

Government of Gujarat

GUJARAT STATE DISASTER MANAGEMENT PLAN 2023-24 VOLUME I



GUJARAT STATE DISASTER MANAGEMENT AUTHORITY

Block No.11, 5th Floor, Udyog Bhavan, Gandhinagar



Government of Gujarat

GUJARAT STATE DISASTER MANAGEMENT PLAN 2023-24

VOLUME 1



GUJARAT STATE DISASTER MANAGEMENT AUTHORITY Block No. 11, 5th Floor, Udyog Bhavan, Gandhinagar

Manish Bhardwaj, IAS, Principal Secretary & Chief Executive Officer GSDMA



Gujarat State Disaster Management Authority, Block No. 11/12, 5th Floor, Udyog Bhavan, Gandhinagar Tel :- +91-79-23259276 Fax :- +91-79-23259275

FOREWORD

Disasters both natural and man-made are barrier to sustained growth as they pose threat to economy as well as to infrastructure. Climate change is a reality and is affecting every walk of our life. Compounded by other facts of environmental changes, viz., land use changes and natural resource degradation, climate change impacts on natural systems and processes compound to produce extreme events and disasters, causing losses to live, and serious damages to infrastructure and property. Local level resilience, planning, and role of community and capacity building of associated functionaries and stakeholders is pivotal need of the hour for enabling the resilience into development.

Hence, the need is to develop means to grow economically while building resilience to disasters and climate change by incorporating disaster risk reduction strategies and risk transfer. This calls for a paradigm shift in the approach to address both, disaster resilience as well as developmental activities.

I hope that the State Disaster Management Plan 2023-2024 will be beneficial to all the relevant departments and supplement the understanding of disasters and ensure better coordination in Disaster Risk Management

[Manish Bhardwaj]

A. J. Asari, IAS, Addl. Chief Executive Officer GSDMA



Gujarat Satate Disaster Management Authority, Block No. 11/12, 5th Floor, Udyog Bhavan, Gandhinagar Tel :- +91-79-23259303 Fax :- +91-79-23259275

FOREWORD

The hazard and vulnerability profile of Gujarat shows that it is prone to various disasters. This proneness is caused by natural or anthropogenic induced factors, fuelled up with climate change which is a grave danger for mankind. The plan provides a holistic approach for capacity building and strives for disaster risk reduction by incorporating national and international frameworks aimed towards better response and preparedness.

The Sendai Framework for Disaster Risk Reduction (SFDRR 2015-2030) provides a way forward for combating disaster risk and aims at inclusiveness of social, environment and economic aspects to reduce disaster losses. It represents a step in the direction of global coherence with direct reference to health, development, and climate change. SFDRR focuses to mitigate the disaster risk and its effects to ensure a safer, sustainable future. While the Sustainable Development Goals (SDGs) (2015 2030) focuses on integrated approach towards building a resilient society and strengthen the means of implementation. Coherence with these frameworks will ensure sustainability, reduce risk and will build disaster resilience society towards disasters.

I hope the State Disaster Management Plan 2023-2024 will be useful to all stake holders to understand the roles and responsibility.

[A. J. Asari]

Table of Contents

Chapter 1:Introduction	
Background	1
Need for the Plan	1
Disaster Risk Reduction Post-2015	1
Sendai Framework of Actions for Disaster Risk Reduction 2015-2030	
Sustainable Developmental Goals	
Paris Agreement on Climate Change Action and Disaster Risk Reduction (CoP 21)	2
Prime Minister's 10 Point Agenda towards Disaster Risk Reduction	3
Vision	3
Objectives of the Plan	3
Plan Activation	4
Plan Implementation	4
Chapter 2: State Profile: Understanding the Context	5
Administrative Profile	6
Geographical Profile	6
Demography	7
Social Profile	
Religion	7
Caste and Tribes	
Economic Profile	8
Main occupation	9
Income Pattern	9
Sectors of Economy	9
Climate	10
Cultural Profile	
Languages	
Costumes	
Food	
Housing	
Fairs and Festivals	
Chapter 3: Hazard, Vulnerability, Capacity and Risk Analysis	
Hazards Analysis	
Earthquake	
3.1.2 Cyclone	
3.1.3. Drought	
Flood	
Tsunami Fire	
Industrial and Chemical Disasters	
Accidents	
Epidemic	
Heat Wave	
Stampede	
Lightening Risk of Gujarat	
Neclear & Radiological Disaster	
Cyber Attack	
History of Disasters	
Seasonality of Hazards	
Vulnerability Analysis	
Vulnerable strata of the society	
Structural Vulnerability	
Economical Vulnerability	
Environmental Vulnerability	

	city Analysis	
	an Resources	
1 1	oment	
	structure	
	4: Disaster Risk Governance in the State	
Natio	nal Level	27
	Level	
	cies competent for issuing Disaster Specific Early Warnings:	
	ct Level	
	^r Stakeholders in Disaster Management	
	5 :Disaster Risk Reduction for Resilience	
Earth	quake / Seismic	38
Cyclo	ne and Wind	48
Tsuna	ami	62
Flood	S	75
Urbar	n Floods	88
Nucle	ar and Radiological Disasters	99
	ical (Industrial) Disasters	
	lazard	
	gical and Public Health Emergencies	
	6 :Mainstreaming Disaster Risk Reduction and Climate Change Adaptation	
	ats for Pre-approval of Projects	
	nditure Finance Committee (EFC) Format	
	led Project Report (DPR) Format	
	ant Government Schemes and Projects	
0	et Allocation	
-	\cdot 7 Disaster Preparedness & Capacity Building: Strengthening Institutional Capac	• •
	ce	
	aredness Measures	
	Government	
•	rtments of the State Government	
a.	Revenue Department	
b.	Agriculture & Cooperation Department	
С.	Animal Husbandry Department	
d.	Civil Aviation Department	
e.	Climate Change Department	
f.	Education Department	
g.	Fire & Emergency Services	
h.	Food & Civil Supplies Department	
i.	Forest & Environment Department	
j.	Health & Family Welfare Department	
k.	Industrial Safety And Health	
Ι.		
m.	Information Department	
	Narmada, Water Resources, Water Supply & Kalpsar Department	150
n.	Narmada, Water Resources, Water Supply & Kalpsar Department Home Department	150 150
n. o.	Narmada, Water Resources, Water Supply & Kalpsar Department Home Department Port & Transport Department	150 150 150
	Narmada, Water Resources, Water Supply & Kalpsar Department Home Department Port & Transport Department Roads & Buildings Department	150 150 150 151
0.	Narmada, Water Resources, Water Supply & Kalpsar Department Home Department Port & Transport Department Roads & Buildings Department Science & Technology Department	150 150 150 151 151
о. p.	Narmada, Water Resources, Water Supply & Kalpsar Department Home Department Port & Transport Department Roads & Buildings Department Science & Technology Department Social Justice & Empowerment Department	150 150 150 151 151 151
o. p. q. r. s.	Narmada, Water Resources, Water Supply & Kalpsar Department Home Department Port & Transport Department Roads & Buildings Department Science & Technology Department Social Justice & Empowerment Department Sports Youth & Cultural Activities Department	150 150 150 151 151 151 151
o. p. q. r.	Narmada, Water Resources, Water Supply & Kalpsar Department Home Department Port & Transport Department Roads & Buildings Department Science & Technology Department Social Justice & Empowerment Department Sports Youth & Cultural Activities Department Tribal Development Department	150 150 151 151 151 151 151 152
o. p. r. s. t. u.	Narmada, Water Resources, Water Supply & Kalpsar Department Home Department Port & Transport Department Roads & Buildings Department Science & Technology Department Social Justice & Empowerment Department Sports Youth & Cultural Activities Department Tribal Development Department Women & Child Development Department	150 150 151 151 151 151 151 152 152
o. p. q. r. s. t. u. Gujar	Narmada, Water Resources, Water Supply & Kalpsar Department Home Department Port & Transport Department Roads & Buildings Department Science & Technology Department Social Justice & Empowerment Department Sports Youth & Cultural Activities Department Tribal Development Department	

