of dead and arrange for their post mortem.	To perform the same functions as assigned to the primary agency; Provide manpower to the primary agency wherever available and needed; Make available its resources to the primary agency wherever needed and available.
Sanitation/ Sewerage Disposal	Urban Development and Rural Development	Irrigation and Public Health	Make arrangement for proposal disposal of waste in their	Ensure cleanliness and hygiene in their respective areas; To arrange for the disposal of	Repair the sewer leakages immediately; Provide bleaching powder to the primary	Sanitation/ Sewerage Disposal

			respective areas; Arrange adequate material and manpower to maintain cleanliness and hygiene.	unclaimed bodies and keeping record thereof; Hygiene promotion with the availability of mobile toilets; To dispose off the carcass.	agencies to check maintain sanitation	
4.	Power	KPTCL		Provide and coordinate State support until the local authorities are prepared to handle all power related problems; Identify requirements of external equipment required such as DG sets etc; Assess damage for national assistance.	Support to Local Administration ; Review the total extent of damage to the power supply installations by a reconnaissance survey; To provide alternative means of power supply for emergency purposes; Dispatch emergency repair teams equipped with tools, tents and food; Hire casual labour for the clearing of damaged poles etc.	Make arrangement for and to provide the alternative sources of lighting and heating to the affected populations and for the relief camps.
5.	Transport	Department of Transport	KSRTC, Civil Aviation, Railways	Overall coordination of the requirement of transport; Make an inventory of vehicles available for various purposes; Coordinate and implement emergency	Coordinate arrangement of vehicles for transportation of relief supplies from helipads/airports to the designated places; Coordinate arrangement of vehicles for transportation	Make available its fleet for the purpose of SAR, transportation of supplies, victims etc; Act as stocking place for fuel for emergency

				related response and recovery functions, search and rescue and damage assessment.	of SAR related activities.	operations; Making available cranes to the Dist. Administration; GAD and Civil aviation will coordinate for helicopter services etc. required for transportation of injured, SAR team, relief and emergency supplies.
--	--	--	--	---	----------------------------	---

6.	Search and Rescue	Civil Defence, Home Guards, Fire and Emergency Services	NDRF, SDRF, Armed and Para military forces, Police, Red Cross, VOs, Volunteers and 108.	Establish, maintain and manage state search and rescue response system; Coordinate search and rescue logistics during field operations; Provide status reports of SAR updates throughout the affected areas.	GIS is used to make an estimate of the damage area and the deployment of the SAR team in the area according to the priority; Discharge all ambulatory patients for the first aid which has the least danger to health and others transported to safer areas.	108 and Red Cross to make available ambulances as per requirement; SDRF, VOs and Volunteers to assist the primary agency in SAR; NDRF, Armed and para military forces to provide assistance to civil authorities on demand; Police to arrange for the transportation and postmortem of the dead.
7.	Public Works and Engineering	KPWD	CPWD, National Highways Authority of India, MES, BRO	Emergency clearing of debris to enable reconnaissance; Clearing of roads; Assemble casual labour; Provide a work	Establish a priority list of roads which will be opened first; Constructing major temporary shelters;	Making machinery and manpower available to the PWD and to keep national highways and other facilities in functional

				<p>team carrying emergency tool kits, depending on the nature of disaster, essential equipment such as</p> <ul style="list-style-type: none"> • Towing vehicles • Earth moving equipments • Cranes etc. <p>Construct temporary roads; Keep national and other main highways clear from disaster effects such as debris etc.; Networking with private services providers for supply of earth moving equipments etc.</p>	<p>Connecting locations of transit/relief camps; Adequate road signs should be installed to guide and assist the relief work; Clearing the roads connecting helipads and airports; Restoring the helipads and making them functional; Rope in the services of private service providers and secondary services if the department is unable to bear the load of work.</p>	state.
--	--	--	--	---	--	--------

8.	Information and Communication	Department of Revenue through State EOC	Department of IT/NIC	<p>Operate a Disaster Welfare Information (DWI) System to collect, receive, and report and status of victims and assist family reunification; Apply GIS to speed other facilities of relief and search and rescue; Enable local authorities to</p>	<p>Documentation of response/relief and recovery measures; Situation reports to be prepared and completed every 3-4 hours.</p>	Render necessary assistance in terms of resources, expertise to the primary agency in performing the assigned task.
-----------	--------------------------------------	---	----------------------	--	--	---

				<p>establish contact with the state authorities; Coordinate planning procedures between district, the state and the centre; Provide ready formats for all reporting procedures as a standby.</p>		
9.	Relief Supplies	Department of Revenue	Department of Food and Civil Supplies	<p>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 in consultation; Coordinate activities involved with the emergency provisions; Temporary shelters; Emergency mass feeding; To coordinate bulk distribution of emergency supplies; To provide logistical and resource support to local entities; In some</p>	<p>Support to Local Administration ; Allocate and specify type of requirements depending on need; Organize donation (material) for easy distribution before entering disaster site.</p>	<p>To assist the primary agency in arranging and supplying relief supplies; To assist the primary agency in running the relief camps.</p>

				instances, services also may be provided to disaster workers; To coordinate damage assessment and post disaster needs assessment.		
10	Food & Civil Supplies	Department of Food and Public Distribution		Requirement of food and clothing for affected population; Control the quality and quantity of food, clothing and basic medicines; Ensure the timely distribution of food and clothing to the people; Ensure that all food that is distributed is fit for human consumption.	Make emergency food and clothing supplies available to population; Ensure the provision of specific nutrients and supplementary diet for the lactating, pregnant women and infants.	Ensuring the distribution of food supplies to the affected population through the PDS network etc.
11	Drinking water	Department of Water Resources	Department of Urban Development	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 are kept separate from drinking	Support to local Administration ; Water purification installation with halogen tablets etc.	To assist the primary agency wherever ULB is associated in the distribution of potable water

				water facilities.		
12 .	Shelter	Department of Revenue	KPWD and Panchayat Raj	Provide adequate and appropriate shelter to all population; Quick assessment and identifying the area for the establishment of the relief camps; Identification of public buildings as possible shelters; 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.	Support to Local Administration ; Locate adequate relief camps based on survey of damaged houses; Develop alternative arrangements for population living in structures that might be affected even after the disaster.	KPWD would assist the primary agency in establishing temporary shelters of larger dimensions ; Department of Panchayati Raj through local Panchayats would assist the primary agency in establishing shelters of smaller dimensions .
13 .	Media	Department of Information & Publicity	Local DD and AIR	To Provide and collect reliable information on the status of the disaster and disaster victims for effective coordination of relief work at state level; Not to intrude on the privacy of individuals and families while collecting information;	Use and place geographical Information to guide people towards relief operation; Use appropriate means of disseminating information to victims of affected area; Curb the spread of rumours; Disseminate instructions to all	To assist the primary agency in discharge of its role.

				<p>Coordinate with DOCs at the airport and railways for required information for international and national relief workers;</p> <p>Acquire accurate scientific information from the ministry of Science and Technology;</p> <p>Coordinate with all TV and radio networks to send news flashes for specific needs of Donation;</p> <p>Respect the socio-cultural and emotional state of the disaster victims while collecting information for dissemination.</p>	stakeholders.	
--	--	--	--	---	---------------	--

14.	Help lines	Department of Revenue	Department of Information and Publicity	<p>To receive distress calls from the affected people and coordinate with the control room;</p> <p>To facilitate the optimization of donations received in kind;</p> <p>Co-ordinate, collect, process, report and display essential elements of information and</p>	<p>One of the most critical needs will be having a simplified way of identifying and tracking victims and providing assistance;</p> <p>Identify locations for setting up transit and relief camps, feeding</p>	<p>To assist the primary agency in performing its job effectively and provide its manpower and resources for the purpose</p>
------------	-------------------	-----------------------	---	---	--	--

				<p>to facilitate support for planning efforts in response operations; Co-ordinate 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 the damaged areas and passage of emergency personnel and equipment for life saving property protection and health and safety.</p>	<p>centres and setting up of the Help lines at the nodal points in the state and providing the people the information about the numbers</p>	
15.	Animal Care	Department of Animal Husbandry	Department of Panchayati Raj & Agriculture	<p>Treatment of animals; Provision of vaccination; Disposal of dead animals.</p>	<p>To arrange for timely care and treatment of animals in distress; Removal of dead animals to avoid outbreak of epidemics</p>	<p>To assist the primary agency in performing its role.</p>

16.	Law and Order	Police	Home Guards	Having sound communication and security plan in place to coordinate law and order issues; Training to security personnel in handling disaster situations and issues related to them.	To maintain law and order; To take measure against looting and rioting; To ensure the safety and security of relief workers and material; To take specific measure for the protection of weaker and vulnerable sections of the society; To provide safety and security at relief camps and temporary shelters.	To assist the primary agency by making available manpower.
17.	Removal of trees and fuel wood	Forest	ULBs & PRIs	Removal of fallen trees; To provide fuel wood for the relief camps and public; Have adequate storage of fuel wood and make arrangement for distribution thereof; To provide fuel wood for cremation.	Arrange for timely removal of trees obstructing the movement of traffic; Arrange for timely removal of trees which have become dangerous; Make arrangement for fuel wood for the relief camps and for general public; Provide fuel wood for mass cremation etc.	To support and supplement the efforts of the primary agency.