Collectors/ Municipal Commissioners	153
Local Authority	154
Indian Railways	154
Private Sector	
Community Groups and Voluntary agencies	154
Citizen	
Capacity Building Measures	
Techno-legal Regime	
Training	155
Awareness	
Developing Technical and Computer Aided Databases	
Knowledge Management	
Current Projects/ Programmes	
Gujarat School Safety Programme	
School Safety Week	
Disaster Risk Management Programme	
Aapda Mitra	
Hospital Safety	
Chapter 8: Disaster Response & Relief	
Level of Disasters	
Emergency Operations Centres	
Security of SEOC	
Activation of EOC	
Command & Control of EOCs	
Functions of EOC	
Emergency Response Centres (ERCs)	
Activation	
Command & Control	
Trigger Mechanism	
Early warnings Agencies	
In case of Early Warning	
Without Early Warning	
Incident Response System	
Emergency Support Functions	
Disaster Reporting and Assessments	
Rapid Report	
Preliminary Report	
Detailed Report	
Deactivation of the Process	
Minimum Standard of Relief	
Finalizing relief payouts and packages	
Relief Kits	
Chapter 9: Reconstruction and Rehabilitation for Resilient Recovery	183
Introduction:	183
Recovery Process	183
Relief Memorandum [for seeking assistance from National Disaster Response Fund(NDRF)	
Post Disaster Needs Assessment	-
Developing Reconstruction and Rehabilitation Strategy for Resilient Recovery	187
Short-term, Mid-term and Long-term Recovery	
Repair and Restoration	
Reconstruction	188

Gujarat State Disaster Management Plan 2022-23

	bilitation	
Socio	o-economic Rehabilitation	
Psyc	hological Rehabilitation	
Envi	ronmental Rehabilitation	
Relo	cation	
Resto	oration of Damaged Cultural Heritage Sites, their Precincts and Museums	190
Proje	ect Management	190
Infor	mation, Education and Communication	190
Dispu	ute Resolution Mechanisms	191
Imple	ementing Initiatives for Recovery of Reconstruction Costs	191
	r 10: Financial Arrangements	
	Funds at National Level	193
	National Disaster Risk Management Funds (NDRMF)	193
Prim	e Minister's National Relief Fund (PMNRF)	193
	State Level	193
State	Disaster Risk Management Funds (SDRMF)	193
Chie	f Minister's Relief Fund	194
Othe	r Sources of Funds	194
a.	Public Private Partnership	194
b.	Grant in Aid	
c.	Corporate Social Responsibility (CSR) Funds	194
d.	Loan	195
e.	Disaster Bonds	195
f.	Donations	195
g.	Recovery Measures -Introduction of Special Tax	
h.	Funds Disbursement and Audit	195
Chapte	r 11: Plan Maintenance	197
	Trainings and drills	197
	Plan Testing	197
	Mock Exercise	198
	Review ,Revise& Updation of Plan	198

List of Table

Table 2.1: Administrative Profile of Gujarat
Table 2.2: Geographical Profile of Gujarat
Table 2.3: Demography of Gujarat
Table 2.4: Religion wise Population
Table 2.5: Social Indicators of SC and ST Population
Table 2.6: Sectors of Economy
Table 2.7: Climatic Sub Regions of Gujarat
Table 3.1: Seasonality of Hazards
Table 3.2: Classification of Marginal workers
Table 3.3: Classification of Disabled population
Table 3.4: Status of Residential Households
Table 3.5: Status of Residential-cum-other use Households
Table 3.6: Infrastructural Capacity
Table 4.0: Institutional Mechanism at State Level
Table 5.1: Earthquake/Seismic
Table 5.2: Cyclones and wind
Table 5.3: Tsunami
Table 5.4: Flood
Table 5.5: Urban Flood
Table 5.6: Nuclear and Radiological Disaster
Table 5.7 Chemical (Industrial) Disaster
Table 5.8 Fire Hazard
Table 5.9 Biological and public Health Emergencies
Table 6.1: Checklist for EFC Format
Table 6.2: Checklist for DPR Format.
Table 7.1 Training of various stakeholders
Table 8.1: Agencies Competent for Issuing Disaster Specific Early Warning
Table 8.2 Emergency Support Functions

List of Figure

Figure 2.1: Geographical Profile of Gujarat
Figure 2.2: Tribal Population in Gujarat
Figure 3.1: Gujarat Earthquake Hazard Risk Zonation Map
Figure 3.2: Gujarat Cyclone Hazard Risk Zonation Map
Figure 3.3 Gujarat Storm Surge Hazard Risk Zonation Map
Figure 3.4: Gujarat Drought Hazard Risk Zonation Map
Figure 3.5: Gujarat Flood Hazard Risk Zonation
Figure 3.6: Gujarat Tsunami Hazard Risk Zonation
Figure 3.7: Areas of Gujarat Vulnerable to Industrial and Chemical Hazard
Figure 8.1 Trigger Mechanism in case of Early Warning
Figure 8.2: Trigger Mechanism without Early Warning
Figure: 8.3: Incident Response System

List of Annexure

Annexure 1	List of major disaster which affected the State	199
Annexure 2	List of equipments provided to collectors/Muncipal Commissioner	203
Annexure 3	List of codes/ Building for Safety of Building/Stractures	216
Annexure 4	Checklist for natural & man-made hazards impact assessment	220
Annexure 5	Facilities at SEOC,Gandhinagar	223
Annexure 6	Roles & Responsibilities of each section	224
Annexure 7	Detailed guidelines for providing relief	237
Annexure 8	Details of Relief Kit, Household Kit and Family ration	238
Annexure 9	Relief Memorandum	240

List of References

Abbreviations

A A T	A impart Anthonity of Ladia
AAI ACWC	Airport Authority of India Area Cyclone Warning Centre Addl
	Area Cyclone Warning Centre Addl.
DGP	Addl. Director General of Police
AERB	Atomic Energy Regulatory Board
AIR	All India Radio.
AMCDRR	Asian Ministerial Conference on Disaster Risk Reduction
ANSS	Advanced National Seismic System
ASC	Amateur Seismic Center
AWS	Automatic Weather Stations
AYUSH	Ayurveda, Yoga and Naturopathy, Unani, Sidha, Homeopathy
BARC	Bhabha Atomic Research Centre
BASE	Building Assessment and Structural Surveillance
BIS	Bureau of Indian Standard
BISAG	Bhaskaracharya Institute for Space Applications and Geo-Informatics
BMTPC	Building Materials and Technology Promotion Council
BPL	Below Poverty Line
BPR	Bottom Pressure Recorder
BRO	Border Road organization
CAPF	Central Armed Police Forces
CBO	Community Based Organizations
CBRI	Central Building Research Institute
CBRN	Chemical, Biological, Radiological and Nuclear
CERT-In	the Indian Computer Emergecy Response Team
CCA	Climate Change Adaptation
CCD	Climate Change Department
CCG	Central Crisis Management Group
CDEF	Civil Defense Emergency Force
CDHO	Chief District Health Officer
CDMA	Code Division Multiple Access
CDO	Central Design Organization
CEO	Chief Executive Officer
CFO	Chief Fire Officer
CHC	Community Health Center
CMG	Crisis Management Group
СоН	Commissioner of Health
COR	Commissioner of Relief
СР	Commissioner of Police
CRZ	Coastal Regulation Zone
CSO	Civil Society Organisation
CSR	Corporate Social Responsibility
CWC	Central Water Commission
CWCs	Cyclone Warning Centres
CWDS	Cyclone Warning Dissemination System

DAE	Department of Atomic Energy
DC	District Collector
DCF	Deputy Conservator of Forest
DCG	District Crisis Management Group
DCR	District Control Room
DDO	District Development Officer
DEOC	District Emergency Operation Centre
DEOC	District Emergency Operation Centre
DFO	District Forest Officer
DG	Director General
DGHS	Directorate General of the Health Services
DGP	Director General of Police
DIG	Deputy Inspector General
DISH	Director Industrial Safety & Health
DM	District Magistrate
DM	Disaster Management
DMP	Disaster Management Plan
DoR	Director of Relief
DP&S	Directorate of Purchase and Stores
DPIIT	Department of Promotion of Industry and Internal Trade
DPO	District Project Officer
DPR	Detailed Project Report
DRM	Disaster Risk Management
DRMP	Disaster Risk Management Programme
DRR	Disaster Risk Reduction
DST	Department of Science & Technology
EFC	Expenditure Finance Committee
EHRA	Earthquake Hazard and Risk Assessment
EMS	Emergency Medical Services
EMSA	Emergency Medical Services Authority
EOC	Emergency Operation Centre
ERC	Emergency Response Center
ERTs	Emergency Response Teams
ESF	Emergency Support Function
F&E Dept.	Forest and Environment Department
F&ES	Fire and Emergency Services
GACC	Global Anthropogenic Climate Change
GACC	Global Adaptation Climate Change
GAD	General Administration Department
GDCR	General Development Control Regulations
GDP	Gross Domestic Product
GEB	Gujarat Electricity Board
GERI	Gujarat Engineering Research Institute
GIDC	Gujarat Industrial Development Corporation
	J J . erepatient e erperation

GIDM	Gujarat Institute of Disaster Management
GIS	Geographic Information System
GMB	Gujarat Maritime Board
GMCSL	Gujarat Medical Corporation Services Limited
GoG	o 1
Gol	Government of Gujarat Government of India
GPCB	
GSDMA	Gujarat Pollution Control Board Gujarat State Disaster Management Authority
GSI GSM	Geological Survey of India
GSM GSRTC	Global System for Mobile Communications
GSWAN	Gujarat State Roads Transport Corporation Gujarat state Wide Area Network
GUVNL	Gujarat Urja Vikas Nigam Limited
GWSSB	Gujarat Water Supply & Sewerage board
HAZCHEM	Hazardous Chemicals
HBJ	Hazira-Bijapur-Jagdishpur
HF/VHF	High Frequency/Very High Frequency
HoD	
1102	Head of Department Headquarter
HQ HRVA	Hazard Risk and Vulnerability Assessment
HRVCA	Hazard Risk Vulnerability and Capacity Assessment
HWB ICG	Heavy Water Board Indian Coast Guard
ICG	Indian Council of Medical Research
IDRN	India Disaster Resource Network
IDKN	Information, Education and Communication
IIPH	Indian Institute of Public Health
IMD	India Meteorological Department
INCOIS	Indian National Centre for Ocean Information Services
IND	Improvised Nuclear Device
IND INSAT	Indian National Satellite System
INSAT	Indian Oil Corporation
IRCS	Indian Red Cross Society
IRIS	Incorporated Research Institute for Seismology
IRS	Incident Response System
IRT	Incident Response Team
ISR	Institute of Seismological Research
ISRO	Indian Space Research Organization
ICT	Information and Communication Technology
ITCS	Information Communications Technology System
JSSK	Janani Shishu Suraksha Karyakram
KAPS	Kakrapar Atomic Power Station
LCG	Local Crisis Management Group
LEG	Long Period Averages
MAFW	Ministry of Agriculture and Farmers Welfare
TATUT AA	winnsuly of Asgriculture and I armers wellate

МАН	Major Accident Hazard
MCA	Ministry of Corporate Affairs
MoEF&CC	• I
	Ministry of Environment, Forests and Climate Change
MFIN	Microfinance Institutions Network
MFRs	Medical First Responders
MHA	Ministry of Home Affairs
MHFW	Ministry of Health and Family Welfare
MHIPE	Ministry of heavy Industries and Public Enterprises
MHUA	Ministry of Housing and Urban Affairs
MLA	Member of Legislative Assembly
MoA	Ministry of Agriculture
MoC & F	Ministry of Chemicals and Fertilizers
MoC & I	Ministry of Commerce and Industry
MOCA	Ministry of Civil Aviation
MoD	Ministry of Defence
MOES	Ministry of Earth Sciences
MoF	Ministry of Finance
MoLE	Ministry of Labour and Employment
MOM	Ministry of Mines
MoP & NG	Ministry of Petroleum and Natural Gas
MOR	Ministry of Railways
MOSPI	Ministry of Statistics and Program Implementation
MoSRT & H	Ministry of Shipping, Road Transport and Highways
MP	Member of Parliament
MRTH	Ministry of Road Transport & Highways
MSDS	Material Safety Data Sheet
MSK	Medvedev–Sponheuer–Karnik scale
MSZ	Makran Subduction Zone
NBC	National Building Codes
NCC	National Cadet Corps.
NCCR	National Centre for Coastal Research
NCMC	National Crisis Management Committee
NDMA	National Disaster Management Authority
NDMF	National Disaster Mitigation Fund
NDRF	National Disaster Response Force
NDRF	National Disaster Response Fund
NDRMF	National Disaster Risk Mitigation Fund
NEC	National Executive Committee
NEIC	National Earthquake Information Center
NFHS	National Family Health Survey
NGO	Non Government Organization
NGRI	National Geophysical Research Institute
NHAI	National Highway Authority of India
NIC	National Information Center

NIDM	National institute of Disaster Management
	National institute of Disaster Management
NIO	North Indian Ocean
NIOT	National Institute of Ocean Technology
NPCIL	Nuclear Power Corporation of India Ltd
NSRA	Nevada Seismic Research Affiliates
NSS	National Service Scheme
NSSP	National School Safety Programme
NWRWS	Narmada Water Resources Water Supply
NYK	Nehru Yuva Kendra
ONS	Observational Network Stations
PCR	Police Control Room
PESO	Petroleum and Explosive Safety Organization
PFZ	Potential Fishing Zones
PGA	Peak Ground Acceleration
PHC	Primary Health Center
PMNRF	Prime Minister's National Relief Fund
РМО	Prime Minister's Office
PMS	Probable Maximum Surge
PPP	Public private Partnership
PRI	Panchayati Raj Institutions
PS	Principal Secretary
QCI	Quality Council of India
QRMT	Quick Reaction Medical Team
R & B Dept.	Roads & buildings Department
R & R	Rehabilitation & Reconstruction
RD	Revenue Department
RDD	Radiological Dispersal Device
RED	Radiation Exposure Device
RGN	Rain-Gauge Network
RMSA	Rastriya Madhyamik Shiksha Abhiyan
RMSC	Regional Specialised Meteorological Centre
RSBY	Rashtriya Swasthya Bima Yojana
RSO	Radiological Safety Officer
RTA	Road Transport Authority
RTSMN	Real Time Seismic Monitoring Network
RWA	Resident Welfare Associations
SAR	Search and Rescue
SCG	State Crisis Management Group
SCMC	State Crisis Management Committee
SDG	Sustainable Development Goals
SDMA	State Disaster Management Authority
SDMF	State Disaster Mitigation Fund
SDMP	State Disaster Management Plan
SDRF	State Disaster Response Force

SDRF	State Disaster Response Fund
SDRM	-
	State Disaster Risk Mitigation Fund
SDRN	State Disaster Response Network
SED	Site Emergency Director
SEOC	State Emergency Operation Centre
SFAC	Standing Fire Advisory Committee
SIRD	State Institute of Rural Development
SJ&ED	Social Justice and Empowerment Department
SMS	Short Messaging Service
SOG	Standard Operations Guide
SOP	Standard Operating Procedure
SPIPA	Sardar Patel Institute of Public Administration
SRPF	State Reserve Police Force
SSNNL	Sardar Sarovar Narmada Nigam Limited
SST	Sea Surface Temperature
SWP	Single Wire Protocol
TEOC	Taluka Emergency Operation Centre
UD & UHD	Urban Development & Urban Housing Department
UDA	Urban Development Authority
UDD	Urban Development Department
UFDM	Urban Flood Disaster Management
UHC	Urban Heath Centers
UNDP	United Nations Development Programme
UNICEF	United Nations International Children's Emergency Fund
UNDRR	United Nations Office for Disaster Risk Reduction
UNOEIWG	UN General Assembly Open-Ended Intergovernmental Working Group
UTs	Union Territories
VSAT	Very Small Aperture Terminal
WALMI	Water and Land Management Institute
WAN	Wide Area Network
WASMO	Water and Sanitation Management Organization
WE&CDD	Women and Child Department
WHO	World Health Organization
WRD	Water Resource Department

Chapter 1: Introduction

SDMP 2023-24

Background

The National Disaster Management Act, 2005 (NDM Act 2005) lay down institutional and coordination mechanism for effective Disaster Management (DM) at the national, state, district and local levels. Government of Gujarat has also enacted Gujarat State Disaster Management Act, 2003 (GSDM Act 2003) which preceded the NDM Act 2005 and created a multi-layered institutional system consisting of Gujarat State Disaster Management Authority (GSDMA) headed by the Hon. Chief Ministers and suitable mechanism at below levels i.e. at District, Municipal Corporation, Taluka, City/Town and village level. The institutional arrangements have been set up consistent with the paradigm shift from the relief-centric approach of the past to a proactive, holistic and integrated approach for Disaster Risk Reduction (DRR) by way of strengthening disaster, prevention mitigation, preparedness and response.

The NDM Act 2005 defines disaster as;

"Disaster means 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 lifeor 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."