Annexure X
Do's and Don'ts

Operational Guidelines of What to do in the event of a Flood

Do's	Don'ts
Listen to the Radio/ TV/ Public Addressing System for advance information and advice.	Do not enter floodwaters on foot if you can avoid it.
Disconnect all electrical appliances and move all valuable personal and household goods and clothing out of reach of floodwater, if you are warned or if you suspect that floodwaters may reach the house.	Never wonder around a flooded area.
Move vehicles, Farm animals and Movable goods to the highest ground nearby.	Do not allow children's to play in, or near, floodwaters.
Turn off electricity, gas if you have to leave the house.	Do not drive into water or unknown death and current.
Lock all outside doors and windows if you have to leave the house.	Do not eat food or drink water, which is affected by floodwater.
If you have to evacuate, do not return until advice.	

Operational Guidelines of What to do in the event of a Cyclone

Do's	Dont's
Listen to the Radio/ TV / Public Addressing System for advance information and advice.	Do not go outside or into a beach during a lull in the storm.
Allow considerable margin for safety.	Be away of fallen power lines, damage bridges And structures.
A cyclone may change direction, speed or intensity within a few hours, so stay tuned to the radio / TV for updated information.	Do not go for side sight seeing
Tape up large windows to prevent from shattering.	
Move to the nearest shelter or vacate the area if this is ordered by the appropriate government agency.	
Stay indoors and take shelter in the strongest part of the house / society.	
Open windows on the sheltered side of the house if the roof begins to lift.	
Find shelter if you are caught out in the open.	
If you have to evacuate, do not return until advice.	

Operational Guidelines of What to do in the event of a Heat Wave

Do's	Dont's
Listen to the Radio/ TV/ Public Addressing System for advance information and advice.	Avoid standing under direct sun.
Finish the work at the morning or leave it to the evening.	Avoid Long Drives.
Drink Sufficient Water & take Food	
Keep your head away from the direct heat. Use	

Clothes, Cap, Umbrella or Glasses	
Keep Stock water with you	
Wear light dresses.	

Operational Guidelines of What to do in the event of a Drought Situation

Do's	Dont's
Save Water & Stock Water	Stop disutility of Water
Arrange for alternate coping's	
Contact Nearest Agriculture Office	

Operational Guidelines of What to do in the event of a Tornado

Do's	Dont's
Listen to the Radio/ TV/ Public Addressing System for advance information and advice.	Do not run and do not wander round the streets.
Turn off Electricity	
Keep away from Old, Tall or ditched buildings, electricity wires, slopes and walls, which are liable to collapsed.	Keep away from buildings, walls, slopes, electricity wires and cables & stay in the vehicle.

Operational Guidelines of What to do in the event of a Earthquake

Do's	Dont's
Listen to the Radio/ TV/ Public Addressing System for advance information and advice.	Do not run and do not wander round the streets.
Teach all members of your family how to turn off the electricity, water and gas supply.	Keep away from buildings, walls, slopes, electricity wires and cables & stay in the vehicle.
Protect yourself by staying under the lintel of an inner door, in the corner of a room, under a table or even under a bed.	Do not rush to the doors or exits, never use the lifts keep well away from windows, mirrors, chimneys and furniture.
Keep away from Old, Tall or ditched buildings, electricity wires, slopes and walls, which are liable to collapsed.	Do not rush to the doors or exists, never use the lift.
Stop the vehicle away from building, walls, slopes, electricity wires and cables.	Avoid places where there is use electric wires and do not touch any metal object in contact with them.
Live your badly damaged house.	Do not re-enter badly damaged buildings and do not go near damage structures.
Collect water containers, food items and ordinary and facial medicines.	

Annexure XI

EMERGENCY SUPPORT FUNCTION

ESF No	ESF	Responsibility	Primary Agency	Support Agency
1	Communication	<ul style="list-style-type: none"> • Coordination of state actions to assure the provision of telecommunication support • Coordinate the requirement of temporary telecommunication in the affected areas 	AIR and Dooradarshan	BSNL, NIC, Private Telecom Operators, Public Relation Department
2	Emergency Medical services and public Health	<ul style="list-style-type: none"> • Coordinate, direct and integrate state level response • Direct activation of medical personnel, supplies and equipment • Coordinate the evacuation of patients • Provide human services under the Dept of health • Prepare and keep ready Mobile Hospitals and stock 	Health Department	District Hospitals, NIMHANS, Medical Education Department, Southern Railways, Red cross, Rotary Club, Lions Club, Indian Medical Association, Medical Association, Medicine Stockist, Volunteer Organisations, Private Hospitals and Nursing Homes, Ambulance Services, Blood banks
3	Power	<ul style="list-style-type: none"> • Provide and coordinate State support until the local authorities are prepared to handle all power related problems • Identify requirements of external equipment required • Assess damage for state/national Assistance 	KPTCL	KSEB, Indian Railways
4	Transport	<ul style="list-style-type: none"> • Overall coordination of the state and the civil transportation capacity in support of district and local government entities • Restoration of roads coordinate and implement emergency related response and recovery functions, search and rescue and damage assessment. 	Transport Dept	Southern Railways, NHAI, PWD, District Municipal Corporation, Community Volunteers, Voluntary Organisations
5	Search & Rescue	<ul style="list-style-type: none"> • Establish, maintain and manage state search and 	Fire and Rescue	Police, CISF, CRPF, Health Department,

		<p>rescue response system.</p> <ul style="list-style-type: none"> • Coordinate search and rescue logistics during field operations • Provide status reports of SAR updates throughout the affected areas. 	Service	Building departments, NCC, Community Volunteers, Red Cross, Civil Society Organizational, Home guraad department, other para-military agencies
6	Public works and Engineering	<ul style="list-style-type: none"> • Emergency clearing of debris to enable reconnaissance • Coordinate road clearing activities to assist local relief work • Begin clearing road. Assemble casual labour • Provide a work team carrying emergency tool kits, depending on the nature of disaster • Keep national and other main highway clear from disaster effects such as debris etc. 	PWD	NHAI, Indian Railways
7	Information and Planning	<ul style="list-style-type: none"> • Facilitate the overall activities of all responders in providing assistance to an affected area. • Apply GIS to speed other facilities of relief and search and rescue • Enable local authorities to establish contact with the state authorities • Coordinate planning procedures between districts 	Revenue Dept	
8	Relief Supplies	<ul style="list-style-type: none"> • Coordinate activities involved with emergency provisions <ul style="list-style-type: none"> ○ Temporary shelters ○ Emergency mass feeding ○ Bulk distribution • Provide logistical and resource support to local entities • Operate an information system to collect, receive, and report the status of victims and assist family reunification ; and coordinate 	Food and Civil Supplies Dept	Urban and Rural Development Departments

		bulk distribution of emergency relief supplies.		
9	Food	<ul style="list-style-type: none"> • Assess requirement of food for affected population • Control the quality and quantity of food • Ensure the timely distribution of food to the people • Ensure that all food that is distributed fit for human consumption 	Agriculture Dept	Agriculture Marketing Board, Chamber of Commerce, Market Associations
10	Drinking Water	<ul style="list-style-type: none"> • Procurement of clean drinking 	Water Resources Dept	PWD
11	Shelter	<ul style="list-style-type: none"> • Provide adequate and appropriate shelter to all population • Quick assessment and identifying the area for the establishment of the relief camps • Identifying the population which can be provide with support in their own place and need not be shifted reallocated • Locate relief camps close to open traffic and transport links 	PWD	Urban Development Dept; Rural Development and Panchayat Raj Dept., Police, Health Dept
12	Media	<ul style="list-style-type: none"> • To provide and collect reliable information on the status of the disaster and disaster victims for effective coordination of relief work at district level. • Coordinate with EOCs at the airport and railways for required information for internationals and national relief workers • Acquires 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 	Information Dept	Media, NGOs, Health department, Police department

		<p>Donation</p> <ul style="list-style-type: none"> • Respect the socio-cultural and emotional state of the disaster victims while collecting information for dissemination 		
13	Help lines	<ul style="list-style-type: none"> • Coordinate, collect, process, report and display essential elements of information and facilities 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 the damaged areas and passage of emergency personnel and equipment for life saving, property protection and health and safety 	Dept of Home Affairs/Public Relations	Media, NGOs, Health department, Police

Annexure XII Preparation of DDMP – Templates

Strategy for Preparing the DDMP

Prior to the preparation of plans, this year the CDM, ATI, Mysuru has prepared online DDMP templates and to facilitate preparation of DDMP in Kannada, Kannada templates also prepared and sent to all District Administrations.

The district level officers were trained at ATI Mysore and a series of workshops were organized at every district to discuss the hazards, risks and vulnerability including the capacity. The templates for preparedness, mitigation, Response and Recovery developed as per the guidelines of NDMA and DM Act-2005 were adopted by the District Administrations. The Risk assessment tools were used. Expert groups were formed for each category of disaster.