The losses and impacts that characterise disasters usually have much to do with the exposure, vulnerability and coping capacity of people and places as they do with the severity of the hazard event. Therefore, there is no such thing as a natural disaster, but disasters often follow natural hazards.

Need for the Plan

As per Section 15 (3) of The Gujarat State Disaster Management Act, 2003, "The Authority shall prepare, or cause to be prepared and maintain a master plan for the State". Section 23 (1) of The Disaster Management Act, 2005 also reads "There shall be a plan for disaster management for every State to be called State Disaster Management Plan". Apart from these statutory requirements, the hazard profile and disaster history of the state demands for a comprehensive state disaster management plan to be in place for coordinated and streamlined management of disaster in the state.

Disaster Risk Reduction Post-2015

Post 2015, there has been a significant shift from the approach of Managing Disasters to Managing Risk. The three landmark global agreements viz. – the Sendai Framework for Disaster Risk Reduction 2015-30 (SFDRR), Sustainable Development Goals (SDG) and the Paris Agreement (CoP 21) set the stage for future global action on Disaster Risk Reduction (DRR), sustainable development and climate change.

Sendai Framework of Actions for Disaster Risk Reduction 2015-2030

The Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR) was adopted at the Third United Nations World Conference on Disaster Risk Reduction held in Sendai, Japan in March 2015. The SFDRR is document which outlines four priorities for action to achieve 7 targets, which in turn would lead to one outcome that is- substantial reduction of disaster risk and losses in lives, livelihoods, health, economy of persons, businesses, communities and countries. India is a signatory to the Sendai Framework for a 15-year, voluntary, non-binding agreement which recognizes that theState has the primary role to reduce disaster risk, but that responsibility should be shared with other stakeholders including local government, the private sector and other stakeholders.

The Four priorities of actions are:-

- 1. Understanding Disaster Risk
- 2. Strengthening Disaster Risk Governance to Manage Disaster Risk
- 3. Investing in Disaster Risk Reduction for Resilience
- 4. Enhancing Disaster Preparedness for Effective Response and to 'Build Back Better' in Recovery, Rehabilitation and Reconstruction

The seven global targets are:-

- A. Substantially reduce global disaster mortality by 2030, aiming to lower the average per 100,000 global mortality rate in the decade 2020-2030 compared to the period 2005-2015
- B. Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 in the decade 2020-2030 compared to the period 2005-2015
- C. Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030
- D. Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030
- E. Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020
- F. Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this Framework by 2030
- G. Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030

Sustainable Developmental Goals

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by all United Nations Member States in September 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. The 17 SDGs are integrated-that is, they recognize that action in one area will affect outcomes in others, and that development must balance social, economic and environmental sustainability. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests. In order to make the 2030 Agenda a reality, broad ownership of the SDGs must translate into a strong commitment by all stakeholders to implement the global goals.

Paris Agreement on Climate Change Action and Disaster Risk Reduction (CoP 21)

The CoP 21or the Paris Climate Conference held in December, 2015 led to a new international climate agreement, applicable to all countries, aiming at "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre -industrial levels, recognizing that this would significantly reduce the risks and impacts of climatechange". The Paris Agreement recognized the need loss and damage associated with the effects of climate change. The agreement identifiedareas of cooperation central to DRR and called for investments to address the underlyingrisk drivers associated with rising greenhouse gas (GHG) emission levels and to inspire innovation low-carbon growth.

The State Disaster Management Plan (SDMP) has tried to envisage coherence across the states Efforts for DRR, sustainable development, and the actions in response to climate change.

Prime Minister's 10 Point Agenda towards Disaster Risk Reduction

The Prime Minister, Shri Narendra Modi, listed a Ten -Point Agenda in his inaugural speech at the Asian Ministerial Conference on Disaster Risk Reduction 2016, held in New Delhi in November 2016 (AMCDRR), which has also been incorporated in the SDMP. The ten key elements consist of thefollowing:

- 1. All development sectors to imbibe principles of Disaster Risk Management
- 2. Work towards risk coverage for all-starting from poor households to small and medium enterprises to multi-national corporations to nation states.
- 3. Encourage greater involvement and leadership of women in disaster risk management
- 4. Invest in risk mapping globally related to hazards such as earthquakes based on widely accepted standards and parameters.
- 5. Leverage technology to enhance the efficiency of disaster risk management efforts.
- 6. Develop a network of universities to work on disaster issues.
- 7. Utilise the opportunities provided by social media and mobile technologies.
- 8. Build on local capacity and initiative. Response agencies need to interact with the communities and make them familiar with the essential drill of disaster response.
- 9. Ensuring that disaster learning is well documented.
- 10. Bring about greater cohesion in international response to disasters.

Vision

Making disaster resilient Gujarat by enhancing the capacity of all stakeholders to respond to disasters in a planned way to minimize loss of lives, livelihoods and economic loss in different forms including critical infrastructure, basic services including health and educational facilities along with social, cultural & environmental loss.

Objectives of the Plan

- i) To assess various hazard, vulnerability, capacity and risk associated with the state.
- ii) To lay down various measures and guidelines for prevention and mitigation.
- iii) To lay down preparedness measures for all stakeholders.
- iv) To build the capacity of all stakeholders in the state to cope with the disasters and promote community based disaster management.
- v) To provide clarity on roles and responsibilities for all stakeholders concerned with various phases of disaster management.
- vi) To ensure co-ordination and promote productive partnership with all other agencies related to disaster management.
- vii) To mainstream disaster management concerns into the developmental planning process.
- viii) Ensuring DRM is socially inclusive, gender sensitive and empowering.
- ix) Strengthen efforts to mainstream DRR into water management and reduce the likely impacts of water-related hazards.
- x) To develop efficient, streamlined and rapid disaster response and relief mechanism in the state.
- xi) Prevent disasters and achieve substantial reduction of disaster risk and losses in lives, livelihoods, health, and assets (economic, physical, social, cultural and environmental).

- xii) Invest in disaster risk reduction for resilience through structural, non-structural and financial measures, as well as comprehensive capacity development.
- xiii) To commence recovery programme as an opportunity to build back better in case of a future disaster by incorporating community in the programme.
- xiv) Promote the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures to prevent and reduce hazard exposure and vulnerabilities to disaster.
- xv) Strengthen disaster risk modeling, assessment, mapping, monitoring and multi-hazard early warning systems.

Effective use of science, technology and traditional knowledge in all aspects of DRM.

Plan Activation

The disaster response structure will be activated on the receipt of disaster warning/on the occurrence of the disaster. The occurrence of disaster may be reported by the concern monitoring authority to the Commissioner of Relief/GSDMA by the fastest means. The Commissioner of Relief (COR) will activate all departments for emergency response including the State EOC, District EOCs and Regional ERCs. Also, they will issue instructions to include the following details:

- Exact quantum of resources (in terms of manpower, equipments and essential items from key departments/stakeholders) that is required.
- The type of assistance to be provided
- The time limit within which assistance is needed
- Details of other Task/Response Forces through which coordination should take place

The State EOC, ERCs and other control rooms at the State level as well as district control rooms should be activated with full strength. The State Government may publish a notification in the official gazette declaring such areas to be disaster-affected area under GSDMA Act (Section 32 (2) (a)). Once the situation is totally controlled and normalcy is restored, the COR declares End of Emergency Response and issues instructions to withdraw the staff deployed in emergency duties.

Plan Implementation

Both the DM Act 2005 and GSDM Act 2003 enjoins state governments to make provisions for the implementation of the disaster management plans. The Section 15 of GSDM Act 2003 states that every Department of the Government of Gujarat shall make provisions, in its annual budget, for funds for the purposes of carrying out the activities and programmes set out in its disaster management plan. The Act also mandates that every Department of the Government of the Government and programmes a departmental Disaster Management Plan in accordance with the SDMP.

Chapter 2: State Profile: Understanding the Context

The State of Gujarat was formed on 1st May 1960. It is located on the western most part of India and shares border with Pakistan and Rajasthan in the north east, Madhya Pradesh in the east, and Maharashtra and the Union territories of Diu, Daman, Dadra and Nagar Haveli in the south. The Arabian Sea borders the state both to the west and the south west. As per 2011 census, the population of the State comes to nearly 6.03 crores, which is around 5 % of the population India¹. Literacy rate in Gujarat has seen upward trend and is 79.31% as per 2011 population census. Of that, male literacy stands at 87.23% while female literacy is at 70.73%. Urban Population of the State is 42.6%, which used to be at 37.4% in 2001. Rural population in the state in 2011 fell to 57.4% from 62.6% in 2001 Ahmedabad is the most populated District in the State, with 7.20 million people.

Gujarat has the longest coastline of about 1,600 Km in India which makes it vulnerable to numerous hydro-meterological viz. Cyclone, storm surge, Gusty winds, Heavy rainfall etc. Gandhinagar, is the capital city of Gujarat and is located close to Ahmedabad, the commercial capital of Gujarat.

The State of Gujarat can be divided in to four major parts Central Gujarat, North Gujarat, Saurashtra & Kutch, and South Gujarat.

Administrative Unit	Number	
Districts	33	
Talukas	252	
Municipal Corporations	8 (Ahmadabad, Surat, Vadodara, Rajkot, Bhavnagar,	
	Jamnagar, Junagadh and Gandhinagar)	
Municipalities	159	
Villages	18584	

Administrative Profile

Table 2.1: Administrative Profile of Gujarat

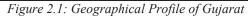
Geographical Profile

The total geographical area of the state is 196,024 km². It stretches from 20-6' N to 24-42' N latitude and from 68-10'E to 74-28' E longitude.

Geographical Regions	 Peninsula of Saurashtra - Hilly track sprinkled with low mountains Kutch – Barren and rocky in north-west Mainland (from Aravalli hills in north to Damanganga river in south) – a level plain of alluvial soil 	
Connected States/UTs	 Rajasthan in north east Madhya Pradesh in east Maharashtra and the Union Territories of Daman, Diu and Nagar Haveli in south 	
Major Rivers	 Sabarmati and Mahi (Cenrtal& North Gujarat) Mithi, Khari, Bhadar, Shetrunji and Bhogavo (Saurashtra) Narmada, Tapi, Purna, Ambika, Auranga and Damanganga (South Gujarat) 	

¹<u>https://gujaratindia.gov.in/state-profile/demography.htm</u>

Mountains	 The northern and eastern borders are made up of mountains which are the tails or offshoots of outside ranges like the Aravallis, Vindhyas, Satpuras and Sahyadris Saurashtra contains two parallel ranges, one stretching from east to west and the other from north-east to south-west The Girnar which is the highest mountain in the state (1,145 metres) forms a part of the range south of the Bardo and is about 160 km in length. 	
Deserts	Kutch on the north-east is barren and rocky and contains the famous Rann (desert) of Kutch, the big Rann in the north and the little Rann in the east	
Forest cover	Total forest 14,757 km ² (9.66% of total geographical area)	
	Very dense 378 km ² ; moderately dense 5,200 km ² ; Open Forest 9,179	
	km ² (As per State of Forest Report 2017) ²	
Mangrove Cover	1,103 km ² (As per State of Forest Report 2017)	
Coastline	Over 1600 km	
	Eisens 2.1. Communication Description of Continuent	



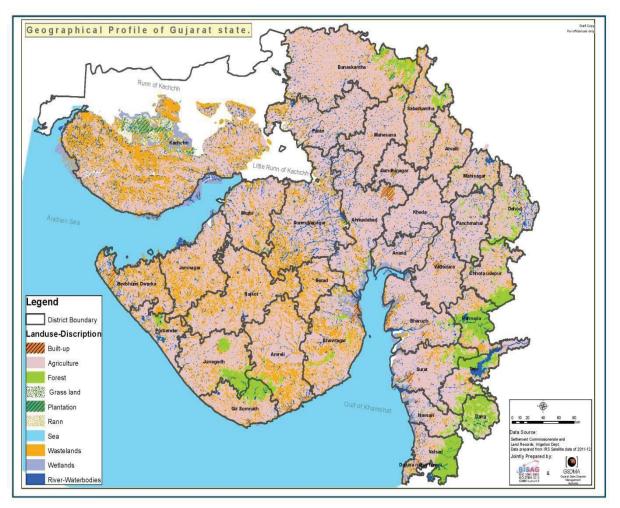


Table 2.2: Geographical Profile of Gujarat

²²https://forests.gujarat.gov.in/forest-cover.htm

Demography

Population	604.40 lakhs		
1 opulation	Male – 314.91 lakhs	Female – 289.48 lakhs	
Rural Population	346.95 lakhs (57.40 %)		
in in the parameters in the pa	Male – 177.99 lakhs Female – 168.95 lakhs		
Urban Population	257.45 lakhs (42.60%)		
r in r	Male – 136.92 lakhs	Female – 120.53 lakhs	
Child Population (0-6 yrs)	77.77 lakhs (12.87%)		
	Male – 41.15 lakhs	Female – 36.62 lakhs	
	Rural – 48.25 lakhs	Urban- 29.52 lakhs	
Population Density	308 per km ²		
Decadal Growth Rate	19.3% (2001-2011)		
• Rural	9.3% (2001-2011)		
• Urban	36.0 % (2001-2011)		
Sex Ratio	919 females per 1,000 males		
• Rural	949		
• Urban	880		
• Child (0-6)	890		
Literacy Rate	78 %		
	Male - 85.8 %	Female – 69.7 %	
• Rural	71.7 %		
	Male – 81.6 %	Female – 77.2%	
• Urban	86.3%		
	Male - 91.0 %	Female – 81.0 %	
Effective Literacy Rate	67.99		
Crude Birth Rate	20.8 per '000 population (SRS 2013)		
Crude Death Rate	6.5 per '000 population (SRS 2013)		
Infant Mortality Rate (IMR)	36 per '000 live birth (SRS 2013)		
Maternal Mortality Rate (MMR)	122 per 1 lakh live births (SRS 2010-12)		
Natural Growth Rate	14.3 per '000 population (SRS 2013)		

Table 2.3: Demography of Gujarat; (Source: Census of India)

Social Profile

Religion

Majority of the population in the state practices Hinduism. Religion wise population of the state ismentioned in Table 2.4.

Religion	Percent of Total Population (2001)
Hindu	89.09 %
Muslim	9.06 %
Jains	1.04%
Christian	0.56 %
Sikhs	0.09 %
Buddhists	0.04 %
Others	0.06 %

Table2.4: Religion wise Population

Caste and Tribes

As per Census 2011, the population of Scheduled Castes and Scheduled Tribes in the state is 40.74 lakh (6.7 %) and 89.17 lakh (14.8 %) respectively. The tribal population is concentrated in the 14 eastern districts, from Mt. Abu on the Rajasthan border in the north to Dahanu district on the Maharashtra border in the south. The tribal sub plan (TSP) area constitutes 18% of the state's geographical area. There are 11 major tribes in Gujarat; the largest Bhil constituting 47.89% of the state's tribal population. The 5 Particularly Vulnerable Tribal Groups number about 1,44,593 (as per Census 2011).

Social Indicators	Scheduled Castes		Scheduled Tribes	
Population (Lakhs)	Male- 21.10	Female- 19.64	Male- 45.01	Female- 44.16
	Rural- 22.82	Urban- 17.93	Rural- 80.22	Urban- 8.95
Literacy Rate	79.18 %		62.48%	
	Male- 87.87%	Female- 69.87%	Male- 71.68%	Female- 53.16%
Sex Ratio	931		981	

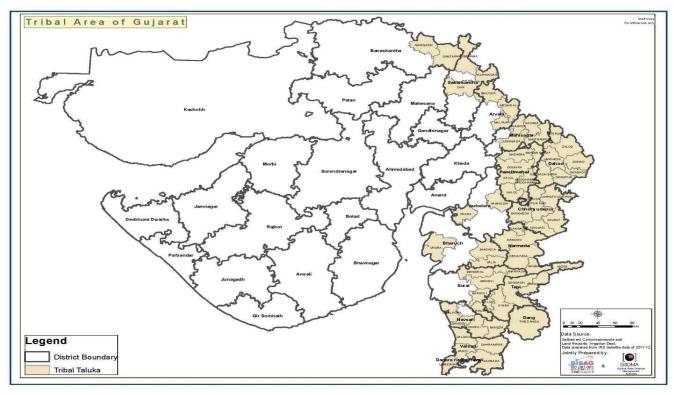


Table 2.5: Social Indicators of SC and ST Population

Figure 2.2: Tribal Population in Gujarat³

Economic Profile

Gujarat is one of the most industrially developed states having, the highest geographical area under SEZ development in India. Gujarat government has taken effective steps to grant perm its, licenses and environment clearance speedily, as a result more and more new factories are being setup. Agricultural growth is highly influenced by cash crops such as cotton, oilseeds and tobacco and increased crop productivity. Due to decisive steps taken by Gujarat government in agriculture sector, noticeable growth has been achieved despite water scarcity in the state. Continuously rising milk production and significant exports of fish have dominated the growth in Animal husbandry sector.