Following broad checklist was adopted for DDMP preparation;

Section 1: Introduction

- 1) Rationale/Justification for DDMP
- 2) Objectives
- 3) Role of District Administration

Instruction

The expert group based on the vulnerability has to define the above statements

Section 2: District Profile

Brief account on the following information of the district

- Geography with features
- Topographic Map with main features
- Land use pattern
- Forests
- Rainfall
- Cropping pattern
- Educational Information
- Health Info
- Religions
- Towns
- Various other institutions
- Rivers and dams
- Power stations and Electric installations
- Power projects
- Industries and mines
- Transport and communication network
- Demography (Poverty, Literacy, Per capita income, Occupation)

Instruction: The above information is obtained from secondary sources and by survey.

Section 3: Risk Assessment & Vulnerability Analysis

Risk assessment can be carried out by using various PRA (Participatory Risk Appraisal) Tools such as Transect walk, Resource mapping, Seasonality chart, vulnerability mapping etc. Following is the minimum information required;

Important Components of DDMP

- Objectives
- Profile of the District
- HRVC-Analysis
- Preparedness Plan
- Mitigation Plan
- Response Plan
- Rehabilitation and Reconstruction Plan
- Automation of DDMP
- SoPs Before, During and After the Disaster

Proneness to Various Types of Disasters

Type of hazard	Time of Occurrence	Potential Impact	Vulnerable Area
Flash flood	June-August	Loss of houses, damage infrastructure, houses, etc.	entire districts/urban area etc

Disaster Probability

Name of Disaster	Jan	Feb	Mar	Apr	---- Dec
Floods					
Land slide					
Earthquake					
Fire accidents etc					

Post History of Disasters in the District Occurrence in Future

Sl. No.	Type of hazard	Year of occurrence	Area affected	Human loss	Crop affected	House damaged	Infra-Structure damaged	Animals affected	Any other

Section 4: GIS and Preparation of Basic Maps

Use the GIS and GPS technology for preparing the following;

- Map Showing sub divisions.
- Maps showing boundaries of Taluks, GPs etc.
- Maps showing Educational Institutes, Health Institutes, Public Infrastructure.
- Map Showing Vulnerable Areas to different disasters such as Heavy rainfall, floods, landslides, drought, fire, industrial accidents, chemical accidents/mishaps, road accidents etc.

Instruction: The maps including vulnerability maps shall be digitized in GIS and attribute data is fully obtained .

Capacity Analysis

- Inventories and Evaluation of Resources.
 - Location of Safe shelters.
 - Storage of Food (Type of structure, Location, Capacity, Contact person, Address etc.).
- Communication and Media.
- Administrative Preparedness for Different Disasters.
- Human Resource and Skills.
- Public Private Resource inventory and capability analysis.

Instruction: The data needs to be obtained from all the departments, NGOs, Community, PRIs and other private sources

Section 5: Institutional Mechanisms

Please refer chapter 4 & 9 for details

- DDMA structure
- ICS (incident command system)
- EOC (Emergency Operation Centre)
- SOC (Site Operation Centre)
- NGO/CBOs (Community based organization)
- Community involvement
- Linkages with departments

Chapter 6: Mitigation Plan

Please refer chapter 9 for details

- Structural measures
- Non structural measures
- Short term strategy
- Long term strategy

Instruction: This data on old and weak buildings, schools/colleges/life line buildings/vulnerable areas needs to be obtained from every village/GP and Urban areas(ULBs), Private, the departments and PRIs and community etc.

Section 7: Response Plan

Please refer chapter 9 for details

- Rescue and Relief management
- Post Disaster evaluation & measures
- Restoration work

Section 8: Institutional Arrangements at the District Level

Please refer Chapters 4, 5 and 9

- Roles and Responsibilities of Officers ;
 - Before
 - During and;
 - After

Section 9: Communication Plan

Please refer chapter 4 of this handbook for EOC, DCR etc.

- District Control Room (DCR)
- Structure of DCR
- Communication tools(HAM Radio, Walkie-Talkie, satellite telephone etc.)
- Warning System
- Message Reporting

Section 10: Standard Operating Procedures (SOP) for each Dept & Officers (Refer Annexure –I & Chapter-13 of KSDMP 2012-13)

These are explained in the chapter 9 of this handbook

- Before the Disaster
- During and
- After the Disaster

Checklist for each Department & its Officers

Dos & Don'ts

Section 11: Contact Persons & Addresses

Note: For every component of DDMP, templates with queries and relevant data from the field was obtained. The process of updating should be carried out by digitizing so that the DDMP can be updated on a continuous basis by the District Administration

Annexure XIII

Requirement of Equipment and Machinery for Disaster Management in each District RESCUE EQUIPMENT

(i) Per Rescue Party:

1. Iron shod levers 10 ft. long
2. Heavy block for fulcrum
3. Crowbars
4. Picks
5. Shovel (or phawras)
6. Half round files
7. Sledge Hammer
8. Heavy Axe
9. Light Axe
10. Two handled cross cut saw
11. Hand Saw
12. 100 ft. length 3 in. fiber rope
13. 100 ft. length 5.8 in wire rope
14. 40 ft. length 1 ½ in fiber lashing lines
15. Chain tackle
16. Single sheave snatch block
17. 20 ft. bamboo ladder
18. Petromax lamp
19. Torches (electricity)
20. Hurricane Lanterns
21. Tarpaulin 12'x12'
22. Box of Miscellaneous tools
23. Set of rope tackle, 3 sheave, 2 sheave
24. Jacks with 5 ton lift
25. 20 ft. length of fibre rope 1 ½''
26. Rubber gloves (pair) tested upto 11000 volts
27. 200 ft. length fibre rope 3'' or 4'' (where need)
28. Stretcher harness (set)
29. Scaffold poles for sheer legs
30. Debris baskets
31. Fireman's axes (with carrying Pouches)
32. Short Ladder (8 to 10 ft.)
33. Bucket kets
34. Improvised tourniquets
35. Dressing shell
36. Dressing first field
37. Lint unmedicated in Squares about 18"x18"
38. Safety Pins (Large) cards of 6
39. Clasp Knife
40. Tarpaulins or stout canvas sheet 12'x12' (to protect trapped person from filling until released)
41. Leather gloves (prs)
42. First Pouches
43. First aid box
44. Stretchers
45. Blankets

Approximate cost: Rs. 10 Lakhs

1. Bandages triangular
2. Canes for tightening improvised tourniquets
3. Dressing Shell
4. Dressing first field
5. Labels, casualty identity, packets of 18
6. Safety pins (large) Cards of 6
7. Scissors
8. Tourniquet

Approximate Cost Rs. 1.0 Lakh

EQUIPMENT CARRIED BY RESCUE PARTY

The details of major equipment carried by the Rescue Party are:-

(a) Per Rescue Party.

1. Iron shod levers, 10 ft. long
2. Heavy Block for Fulcrum
3. Crowbars
4. Picks
5. Shovels (or Phawrahs)
6. Half round files
7. Sledge Hammer
8. Heavy Axe
9. Light Axe
10. Two handled cross-cut saw
11. Hand Saw
12. 100 ft. length, 3 in. fibre rope
13. 100 ft. length 5/8" wire rope
14. 40 ft. length 1 1/2" fibre lashing lines
15. Chain tackle
16. Single sheave snatch block
17. 20 ft. bamboo ladders
18. Petromax lamp
19. Torches electric
20. Hurricane lanterns
21. Tarpaulin 12'x12'
22. Box of miscellaneous tools
23. Set of rope tackle, 3 sheaves-2 sheaves
24. Jack with 5 ton lift
25. 20 ft. length of fibre ropes 1 1/2"
26. Rubber gloves (pair) (tested up to 25000 voltage)
27. 200 ft. length fibre rope 3" or 4" (when needed)
28. Stretcher harness (set)
29. Scaffold poles for sheer legs
30. Debris baskets
31. Fireman's axes (with carrying pouches)
32. Short ladder (8 or 10 ft.)
33. Buckets
34. Tarpaulins or stout canvas sheets 12'x12' (to protect trapped persons from falling debris until released)
35. Leather gloves

36. First aid pouches
37. First aid box
38. Stretchers

Content of Pouch for Rescue Party (2 per Party).

1. Bandages triangular
2. Canes for tightening improvised tourniquets
3. Dressing Shells
4. Dressing First, Aid
5. Labels, casualty identity, packets of 20
6. Safety pins (large) Cards of 6
7. Scissors
8. Tourniquet

EARTH QUAKE RESCUE EQUIPMENTS

1. Concrete cutters
2. Steel cutters
3. Wood cutters
4. Emergency Lights
5. Hand Held Cutters
6. Spreaders
7. Combitools and Mini Cutters
8. Lifting Kit
9. Head Torch
10. Helmet and Search Lights
11. Leather and Rubber Hand gloves
12. Insulated Firemen Axe
13. Pneumatic Jack with air cylinders with compressor
14. Breathing apparatus set
15. Binoculars(2-3 Kms range)

Approximate Cost : Rs. 20 .00 Lakhs

Fire Rescue Equipments

1. Proximity suit(2 nos)
2. Water CO2 type(10 nos)
3. CO2 Type(10 nos)
4. Foam Type(10 nos)
5. DCP Type(10 nos)
6. Thermal image camera((2 nos)
7. High pressure portable pumps with pipes
8. Ropes(manila)
9. Chargeable Torches(10 nos)
10. Generators with flood light light stand with wire 2.4 Kv
11. Breathing Apparatus Set(5 nos)

Approx cost : Rs. 25.00 Lakhs

Traffic Safety Equipments

1. Buttons(100 nos.)
2. Reflective Jackets (100 nos.)
3. Studs & Road Humps(100 nos)

4. Speed Barriers(100 nos.)
5. Signage Boards and Cones(200)
6. Cones and Barricades(100 nos)
7. Delineators(100 nos)
8. Barriers & Metal Detectors(10 nos)
9. Manila Ropes 50 mt. each 10 Nos.
10. Nylon ropes
11. Nylon reflective ribbons with stand(100 nos)
12. Binoculars(2-3 Kms range)

Approximate Cost : Rs. 10.00 Lakhs

Flood Rescue Equipments

1. Bore well camera/under water searching camera (1 no.)
2. Inflatable Boat with OBM & Without OBM(10 HP)(2 nos)
3. FRP Boats with OBM & without OBM(10 HP)(2 nos)
4. Life Buoys (20 nos)
5. Life Jackets(20 nos)
6. Gumboots(100 nos)
7. Helmet(100 nos)
8. Stretcher(10 nos)
9. Safety Goggles(100 nos)
10. Chain Pulley Block(5 nos)
11. Global Positioning System(5 nos)
12. Rope ladder(5 nos)
13. Diamond Saw Cutter(2 nos)
14. Search Lights(20 nos)
15. Hi-Power Torches(20 nos)
16. Hydraulic Jack (2 nos)
17. Petrol Driven Wood Cutter(5 nos)
18. Diving suits with air cylinder (5 nos)
19. Petrol operated compressor (1 no.)

Approximate Cost : Rs. 50 lakhs

Approximate Cost of setting up of Emergency Operation Centre in each district(Initial investment) (including Wireless communication System)

= Rs. 2.00 Crore

Annexure XIV

Stampede and Crowd Management Plan

Article 19(1)(b) of constitution of India- Right to assemble peacefully without arms

Article 19(3) of constitution of India- Right to assemble is subject to reasonable Restrictions

Information Assessment by the District Administration

1. Determining the time of assembly, duration of event, location, and type of activities planned
2. Estimating the number of persons expected to participate or observe
3. Reviewing any previous events involving the same or similar groups
4. Assess actions and equipment utilized by groups in prior incidents
5. Analyzing the expected time of arrival and departure, and the means and routes of travel for participants
6. Attempt to determine impact on public transportation and roadways
7. Attempt to determine impact on commerce and public accessibility
8. Analyze potential activities and hazards along the route
9. Assessing public safety concerns associated with the event

Checklist for Hazard Assessment for Crowds

1. **Structural** - Collapse / damage to Barricades, Tents, Make shift bridges & watch towers camps if any
2. **Fire/Electricity** – Camps, Cook Houses, Illegal Electric Connection & Non availability of FF Equipment/ Facilities
3. **Crowd Control** – Closed/ Locked Exit, People in excess of holding capacity of the area, designated route not being followed.
4. **Crowd Behaviour** – Non adherence to traffic arrangements, foreign visitors, Prasad distribution, Unruly & irresponsible crowd behavior, relief Distribution.
5. **Security** – Terrorist/ Separatist/extremist attack , Mishandling by Law enforcing agency.
6. **Lack of Coordination** – Common briefing & clear chain of command & division of Roles Response – Lack of Logistics/infrastructure as per plan.
7. Vulnerability Assessment of **Crowd Crush**
8. People need at least 1 square yard of space each to control their movements.
9. Most people who die in crowds die from asphyxiation while standing upright, not from trampling.
10. The compounded force of 5 people crushing in can kill a person.
11. As crowds become more dense, the compression increases exponentially.
12. Humans lose consciousness after being compressed for just 30 seconds, they can be brain dead within 6 minutes. Most die without ever falling down.

Checklist for Rapid Venue Assessment

Sl No	Checklist of Questionnaire	Yes /No
1	Are visitors welcomed and provided information about the venue, location, facilities, events, routes, stay, food, services etc.?	
2	Are visitors satisfaction and service quality studies conducted and feedback given to respective Departments and Officers ?	
3	Is the approach to venue, exit, clean and well lit?	
4	Is there a system of visual control to identify and locate crowd density ?	
4	Do the Fire service, Parking, water supply, Sanitation, Police control room, EoC, etc., are in place?	
5	Are updated location, maps, emergency routes, facilities, ingress, egress, etc ., known to the security and other stakeholders?	
6	Are people held at various holding areas or allowed uncontrolled movement?	
7	Are the clearly identified roles and responsibilities and reporting instructions available to the Officers and Stakeholders ?	
8	Are the critical and vulnerable points and locations around the venue can be viewed from the CCTV or Web site ?	

Category	Indicator
Fire Protection	<ul style="list-style-type: none"> · Average Response Time · Number of Fire Stations, Distance between them
Emergency Medical Services	<ul style="list-style-type: none"> · Average Response Time · Number of Medical Personnel · Number of first-aid kits available
Other Emergency Functions	<ul style="list-style-type: none"> · Established Emergency Operations Center, Facilities · Drills and Exercises

Risk Assessment of Potential Hazard Conditions

- Frequency of Crowd Assembly (Routine, Periodic, One-off) (failure) mode of Detection / Control
- Risk Priority Number for each of the hazard
- Frequency of Hazard Occurrence, Severity, Ease

Managing Demand Supply Gaps

Understanding Demands

Crowd Volume--Type/ Pattern of Crowd--- Arrival Pattern ----- Duration of Stay
(No of Pilgrims/Tourists) (Mode of transportation)

Understanding Supply

Accommodation----- Holding capacity-----
Tents/ Barracks Venue/ Ghats, Rly Stn/ Bus Stand, procession Route
Resource Availability
Manpower, Equipment, Transport, Facilities, Medical, Food & water, commn

Generic Safety and Security Guidelines

- Deploy snake line approach

- Discourage general admission
- Monitor crowd for developing hazard points
- Have alternative routes for releasing excessive crowd pressure
- Have plans to take care of VIP visitors. Do not hesitate to refuse entry to VIPs if assessment indicates that it will add to safety concerns.
- Ask foreigners to register and report regularly.
- Have communication channels (PA system etc.) to send a message to the crowd
- Ensure emergency exits are not barricaded, blocked or otherwise inaccessible
- The shops, if possible, have to be confined to one side of the road and there should be a space of 3 or 4 meters in between cohorts of 5-6 shops so that pilgrims could escape through such space in the event of unexpected rush.
- The visitors should be encouraged to throw food wastes, plastic bottles etc. in clearly identified garbage bins lined up in large numbers across the roads. This will not only help in creating hygienic conditions but will also avoid panic situations arising out of dog/monkey/elephant menace.
- Ensure that the areas where barricades like chains are erected are kept well lit and visible to pilgrims during night lest they may trample upon it and if there is heavy rush that could result in stampede.
- At number of religious places of mass gathering located atop hills/mountains, it is frightening for pilgrims to do their religious journey along with the speeding ponies in both the direction. Shrine boards should explore and expedite the possibilities of alternate track for pilgrims on pony/horses. Until this gets completed, arrangements should be made to deal with the route cleaning issue and a staff associated with it.

Checklist for Planning

- understanding the patrons, various stake holders and their needs
- Crowd Management Strategies
- Risk Analysis and Preparedness
- Information Management and Dissemination
- Safety and Security Measures
- Facilities and Emergency Planning
- Transportation and Traffic Management
- Components of Plan

Event / Venue details

- Event Location
- Brief history of the event/venue
- Duration of event (schedule and timing)
- Expected number of people
- Details of activities and how/when/where they will take place
- Command & Control

Site Plan: The site plan must include maps showing location and details of

- Transportation hubs (Bus-stops, Railway stations, Taxi stands etc.)
- Places for stay
- Information kiosks
- Places of interest at the venue/event
- Entry and exit points at event venue
- Helplines
- Transportation Plan
- Facility providers

Safety & Security Plan

Safety

Risk assessment forms the basis for designing the safety / security plan. Following are the salient components, but not limited to, of the event safety plan

- Safety Policy Statement
- Preventive and Mitigation Measures based on Risk Assessment
- Crowd Control measures
- Integrated approach
- Infrastructure plan
- Traffic Plan
- Medical & Communication Plan

Security:

- Physical Security
- Area Security
- Health security

Preparedness & Capacity Building

- Emergency Operation Centre (Control room)
- Public Information
- Awareness – (local as well as wide area)
- Services and Utilities
- First aid and basic health services
- Visitors flow management
- Transportation and Traffic Management
- Safety and Security Plan
- Contractors and supplier management plan
- Incident monitoring & reporting system
- Training and exercising

Health, Hygiene and Medical Services

- Safe Drinking water availability (location, sources,)
- Toilets (location, numbers for males and females, cleaning schedule, and responsibility etc.)
- Waste Management (garbage bin arrangements, waste collection schedule, recycling plans)
- Medical facilities (number of beds, equipment available etc.), staff (number of doctors, surgeons, paramedics, nurses etc. and their expertise), number of ambulances available (with/without life support systems) and their locations

Roles and Responsibilities

Visitors

- To get acquainted with the venue/event, routes, facilities and emergency procedures
- To abide by the laws, and local regulations in place (fire, traffic, ...) at the venue
- To exert peer pressure on miscreants involved in fighting, pushing, provoking crowds etc., which may lead to heightened safety risks
- To report emerging situation
- To provide feedback and exert pressure on venue/event managers to have continuous

improvements in facilities and the arrangements

Event Organisers/ Venue Managers

1. To acknowledge and accept the obligation to facilitate patrons in having safe, hassle free, and memorable experience at the venue/ event
2. To develop, implement, review, and revise the disaster management plan by working closely with various stakeholders
3. To comply with the central, state, local laws and regulations
4. To get all the necessary approvals from local administration, police, fire, electricity departments etc.
5. To share details of event schedules, venue, transport, medical, food, hygiene, and emergency facilities etc. with the concerned stakeholders

Police

1. To maintain the law and order at events/venues and adjacent public property in close cooperation with local administration, event/venue managers, and the necessary support of the local community
2. To actively participate in venue assessment and preparedness checks
3. To restrict, guide, and regulate crowd and traffic movements
4. To prevent the commission of offences and public nuisances by close and regular monitoring at critical hazard points
5. To provide a prompt and humanitarian response to any threatening disaster situation in order to prevent escalation of casualty and to save lives.