³<u>https://tribal.gujarat.gov.in/tribal-demography-of-gujarat#</u>

Gujarat accounts for 7.9% share to national GDP. According to the Department of Promotion of Industry and Internal Trade (DPIIT), Gujarat attract US \$ 3.461 billion (Rs. 24012 crore) FDI in 2019-20 (April-September) as against US \$ 1.803 billion (Rs. 12618 crore) FDI in 2018-19. Total FDI in the state of Gujarat reached US\$ 24.006 billion during April 2000 to September, 2019. Gujarat accounted for about 5.4% share in the overall FDI inflows in India.⁴

Gujarat is 5th largest state in milk production in India. 7.7% of milk production of the country is from Gujarat in the year 2018-19. Gujarat enjoys the status of industrially developed state of India with its

16.8 per cent share to Country's industrial output, the 1st largest among the states of India. Gujarat is a leader in exports with more than 20 percent share to India's aggregate exports. In which, the ports are most important contributor. The cargo handled by minor & intermediate ports in Gujarat has nobaly increased from 27.8 lakh tones in 1980-81 to 3991.97 lakh tonne in 2018-19. Gujarat has been a leading state on the front of harnessing renewable energy sources with its 10.56per cent share in Country's total Grid Interactive Renewable power installed capacity as on 2018. Out of this, there is

16.94 per cent share in total wind power capacity of India.5

Main occupation

The occupation in the state is business, agriculture and industries workers. As per Population Census 2011, the total number of workers (who have worked for at least one day during the reference year) is 247.68 lakhs. Of this, 180.01 lakh workers are males and 67.67 lakhs are females. The workers have registered a growth of 16.5 per cent during the decade. 155.7 lakh workers are in the rural areas and 92.0 lakh workers are in the urban areas. The female workers in rural and urban areas are 54.0 lakhs and 13.7 lakhs respectively.

Income Pattern

The Per Capita Income at current prices has been estimated at Rs. 96976 in 2012-13 as against Rs. 87175 in 2011-12, showing an increase of 11.2% during the year.

Sectors of Economy

Sector of Economy	Detail of Sector	Production/ Quantity (Annually)	
Agriculture	Food grains production	80.72 lakh tones	
	Cotton production	87.08 lakh bales (170 kgs. each)	
	Oil seeds production	74.23 lakh tones	
	Fruits	92.26 lakh tones	
	Major vegetables grown	Onion, Brinjal, Tomato, Okra and Cucurbits	
		125.40 lakh tones	
	Spices	Cumin, Fennel and Garlic 8.24 lakh tones	
	Flowers	1.96 lakh tones	
Animal Husbandry	Livestock population	282.41 lakhs	
	Milk production	144.92 lakh tones	
	Fish production	8.42 lakh tones (6.99 lakh tones marine and	
	_	1.43 lakh tones inland)	
Water Resources	Irrigation potential surface and	71.27 lakh hectare	
	ground water		
Industries	No of registered factories	28556	
	No. of MAH Factories	402	
	Employment in factories	18.26 lakh	

The key sectors in the economy of the state and the respective production are:

⁴<u>https://invest-india-revamp-static-files.s3.ap-south-1.amazonaws.com/s3fs-public/2020-03/Gujarat%20Socio%20Economic%20review.pdf</u>

⁵ Socio Economic review of Gujarat 2019-2020

Sector of Economy	Detail of Sector	Production/ Quantity (Annually)	
Mining	Agate, Steatite (soap stone), Gypsum, Limestone, Lignite, Bauxite, Laterite,		
_	Dolomite, China and other clay, Bent mite, Quartz, Silica and sand, Chalk,		
	Crude, and Natural Gas		
Electricity	Installed capacity 27509 MW		
	Total generation of electricity121939 million units (2018-1)		
	Total consumption92520 million units (2018-19)		
	Per capita consumption	2208 units	

*Table 2.6: Sectors of Economy*⁶

Climate

The maximum temperature ranges between 26°C and 45°C while the minimum temperature varies between 10.8°C and 27.4°C. Gujarat's agro climate is very heterogeneous and constitutes about 20 per cent of arid and 9 per cent semi-arid areas of the country. Vast area of Saurashtra Kutch and North Gujarat falls under Arid to Semi-arid. It comprises low and erratic rainfall. The winter is mild cold, whereas summer is hot.

Agro climate of the state divided in to eight sub regions in respect of rainfall, temperature, humidity and geographical situation.

Sub Region	District	Rainfall (mm)	Types of Soil
Southern Hills	Dang, Valsad, Navsari	1500 and above	Deep black with patches of
			costal alkali Lateritic and
			medium black soil
South Gujarat	Surat, Bhrauch, Narmada	1000 to 1500	Deep black clayey soils
Middle Gujarat	Panchmahal, Dahod, Vadodara,	800 to 1000	Deep black to loamy sand
	Kheda, Anand		(Goradu)
North Gujarat	Ahemdabad, Gandhinagar,	625 to 875	Sandy loan to sandy soils
	Sabarkantha, Bansantha, Patan,		
	Mehsana		
North Arid Zone	Kutch	250 to 500	Sandy and saline saols
North Saurastra	Bhavnagar, Jamnagar,	400 to 700	Shallow medium black
	Surendranagar, Amreli, Rajkot		
South Saurastra	Junagadh, Porbandar	645 to 700	Shallow medium black &
			Calcareous soil
Bhal& Coastal	Khambat, Bhal Coastal Area of	625 to 1000	Medium black poorly
Areas	Surat &BhrauchOlpad, Vagra,		drained and saline soil
	Hansot, Alater, Dholka,		
	Dhanduka, Vallbhipur,		
	Bhavnagar &Limbadi Talukas		
Table 2.7: Climatic Sub Regions of Gujarat			

Cultural Profile

Gujarat is a melting pot of varied cultures, traditions and religions. Gujarat's long coastline had attracted sea-farers through the ages, lured by the rich prospects of trade. The Arabs, Portuguese, Dutch, Mughals, British and Parsis have also left their marks on Gujarat's culture. Gujarati people celebrate all regional and national fairs and festivals with equal fervour. Gujarat's vibrant culture is also evident in the various dance forms, music, art and crafts and cuisine.

Languages

Gujarati is both the official and local language of the State. Surti, Charotari, Kathiawai, Kutchi, Marathi, Sindhi, Punjabi etc. are also spoken in the State.

⁶ Socio Economic Survey of Gujarat 2019-20

Costumes

Depending on rural or urban area, varied outfits are worn by people of Gujarat. Generally, men wear trousers and shirts or t-shirts and younger women wear normal western outfits like skirts, dresses, jeans, etc. Older women usually wear saris or *salwar kamiz*. In rural parts, people usually wear dhotis and *kurtas* or *bandis*. Even traditional outfits like *chania choli* for women and *kedia* dress for men are worn in rural areas or duringcultural festivals.

Food

Majority of the Gujaratis are vegetarian. The diet mainly consists of cereals, pulses, green vegetables, fruits, milk, ghee, butter-milk, etc. A variety of cuisine sub-ordinates like pickles, chutney, papad, yoghurt, etc serveas fillings on main menu.

Housing

Gujarati urban living offer sophisticated living lifestyles. Well ventilated, furnished, glazed tiled or marbled homes and flats are found in Gujarat. Rural living is flourishing with development. However, the traditional hut dwellings and wooden houses still exist with a rich heritage feel and ethnic living. Wood carved houses with the '*Chabutras*' for bird feeding are the beauty of many traditional homes in Gujarat.

Fairs and Festivals

Festivals in Gujarat signify socio-cultural-religious and even economic aspirations of the people of Gujarat. Gujarat- the 'Land of the Festivals' celebrates more than 3500 fairs and festivals round the year. Among the most popular festivals celebrated are Navratri, Deepavali, Kite Festival, Shivratri, Holi, Janmashtmi, Ganesh Chaturthi and Mohorram-Ramzan. Some of the popular fairs include BhavnathMahadev Fair, Chitra- Vichitra Fair, Dangs Durbar Fair, Dhrang Fair, Tarnetar Fair, Shamlaji Fair, Vautha Fair, Modhera Dance Festival, Kutch Utsav, Ambaji Purnima Fair, etc.