Civil Defense/ NGOs/Volunteers/Village Disaster Management Teams

1. To inform the local issues to the event/venue Managers, Police, and the administration
2. To constitute various focused group/committees viz. traffic control, people flow control, information, medical assistance, food, water & sanitation, mock drill etc.
3. To help in search & rescue and to provide first aid in case of emergency
4. To mobilise local resources (food, shelter, clothing, vehicles, ...) in case of disaster
5. To assist in relief distribution and recovery.

Code of conduct for media covering places of mass gathering

The Press Council of India: Norms of Journalistic Conduct, 2010 lays down the code of conduct for media to be followed:

- Media must be objective, factual and sensitive.
- Media must inform and educate the people, not alarm or scare them.
- Natural or man-made hazards become disasters through acts of commission and omission of the society. Therefore, the disastrous impact can be minimized by preventive action taken by all the stakeholders including the media.
- Wide publicity to the do's and don'ts and the potential benefits of disaster mitigation so that the society follows them before, during and after the occurrence of the disasters.
- Complete cooperation between the media and all governmental and non-governmental agencies.
- The investigative journalist should resist the temptation of quickies or quick gains conjured up from half-baked incomplete, doubtful facts, not fully checked up and verified from authentic sources by the reporter himself.
- Intrusion through photography into moments of personal grief shall be avoided. However, photography of victims of accidents or natural calamity may be in larger public interest.
- Security at Places of worship, KSRTC Bus stands, Railway station, Market Places etc.,

Role of media BEFORE a disaster

- Analysis of sources of risks:
- Community Preparedness
- Controlling law and order situation:
- Keep a watch on anti-social elements and highlight suspected anti-social activities,
- Law and order machinery in restoring peace and harmony.

Role of media DURING a disaster

- Site Situation- accurate information from the site of the disaster to the anxious public, which may help prevent rumours and hence panic.
- Advise the public about Do's and Don'ts to contain the effects of the disaster.
Helpline
- Information Dissemination
- Can facilitate resource mobilization (e.g., help raise funds and material through appeals)

Role of Media After a Disaster

- Can inform the public on post-disaster rehabilitation efforts being made by authorities and aid groups. It can thus also help maintain a public pressure on the authorities to act sincerely.
- Can help investigate the causes of the disaster for the concerned authorities to help prevent it in future.
- Can help generate expert opinions through debates/discussions for better prevention of such a disaster or better preparedness in the event of a repetition of such a disaster

Arrangements :Food, Water and Sanitation

Food

1. No unauthorized vendors allowed anywhere.
2. Food samples from the eateries/ hotels and camps to be sent for testing. (Refer to the briefing).
3. Random inspections of eateries/ hotels/ camps etc.
4. Medical inspection of cooks for contagious diseases.
5. Since large number of Police Personnel & Home Guards are being drafted for bundobast duty, arrangements will be made for their accommodation, food & drinking water.
6. Arrangements for boarding and lodging for the cultural troupes.

MAY I HELP YOU KIOSKS - to be located at vantage points/ places manned by civilians under the guidance of Police carrying logo of Karnata State Police. KIOSKS to provide information regarding

1. Venues of Programmes
2. Routes/Directions/Destinations of places of tourist interest, Bus stand, Rly stn etc.,
3. Timings of Rail/Road transport services
4. Hotels/ Home stay
5. Parking/One way/ Ambulance/ Hospital
6. Booklets containing FAQs
7. Police contact numbers
8. Precautions regarding theft

Water

1. Water filtration plants new.
2. Water purification of all stored water.
3. Security and protection of all water tanks.

4. Water sample testing on daily basis.
5. Water points along the routes with 100 ml disposable sealed bottles.

Hygiene and Sanitation

1. Drainage lines construction.
2. Sanitation at the camps – 1 latrine for 20 persons for planned capacity and 1 bathroom for 30 persons..
3. Disposal of sewage – liquid and solid treatment plants.
4. Drainage clearing in the city.
5. Cleaning of rivers.
6. Ensuring waste is not drained into rivers and nallas.
7. Contractual employment of staff for cleaning drains.
8. Employment of additional Garbage Disposal Teams, Vans.
9. Placing of Wet and Dry bins at places along the pilgrims routs, camps, railway stations, bus stands and all public places.
10. Anti-beggar drive and anti-stray dogs drive.
11. Toilet facilities at Starting Point of pilgrim route, with arrangements for waste disposal and garbage clearance as well as anti-stink measures.
13. Garbage Disposal Bins with lids all along the route. Garbage has to be disposed more frequently. Garbage disposal near the airport and helipads should be more efficient to avoid birds hits with the aircraft.
14. Community should be advised through announcements and boards not to litter the areas.

Traffic Routing and Related Issues

1. No Vehicle Zone, No Heavy Vehicle Zone and Shuttle Service Zone have been identified.
2. Bus stands have been relocated and routing of the buses has been identified.
3. KSRTC Buses passing will be routed on the outskirts.
4. Traffic passing will be diverted partly if required. These routes and tie-ups will be ensured by the SP For the population staying in No vehicle Zone, a separate two wheeler and four wheeler car park will have to be made and all those vehicles will have to be parked there with a system of halogram and 24 hours guarding and checking.

Security at the Helipads

1. Watch towers helipads.
2. Floodlighting of the runway and helipads.
3. Helipad to be 75 mtr diameter for each helicopter with a gap of 50 mtr.
4. Heli-marking ('H') with 18" white paint on hard surface.
5. Firefighting equipment, fire tenders and ambulance with medical team.
6. No trees and electric wires within the vicinity (75 mtr of outer perimeter).
7. Residential areas around both to be screened.
8. Deploy sharp shooters and radio communications on high rise towers/ buildings on the periphery.
9. Access control round the clock.
10. Bomb Disposal Unit and Mine detectors to check these before landing and certify, each time.
11. Major bandobust places with very high police public interface
12. Cameras installed
13. Surveillance Cameras at key places to monitor the movement of crowd and vehicles.
14. Surveillance cameras will be installed at other sensitive locations.
15. Effective use of PCR Vehicles.
16. Use of ASC teams
17. Mufti men in large numbers will be deployed in all places of functions as well as in the procession.

18. Anti-Sabotage check will be done in all the venues and routes by using DFMD & HHMD and sniffer dogs.
19. Intelligence staff will be deployed to collect advance intelligence
20. Precautions like Ambulance, Fire force etc.,

Liaison and Information Management

Mock Drill/Exercise

- a. Nodal Departments.
- b. Nodal Officers.
- c. Roles & Responsibilities.
- d. Standard Operating Procedures.
- e. Resources
 - i. Manpower.
 - ii. Logistics/equipments.
 - iii. Expertise

ANNEXURE XV

LIST OF IMPORTANT CONTACT ADDRESSES

Principal Secretary , Revenue Department (DM)
Room No. 546-547, 5th Floor, 2nd Stage
M.S. Building, Dr.B.R.Ambedkar Veedhi,
Bangalore- 560 001
Ph No. : 080- 2235 3980, 2232 0582
Fax: 080- 22354321
E-mail: secyrelif-rev@karnatka.gov.in

State Emergency Operation Centre
Toll Free No. 1070
Website: ksdma.co.in

SEC Members of KSDMA

Role in the Committee	Designation & Department	Office	Internal
Chairperson	Chief Secretary to Government	22252442 22253716	22033300
Vice-Chairperson	Additional Chief Secretary to Government & Developmental Commissioner	22250715	22033308
Member	Additional Chief Secretary / Principal Secretary to Government, Finance Department	22252078	22033749
Member	Principal Secretary to Govt, Energy Department	22252373	22034649/4648
Member	Principal Secretary to Govt Agriculture Department	22250284 25727200	22032595
Member	Principal Secretary to Govt, Rural Development & Panchayat Raj Department	28460838 22353929	22032446
Member	Principal Secretary to Govt / Secretary to Govt (PCAS) Home Department	22258830	22033710
Member Secretary	Secretary to Govt, Revenue Department, Disaster Management	22353980	22032995
Permanent Invitee	DGP & Commandant General, Home Guards, Director of Civil Defence & Director of Fire & Emergency Services	25553234 25576850 25570733	-
Permanent Invitee	Director General, Administrative Training Institute, Mysore	0821- 2520906	-

KSDMA

Role in the Committee	Designation & Department	office	Internal
Chairperson (Ex-officio)	Chief Minister of Karnataka	080-22253414 22253424	22033261
Vice - Chairperson	Minister of Revenue	22252536	22033450
Member	Minister for Rural Development & Panchayat Raj	22258094	22033492

Member	Minister for Health & Family	080-22259183	
Member	Minister for Agriculture	080-22212804	
Member	Minister for Public Works	080-22251449	
Member	Minister of Animal Husbandry	080-22034109 080-23417100	
Member	Minister for Housing, Information ITBT & BWSSB	080-22280562	

Karnataka State Natural Disaster Monitoring Centre(KSNDM), Yalahanka, Bengaluru	Director Mobile :9742204377 9243345433,080-2745232, 080-22745234
---	---

**IMPORTANT CONTACT DETAILS FOR DISASTER RESPONSE
DISASTER MANAGEMENT DIVISION, MINISTRY OF HOME AFFAIRS
(for reporting of grave disaster and for requisitioning of Army, Air force and NDRF)**

HOME SECRETARY	011-23092989 23093031 23093003 (Fax) hshso@nic.in
Joint Secretary (Disaster Management)	24638206 26874825 jsdm@nic.in 24610906 (Fax)
Director (Disaster Management-I)	24642853 26266708 9871087616
Control Room (Disaster Management)	23093563 23093750 23093564 (Fax) 23093566

NATIONAL DISASTER MANAGEMENT AUTHORITY

Vice Chairman	011-26701701 011-26701704 011-26701706(Fax)
Secretary	011-26701710
Control Room	011-26701723 to 728 011-26701729 -30

NDRF New Delhi Directorate General , NDRF,B-Block, 9th Floor, Paryavaran Bhawan, CGO Complex, Lodhi Road, New Delhi-110003	011-24369278 011-24369280 011-24363261 dg.ndrf@nic.in
--	---

IMD, DGM New Delhi	011 - 24611842
IMD, Bengaluru	Free toll Number 1800 180 1717 THE DIRECTOR-IN-CHARGE, TELEFAX:080-22244419 METEOROLOGICAL CENTRE, PALACE ROAD, BENGALURU-560 001. CONTACT NUMBERS:080-22235725, 22235733, 22235737 TELEFAX: 080-22277059 FOR WEATHER ENQUIRY:080-22211118, 22235675, E-MAIL ID: mc.bng@imd.gov.in For Climate enquiry:cls.bng@imd.gov.in Website: www.imdbangalore.gov.in

CS and Principal Secretaries

Chief Secretary to Government Government of Karnataka Room No.320, 3rd Floor, Vidhana Soudha Dr.B.R.Ambedkar Veedhi, Bangalore- 560 001 Ph No.: 080- 2225 2442, 2225 3716 Fax: 080- 2225 8913	Additional Chief Secretary to Government Government of Karnataka Room No.324, 3rd Floor, Vidhana Soudha Dr.B.R.Ambedkar Veedhi, Bangalore- 560 001 Ph No.: 080- 2225 7982 Fax: 080 - 2225 6306
Principal Secretary of Government Infrastructure Development Department Government of Karnataka Room No. 28, Ground Floor Vikasa Soudha Dr.B.R.Ambedkar Veedhi, Bangalore- 560 001 Ph No.: 080- 2225 2366 Fax: 080 - 2228 0605 Email : prs-infra@karnataka.gov.in	Principal Secretary to Government Water Resources Development Room No.307, 3rd Floor, Vikasa Soudha Dr. B.R. Ambedkar Veedhi, Bangalore- 560 001 Ph No. : 080 - 2225 7064 Fax : 080- 2235 3983 Website : www.waterresources.kar.nic.in
Principal Secretary of Government Agricultural & Horticulture Department Room No.413, 4TH Floor, Gate No.2 MS Building, Dr.B.R.Ambedkar Veedhi Bangalore- 560 001 Ph No. : 080- 2225 0284 Fax: 080- 2225 1420 Email : prs-ah@kar.gov.in website : www.raitamitra.kar.nic.in	ACS & Principal Secretary Department of Energy Room No. 236, 2nd Floor, Vikasa Soudha Dr. B.R. Ambedkar Veedhi, Bangalore- 560 001 Ph No. : 080- 2225 2373 Fax: 080- 2223 5395 Website : www.karnataka.gov.in/energy
Principal Secretary of Government Animal Husbandary & Fisheries Department Room No. 405, 4 th Floor, Vikasa Soudha Dr.B.R.Ambedkar Veedhi, Bangalore- 560 001 Ph No.: 080- 2235 3977 Fax: 080- 2225 3734 website: www.ahvs.kar.nic.in	Principal Secretary Food And Civil Supplies & Consumer Affairs Department Room No. 29, Ground Floor, Vikasa Soudha Dr. B.R. Ambedkar Veedhi, Bangalore- 560 001 Ph No. : 080- 2225 9024 Fax: 080- 2235 3959 Website : www.ahara.kar.nic.in

Principal Secretary Forest, Ecology And Environment Department Room No. 404m 4 th Floor, Gate No. 3 MS Building, Dr. B.R. Ambedkar Veedhi Bangalore – 560 001 Ph No. : 080- 2225 6722 Fax: 080- 2225 8393 Website: www.parisara.kar.nic.in	Principal Secretary to Government Public Works Department Room No. 335 & 336, 3rd Floor, Vikasa Soudha Dr. B.R. Ambedkar Veedhi, Bangalore – 560 001 Ph No. : 080- 2225 1449 Fax: 080- 2235 3988 Email : prs-pwd@karnataka.gov.in Website : www.kar.nic.in/pwd
Principal Secretary to Government Health & Family Welfare Department Room No. 105, 1st Floor, Vikasa Soudha Dr. B.R. Ambedkar Veedhi, Bangalore- 560 001 Ph No. : 080- 2225 3924 Fax: 080- 2235 3916 Website : www.psecy.hfw.kar.nic.in	Principal Secretary to Government Housing Department Room No. 213, 2nd Floor, Vikasa Soudha Dr. B.R. Ambedkar Veedhi, Bangalore – 560 001 Ph No. : 080- 2225 6356 Fax: 080- 2225 3718 Email : prs-housing@karnataka.net.in psehousing@mail.kar.nic.in Website : www.karnatakahousing.com
Principal Secretary to Government Department of Industries & Commerce Room No. 106, 1st Floor, Vikasa Soudha Dr. B.R. Ambedkar Veedhi, Bangalore – 560 001 Ph No. : 080- 2225 2443 Fax: 080- 2225 9870 Website: www.karnatakaindustry.gov.in	Principal Secretary to Government Department of Urban Development Room No. 436, 4th Floor, Vikasa Soudha Dr. B.R. Ambedkar Veedhi, Bangalore- 560 001 Ph No. : 080 – 2225 3958 Fax: 080- 2235 3944 E-mail : prs_ud@karnataka.gov.in Website: www.karnataka.gov.in/urbandevelopment

Other Important Contacts

Authority	Contact Person & Designation	STD code	Office	Res	Fax	Mobile
Contacts for KSNMDC						
Karnataka State Natural Disaster Management Centre, Yalahanka, Bengaluru	Director:	080	22106443 22487740 22215613	22217038	22217038	
Contacts for Helicopters						
HQ Training Command			23411061 23414111			9341909452
			23411061 23414111			9480424008
		080	23411061 23414111		23419799	
		080	23418179		23418179	
Contacts for Boats, Boatsmen, Shipping, Cost Guard & Sea Bird						
Min of shipping, Road Transport & Highways, Transport Bhavan, Sansad Marg, New Delhi		011	23711873		23303872	09910487464
		011	23710189	24122685	23722885	09910600334
Coast Guard Sea Bird		08382	263260		263261	9448092360
		08382	263454		232004, 263618	9448144294
Department of Ports, IWT, Karwar		08382	221494		228918	9449002350

		08382		226406		9448132660
Contacts for Civil Aviation						
Mini of Civil Aviation, B Block, Rajiv Ghandi Bhavan, Safdarjung Airport, New Delhi		011	24617692	24106344	24654614	09871329871
		011	24610386	2410044	24655839	09810866142
		011	24610386	26254963	2410386	09958877322
Director Generl of Civil Aviation, Vimanpura Post, HAL Airport, Bangalore- 560017		080	25228475, 25223542		25222933	
Contacts for Railways						
Min of Railways		011	23388146		23304235	09910487464
		011	23384260	26884345		09910487464
South West Railway, New General Manager Office, Gadag Road, Hubli-20		0836	2289813		2289842	9731665730
Contacts for Army/ Defence						
Min of Defence, Department of Defence, South Block, New Delhi		011	23011410	24103862	23013709	09717790920
HQ K & K Sub Area, Cubbon Road, Bangalore- 560001		080	25591722		25591722	909112727
		080	25591686		25591686	
Contacts for Home Guards/ Civil Defence/ Fire Service						
Home Guards, Directrate of Civil Defence and DG Fire Force		080	22971557	22971502	22971512	9448468558
Contacts for NDRF						
NDRF, H.O		011	26712851, 26715303	23386566		09818916161
		011	26160252	26113014		0987115726
Control Room		011	26107953		26105912	
Commmandant 5 th Bn, NDRF, Talegaon, CRPF Campus, Pune-410507, Maharastra (For Karnataka)		02114	231245		231265, 231509	09423506765
		02114	231509			09423578446
Commandant 1 st Bn, NDRF, (Guwahati, Assam)		0361	2840284, 2843555		2840284	09435545951 09435545949 (21c)
Commandant 2 nd Bn, NDRF, (Kolkata, West Bengal)		033	25264302		25264394, 25263077	09434742836 09434742866 (21c)
Commandant 3 rd Bn NDRF, (Mundali,		0671	2879710 9937187222		2879710, 09937186222	09437964571, 09437964574 (21c)