Chapter 3: Hazard, Vulnerability, Capacity And Risk Analysis

Hazards Analysis

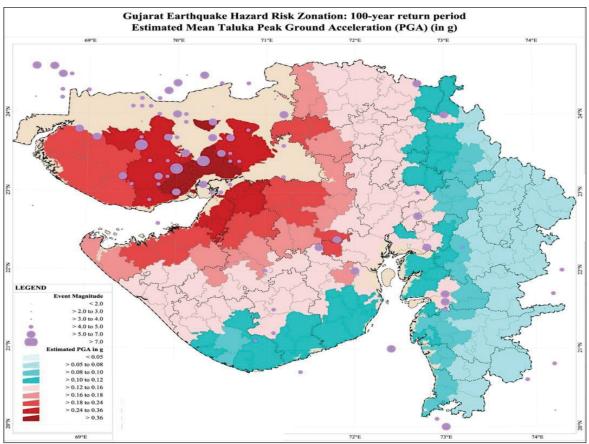
Owing to its geo-climatic, geological and physical features, Gujarat is vulnerable to all major natural hazards namely, drought, flood, cyclone, earthquake, tsunami, Heat wave, etc. The State is also under constant threat of various human made hazards like that of Industrial (chemical) hazards, fire, transportation accidents, epidemic, accidents, etc.

Gujarat State Disaster Management Authority (GSDMA) developed Gujarat Hazard Risk & Vulnerability Atlas. As per the same, following are the major hazards in the State:

Earthquake

As per Indian Seismic Zone Map, Gujarat region lies in three zones- Zone III, IV and V. Kachchh region (about 300km x 300km) lies in zone V where earthquakes of magnitude 8 can be expected. A belt of about 60-70km width around this zone covering areas of North Saurashtra and areas bordering Eastern part of Kachchh lie in zone IV where intensity VIII can be expected mainly due to earthquakes in Kachchh and some local earthquakes along North Kathiawar Fault in Northern Saurashtra. The rest of Gujarat lies in zone III where intensity VII earthquakes can be expected due to moderate local earthquakes or strong Kachchh earthquakes.

The estimated mean taluka earthquake peak ground acceleration (PGA) zonation for a 100-year return period is presented in the figure 3.1. All of Kachchh, almost the entire coastline of northern Saurashtra that adjoins Kachchh and a small area in Patan district fall into the very sever intensity zone over a 100-year return period. The cities of Ahmedabad, Bharuch, Rajkot, and Bhavnagar fall into the severe intensity zone, while Bhuj and Jamnagar fall in the very severe intensity zone over this time frame.



Source: Gujarat Hazard Risk & Vulnerability Atlas (2005) Figure 3.1: Gujarat Earthquake Hazard Risk Zonation Map

3.1.2 Cyclone

Gujarat falls in the region of tropical cyclone. With the longest coast line of 1600 km in the country, it is highly vulnerable to cyclone and its associated hazards such as floods, storm surges, etc. Most of the cyclones affecting the state are generated in the Arabian Sea. They move North-East and hit the coast particularly the Southern Kutch and Southern Saurashtra and the Western part of Gujarat.

Two cyclonic storm seasons are experienced in Gujarat: May to June (advancing southwest monsoon) and September to November (retreating monsoon).

Over 120 cyclones originating in the Arabian Sea had passed through Gujarat over a period of 100 years. Figure 3.2 shows a maximum wind speed class of more than 55 m/sec along the Saurashtra coast, specifically in Junagadh, Porbandar, Jamnagar, Morbi, and Kutch districts, which are exposed to high intensity cyclonic and storm impact.

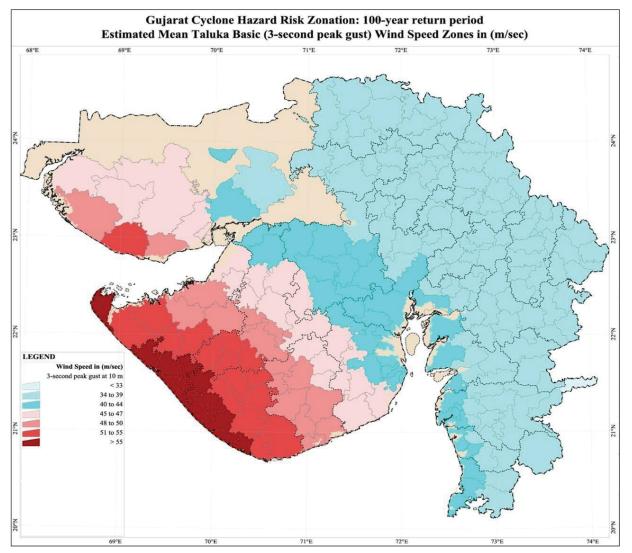


Figure 3.2: Gujarat Cyclone Hazard Risk Zonation Map

The 51 to 55 m/sec classextends further inland to cover much of Jamnagar, part of Rajkot, Morbi and Kutch districts. The 48 to 50 m/sec class extends to most of Rajkot, part of Amreli and Jamnagar districts including Jamnagar, Rajkot cities and parts of Kutch. The 45 to 47 m/sec class covers much of Saurashtra and all of Kutch. This is followed by the 40 to 44 m/sec class that gets its swathe from Kutch through northern Saurashtra all the way to the coast of Gulf of Khambhat and southern Gujarat. The rest of the State falls into the 34 to 39 m/sec class.

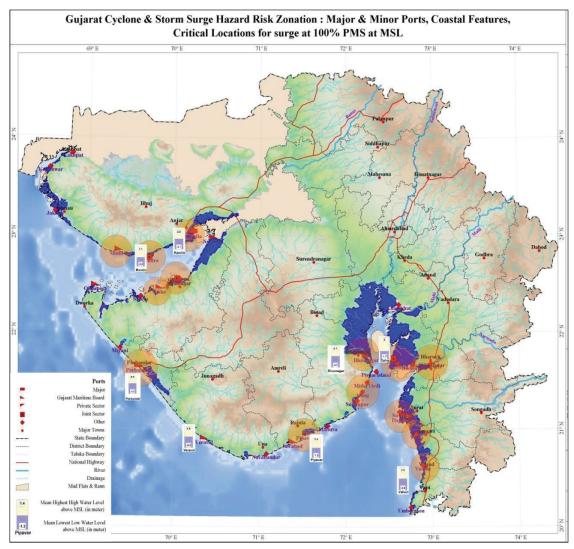


Figure 3.3: Gujarat Storm Surge Hazard Risk Zonation Map

3.1.3. Drought

Daily temperature of the State ranges from a minimum 13°C to 27°C in January to 27°C to 41°C in the summer during May. The South-West winds mostly bring rain between June to September and approximately 90 to 95% of precipitation is registered in these three months. From the North-West areas to South Gujarat areas, the rainfall varies from 300 mm to 2000 mm per annum. In Gujarat, 60% of rainfall is uncertain, unprecedented and unequal and the regions of Saurashtra, Kutch and North Gujarat face famine every third year. Since 1900, the state has faced scarcity of water and food almost 30 times.

Gujarat is one the chronic drought prone state of India, with an average annual rainfall about mm with more than half of the Talukas of Gujarat receiving rainfall within the range of 200-400 mm.

Substantial portions of the State are arid to semiarid. With large parts of North Gujarat and Saurashtra having no source of alternate irrigation, groundwater exploitation is leading increased threats of droughts. Falling water tables have added stress on crops and water supplies.

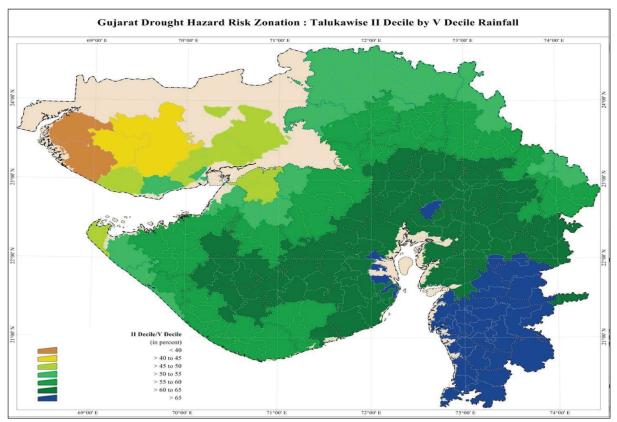


Figure 3.4 : Gujarat Drought Hazard Risk Zonation Map

Flood

The climatology of Gujarat is influenced by the Arabian Sea in the West and three hill ranges along its Eastern border. A long coastline makes parts of arid Saurashtra and Kutch occasionally experience very high rainfall. These occasional heavy rainstorms are responsible for most of the floods in the State. While the Northern part of the State is mostly arid and semi-arid, the Southern part ishumid to sub-humid. Extremes of climate, be it rainfall or temperatures are quite common in this region. All major rivers in the State pass through a wide stretch of the very flat terrain before reaching the sea. These flat lowlands of lower river basins are prone to flooding. Cities like Ahmedabad, Suratand Bharuch are located on the flat alluvial plains of large rivers. Concentrated runoff resulted by heavy rainfall cause flash floods in the small river basin of Saurashtra and Kutch because of their fairly impervious catchments (rocky or black cotton soils) and steep sloping upper catchments.