Orissa)						
Commandant 4 th Bn, NDRF, (Arakkonam, Tamil Nadu)		04177	246269 203050		246594, 246633, 246644	09442105069 09442105169 (21c)
Commandant 6 th Bn, NDRF, (Gandhi Nagar, Gujarat)		079	23202540, 23202539		23201551, 23202540	09428826445 09427304210 (21c)
Commandant 7 th Bn, NDRF, (Bhatinda, Punjab)		0164	2246030 2246570		2246570	09417802032 09417802031 (21c)
Commandant 8 th Bn, NDRF, (Gr Noida, Uttar Pradesh)		0120	2351101, 2351102		2351087, 2351105	09968610011, 09968610012 (21c)
Contacts for Maharastra officers						
Irrigation Circle, Sangli		0233	2302709			09420033333
		0233	2332925, 2381840			09921614999
		0233	233295, 2381840			09850827678, 09421127678
Revenue		0233	2326824			09764107575
		0233	2326824			09423859427
		02162	232750			09422072799
		02162	232349			09422087088
		0231	2654811			0932597509
	0231	2654812			09922298399	
Contacts for Belgaum & Almatti Officers (DAM related)						
Karnataka Nigama Ltd, Belgaum		0831	2422339			9449039786
Dharwad		0836	2447793			9449818793
Almatti		08426	281038			9449034113
		08426	281027			9448132749
		08426				9448012946

DEPUTY COMMISSIONERS		
Deputy Commissioner Bagalkote	08354-245091	-
Deputy Commissioner Bangalore Rural	080-22860220	-
Deputy Commissioner Bangalore Urban	080-22211292	-
Deputy Commissioner Belgaum	0831-24072732	-
Deputy Commissioner Bellary	08392-277100	-
Deputy Commissioner Bidar	08482-225409	-
Deputy Commissioner Bijapur	08352-250021	-
Deputy Commissioner Chamrajanagara	08226-223170	-
Deputy Commissioner Chickmagalur	08262-230401	-
Deputy Commissioner Chitradurga	08194-222811	-
Deputy Commissioner Dakshina Kannada	0824-2220588	-
Deputy Commissioner Davanagere	08192-234640	-
Deputy Commissioner Dharwad	0836-2233888	-
Deputy Commissioner Gadag	08372-237300	-
Deputy Commissioner Gulbarga	08472-255444	-

Deputy Commissioner Hassan	08172-267345	-
Deputy Commissioner Haveri	08375-249044	-
Deputy Commissioner Kodagu	08272-225500	-
Deputy Commissioner Kolar	08152-222001	-
Deputy Commissioner Koppal	08539-220844	-
Deputy Commissioner Mandya	08232-224600	-
Deputy Commissioner Mysore	0821-2422302	-
Deputy Commissioner Raichur	08532-2290112	-
Deputy Commissioner Shimoga	08182-271101	-
Deputy Commissioner Tumkur	08162-272480	-
Deputy Commissioner Udupi	0820-2524925	-
Deputy Commissioner Uttara Kannada	08382-226303	-
CHIEF EXECUTIVE OFFICER, ZILLA PANCHAYATH		
Bagalkote	08354-235576; 235562	ceo-zp-bagalkote@karnataka.gov.in
Bangalore Rural	080-2226079; 2261079	ceo-zp-bangalorerural@karnataka.gov.in
Bangalore Urban	080-22211107; 22230289	ceo-zp-bangaloreurban@karnataka.gov.in
Belgaum	0831-2429712; 2429662	ceo-zp-belgaum@karnataka.gov.in
Bellary	08392-267300; 267200	ceo-zp-bellary@karnataka.gov.in
Bidar	08482-233133; 233109	ceo-zp-bidar@karnataka.gov.in
Bijapur	08352-276378; 276983	ceo-zp-bijapur@karnataka.gov.in
Chamrajanagara	08226-224014	ceo-zp-chamrajnagara@karnataka.gov.in
Chickmagalur	08262-220140; 220094	ceo-zp-chickmagalur@karnataka.gov.in
Chitradurga	08194-223061; 222516	ceo-zp-chitradurga@karnataka.gov.in
Chikaballapur	08156-262002	-
Dakshina Kannada	0824-2220578; 2220538	ceo-zp-dkannada@karnataka.gov.in
Davanagere	08192-261485; 261865	ceo-zp-davanagere@karnataka.gov.in
Dharwad	0836-2447542; 2747700	ceo-zp-dharwad@karnataka.gov.in
Gadag	08372-234375; 230211	ceo-zp-gadag@karnataka.gov.in
Gulbarga	08472-278666; 278603	ceo-zp-gulbarga@karnataka.gov.in
Hassan	08172-267534; 268824	ceo-zp-hassan@karnataka.gov.in
Haveri	08375-249031; 249037	ceo-zp-haveri@karnataka.gov.in
Kodagu	08272-228905; 228905	ceo-zp-kodagu@karnataka.gov.in
Kolar	08152-240649; 240614	ceo-zp-kolar@karnataka.gov.in
Koppal	08539-220002; 220040	ceo-zp-koppal@karnataka.gov.in
Mandya	08232-224004; 225060	ceo-zp-mandya@karnataka.gov.in
Mysore	0821-233052; 2330166	ceo-zp-mysore@karnataka.gov.in
Raichur	08532-228448; 227142	ceo-zp-raichur@karnataka.gov.in
Ramanagar	080-27276712; 27276714	-
Shimoga	08182-271776; 222233	ceo-zp-shimoga@karnataka.gov.in
Tumkur	0816-2272898; 2274161	ceo-zp-tumkur@karnataka.gov.in
Udupi	0820-2530708; 2531480	ceo-zp-udupi@karnataka.gov.in
Uttara Kannada	08382-226560; 226470	ceo-zp-ukannada@karnataka.gov.in
SUPERINTENDENT OF POLICE		
Bagalkote	08354-235077	sp-bagalkote@karnataka.gov.in
Bangalore Rural	080-22264350	sp-bangalorerural@karnataka.gov.in
Bangalore Urban	080-22264412	sp-bangaloreurban@karnataka.gov.in
Belgaum	0831-2405204	sp-belgaum@karnataka.gov.in
Bellary	08392-258400	sp-bellary@karnataka.gov.in

Bidar	08482-226700	sp-bidar@karnataka.gov.in
Bijapur	08352-250152	sp-bijapur@karnataka.gov.in
Chamrajanagara	08226-222243	sp-chamrajnagara@karnataka.gov.in
Chickmagalur	08262-230403	sp-chickmagalur@karnataka.gov.in
Chitradurga	08192-222781	sp-chitradurga@karnataka.gov.in
Dakshina Kannada	0824-2220503	sp-dkannada@karnataka.gov.in
Davanagere	08192-253400	sp-davanagere@karnataka.gov.in
Dharwad	0836-2233200	sp-dharwad@karnataka.gov.in
Gadag	08372-236260	sp-gadag@karnataka.gov.in
Gulbarga	08472-220004	sp-gulbarga@karnataka.gov.in
Hassan	08172-268410	sp-hassan@karnataka.gov.in
Haveri	08375-232800	sp-haveri@karnataka.gov.in
Kodagu	08272-229000	sp-kodagu@karnataka.gov.in
Kolar	08152-243060	sp-kolar@karnataka.gov.in
Koppal	08539-230111	sp-koppal@karnataka.gov.in
Mandya	08232-224500	sp-mandya@karnataka.gov.in
Mysore	0821-2520040	sp-mysore@karnataka.gov.in
Raichur	08532-235001	sp-raichur@karnataka.gov.in
Shimoga	08182-261400	sp-shimoga@karnataka.gov.in
Tumkur	0816-2272451	sp-tumkur@karnataka.gov.in
Udupi	0820-2534777	sp-udupi@karnataka.gov.in
Uttara Kannada	08382-226233	sp-ukannada@karnataka.gov.in
Ramanagar	080-73700	-
Chikkaballapura	08156-274000	-
COMMISSIONERATE		
Commr. Bangalore City	080-22260707	-
Commr. Mysore City	0821-2418100	-
Commr. Hubli-Dharwad City	0836-2233500	-

LIST OF NGO'S

Indian Red Cross Society

General Secretary
Address: #26, Red Cross Bhavan,
1 st Floor,
Race Course Road Bangalore
Karnataka 560001
India
Phone: 080 22264205,22268435
Fax: 080 22284878

UNICEF State Office for Karnataka

Plot No: 317 /A , Road No. 12
MLA Colony, Banjara Hills
Hyderabad - 500034, Andhra Pradesh, India
Tel: +91 040 23540712 / 0722 / 0744 / 0239
Fax: +91 040 23555-156
Email: hyderabad@unicef.org

See More at : '<http://www.unicef.in/Karnataka>'

Infosys Foundation

Neralu, #1/2 (1878), 11th Main,
39th Cross, 4th T Block, Jayanagar,
Bangalore 560011, Karnataka, India
Tel.: +91-80-26534653 / 41261700
Fax: +91-80-41032140
Email: foundation@infosys.com

Azim Premji Foundation,

#134 Doddakannelli,
Next to Wipro Corporate Office,
Sarjapur Road,
Bangalore - 560035
Tel: +91-80- 6614 4900/01/02

Quorum, No. 85, 7th Cross

4th Block, Koramangala
Bangalore - 560034
Karnataka, INDIA
For enquiries, email us at
info@ekstep.org

World Vision India |

No. 16, VOC Main Road,
Kodambakkam,
Chennai - 600 024
+91 44 42287070+91 44 42287242

Seva Mandir

Old Fatehpura Udaipur
Rajasthan, India 313004
Email: info@sevamandir.org
Phone: +91 294 2451041
Fax: +91 294 2450947

Give India

1st floor, Rigel, No. 15-19
Doddanekkundi,
Marathahalli Outer Ring Road,
Bengaluru, Karnataka-560037

Plan India

1, Community Centre, Zamrudpur
Kailash Colony Extension
New Delhi – 110048, India
PHONE: 91 11-46558484

CARE India Solutions for Sustainable Development

Headquarters

Delhi NCR

A-12, Bhilwara Towers, Third Floor, Tower II Sector 1, NOIDA, Uttar Pradesh 201301

Phone 0120-4048250

Email [contactus (at) careindia.org]

CIN No. U85100DL2008NPL178133

Karnataka

2nd floor, No-49, 4th Main road,

Indira Nagar, Chamarajpet,

Bangalore-560018

The Akshaya Patra Foundation

#72, 3rd Floor, 3rd Main Road, 1st & 2nd Stage

Yeshwantpur Industrial Suburb,

Rajajinagar Ward No. 10

Bengaluru – 560022

India

Phone: +91 80 3014 3400

Fax: +91 80 2357 8626

Contact Us- infodesk@akshayapatra.org

Other Local NGOs

Name & Address of organization	Telephone No.
Sri. Suresh Halemani Secretary, <i>Agricultural Foundation</i> , Hullakote, GADAG	9900533448 (M) Ph.08372- 289325
Sri. Mahamadali <i>Janachethana</i> , RAICHUR	9740070306 (M)
Smt. H. Hemavathamma Coordinator, <i>Sneha</i> , 214, LIC Colony, 2 nd Cross Mahaveer School Road, Srirampur, MYSORE	9448031977 (M)
Sri. Yogesh Community Organiser, <i>Deed</i> , H.D. Kote Road, Hunsur	9449827253 (M)
Sri. M. Ravichandra Co-ordinator No.343, RLHP, Gayathripuram, Mysore	0821 2451216
Sri. Shylendra Kumar <i>Budakatu Krushikara Society</i> , H.D. Kote, Mysore	
Sri. D.M. Basavaraju Secretary, <i>Fedina Vikasa Society</i> , H.B. road, Sarvajanika Hospital Layout, H.D. Kote, Mysore	
Ms. Apoorva <i>Apatta samolochakaru</i> , S.R.S. colony, Huttagalli, Mysore	9241322159(M) Ph:0821-2403664
Sri. Krishnan <i>Myrada</i> , Mysore	
Jagadeesh NGO (Director) <i>Rudset Institute</i> , Mysore	9449860466(M)
Ms. Roopa Shree Gowda	

Secretary, River Valley Organization for Rural Development , chandgal Road, Srirangapatna ,Mandya	
Sri. Srinivasa Chief co-ordinator Dyni, Grama Abhivrudi society T.B.Layout , Nagamangala, Mandya	
Sri. Chamaraju B. B.D.O. Vikasa Society , Mysore road, Malavalli	9880154436(M) Ph: 08231-214266
Ms. Shanthi Counselor Sri Akshayanikethana trust, 3 rd cross, Mandya	9844812561(M)
Ms. Nisha Counselor Sri Akshayanikethana Trust Mandya	9480433583(M)
Sri. J. Vensent Babu President, Chetana youva society (R) Chanammgolli, Bhalaji Grama, Virajapet Kodagu	9482194330(M) 9880314253(M)
Sri. T.J. Kishore Kumar Vice President Embark, Youth Association , Bdhind Post Office, Virajpet	
Sri. Joys Menzezs Jilla Valaya Adhikari O.D.P. Society , Indira Nagar, Madikeri, Kodagu	9902322152(M)
Sri. A.P. Kodancha Consumer , Fonum Nonth School, Bmpound, Udupi 576101	
Ms. A. Lakshmi Bhai Chief Programme Co-ordinator Bharathiya Vikasa Trust Manipal, Perampalli, Udupi	9845307031(M) Ph:0820-2570263
Sri. B. Arunachala Nayak Samudaya Programme C.W.D.C Namma Bhoomi Vratha Tharabethi Kendra Kundapura , Udupi	
Sri. K. Shama Bhatt Co-ordinator Samudaya Radio , Manipala	
Sri. V.K. Narashimaha Murthy Samalochakaru Shantiniketana Society® Santvana Kendra, Madhugiri, Tumkur	9481490935(M) Ph: 08137-283796
Sri. P. Parshivamurthy Cluster Manager Yeragamballi , Yelandur Tq, Chamarajanagar Dist	
Sri. Kale Nataraj Co-ordinrator Yogana society(R) , Chamaraja Nagar	9445488808(M)
Sri. Manjunath Hegde Valaya Adhikari International Human Development & Valige Society Beguru, Gundalpet, Chamarajanagar	9945911872(M) Ph:08229-231385
Sri. B.S. Basavaraju Director Adivasi, Chamarajanagar	9449130191(M) 9632471885(M)
Ms. Rajeshwari M Resource Center Manager Myrada Kollegal Hill Area Development Project	9986455274(M) Ph:08224-268935,268927

Hanur Post, Kollegal, Chamarajanagar	
Sri. H.N. Hemavathi Samaja Seva workers V.D.C.T GundalPet, Chamarajanagar	9632467526(M) Ph:08229-222184
Sri. Revanna Y.D.C.T. , Gundalpet Town, Chamarajanagar	9343326347(M) Ph:08229-222184
Sri. B.M. Prabhu Swamy Co-ordinator Deena Bhandu Society , Near Aranya sasya Vibaga, Chamarajanagar	9448871813(M) Ph:08226-226007
Sri. N. Manjunath Tharabethidar Deena bhandu Society , PWD Colony, Behind Forest office, Chamarajanagar	9845776434(M)
Sri. H. Manjunath Co-ordinator Satdam (R) or Set dam , Davanagere	9880939429(M)
Sri. D.G. Puttaraju Secretary Set DCMS(R) #D/2 Vidyanagar, Davangere	9900892747(M)
Ms. Basamma Samudaya Sanghatikaru Rich Society , R.D. Ismail Sab Building, Pattangere, 3 rd Word, Harapanahalli, Davanagere	9900638704(M) Ph:08398280177
Sri. C. Eswarappa District President Akila Bharata Sharana Sahitya Parishat , Davanagere	
Sri. G.S. Suresh Honnashree Association, Eragalli , Channagiri post, Davangere	9448129522
Sri. P.G. Giriappa Yogana Director Badhuku Gramina abhivrudhi Society . Or Badhuku Rural Development Society . Bidirakere, jagalur Davangere	
Sri. P.N. Basavaraj Director Anushree Association , Rajigondanahalli. Channagiri, Davangere	
Sri. Prabhakar C.D.C. World Version India, A.D.P, Gundulpet	9845111703(M) Ph:08229-222725
Sri. L. Nagaraj President Gandhi Graminabivrudi Society ® or Gandhi Rural Development Society, Gudibande, Chikaballapur	9945423162(M)
Sri. R. Naryanappa Secretary Dena dayal Jana Seva Samithi Mylapana Halli, Kalavar Post, Chikaballapur	9449313604(M) Ph:08156-271145
Dr. M. Vijaya Venkataram Sowdary Gramina and Patana Abivrudi Society , Anjani Layout, Chinthamani, Chikkaballapur	9886213879 (M) Ph: 08154- 254335
Ms. Sangeetha P. Panchala Thodalabani , Jamakhandi, Balgalkote	9740262488(M)
Sri. Basavaraj H. Badiger Managing Trustee Todalbagi , Jamkhandi, Bagalkote	974047760(M) 9845726144(M)
Sri. Veeranna Athani President Cavers Swayam Society , Near Bulamatt, Station Road	9845317691(M) Ph: 08354-222108

Bagalkote	
Sri. Santhosh Kumar Koshadikari(Kajanchi) ARUDU , Koduru, Hosanagar, Shimoga	9591243025(M) 9901773546(M) Ph:08185-294595
Sri. G.S. Girish President, Spandana Samsthe , 3 rd word, Kudligi, Bellary	9449821836(M) 9902797016(M) Ph: 08391-221091