The flood prone river sections were identified from settlement level analysis. Flood prone river sections in Saurashtra extend to the upper basins due to the presence ofdams which have to resort to emergency discharge during heavy rainstorms. Even small valleys in Saurashtra areused for agriculture. Hence flooding in these zones impacts both residents and settlements.

Figure 3.5 shows the majority of the area of Gujarat is flood prone, irrespective of the size of the catchment. The flood risk in Saurashtra is lower than that of the South Gujarat plains. The relatively flat plains in the lower basic areas with hilly catchments in upper parts of South Gujarat accentuate flood risks. Few villages in the North Gujarat are flood prone too.

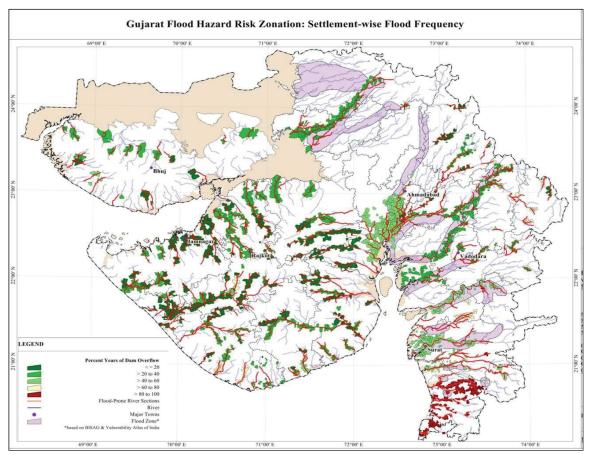


Figure 3.5: Gujarat Flood Hazard Risk Zonation

Tsunami

Gujarat is prone to tsunami risk due to its long coastline and probability of occurrence of near and offshore submarine earthquakes in the Arabian Sea. Makran Subduction Zone (MSZ) -South West of Karachi is an active fault area which may cause a high magnitude earthquake under the sea leading to a tsunami.

In past, Kandla coast was hit by a Tsunami of 12 mtrs height in 1945, due to an earthquake in the Makran fault line. Tsunami prone areas in the State include coastal villages of Kutch, Jamnagar, Rajkot, Porbandar, Bhavnagar, Anand, Ahmedabad, Bharuch, Surat, Navsari and Valsad districts.

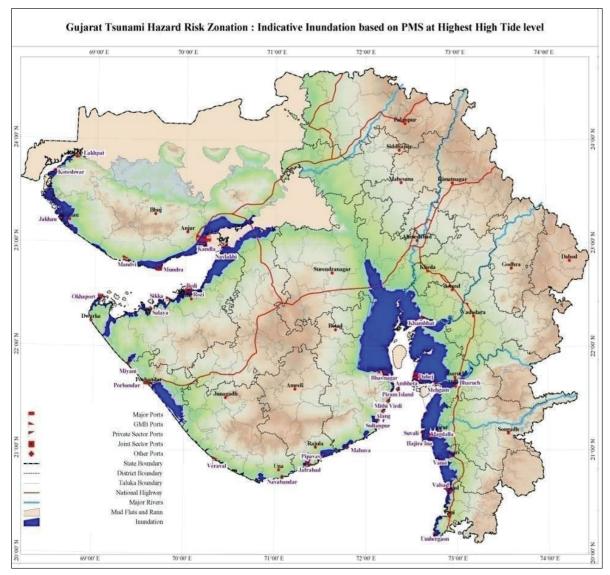


Figure 3.6: Gujarat Tsunami Hazard Risk Zonation

The Hazard Risk and Vulnerability Atlas prepared by GSDMA shows the estimated inundation based on Probable Maximum Surge (PMS) at highest high tide level in figure 3.6.

Fire

There are many causes of fire in the state such as accidents, electrical short-circuit, carelessness, gas leaks, mishandling of flammable chemicals and products, etc. Further, Gujarat being highly industrialized state there is increased threat of fire incidents. Fire causes huge losses of life and property every year.

Industrial and Chemical Disasters

Around 35% of the total Major Accident Hazard (MAH) units of the country are located in Gujarat at Vapi, Hazira, Ankleshwar, Dahej, etc. Gujarat presently has 514 Major Accident Hazard (MAH) prone industrial units.

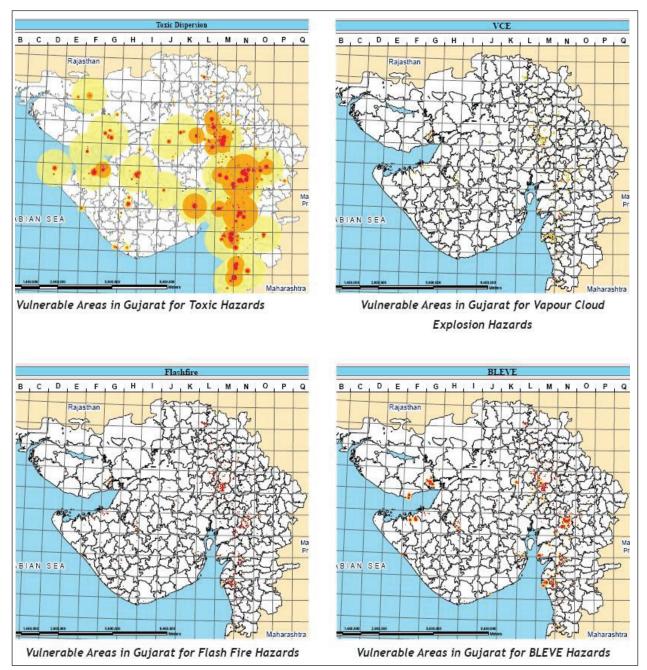


Figure 3.7: Areas of Gujarat Vulnerable to Industrial and Chemical Hazard

All these pose toxic leak risks and over 80% are also prone to fire or explosion risks. Almost the entire range of the chemical process industry exists in Gujarat, including hydrocarbon processing/ refining products, petrochemicals-polymers and man-made fibres, fertilizers, health care products, plant protection chemicals, dyes, pigments and intermediates, fine chemicals, surface coating products, salt and salt-based products, ceramics, glass, cement, vegetable oils, fats, and detergents.

A stretch of 400 kilometres from Ahmedabad to Vapi is known as the Golden Corridor'. Ankleshwar (in Bharuch district) situated on the Narmada estuary is Asia's largest chemical zone. Some toxic chemicals with more than 5,000 metric tonnes storages in Gujarat are acrylonitrile, ammonia, benzene, chlorobenzene, chloroform, cyclohexanone, ethylene dichloride, hydrogen, cyanide, P-xylene, styrene monomer and toluene.

In addition to the manufacturing industries, there is significant infrastructure for handling chemicals such as pipelines, transportation (rail and road), and isolated storages. 70% of country's oils and gas imports are transported through Gujarat via road/rail routes or gas/oil pipelines.

A cross-country 2,300 km Hazira-Bijapur-Jagdishpur (HBJ) gas pipeline originates from Hazira. A hydrocarbon supply pipeline runs from Kandla to Bhatinda (Punjab). A pipeline network of more than 17,000 km is present in the State. This has further increased the incidence of chemical accidents during transportation.

Owing to the presence of most of chemical industries in earthquake prone areas and port based industries in areas prone to tsunami, storm surge and flood, the State is also vulnerable to chemical or industrial disasters in aftermath of a natural disaster.

The Government of Gujarat has categorised districts on the basis of chemical and industrial hazard category such as:

- AA Category (Highly Hazardous)
- A Category (Hazardous)
- B Category (Less Hazardous)
- C Category (Much less Hazardous)

Bharuch and Vadodara districts fall in AA Category (Highly Hazardous) which has large volumes of stored toxic gases such as chlorine and ammonia. The density of MAH installations suggests that Ahmedabad, Bharuch, Vadodara, Valsad and Surat have the largest concentration of MAH units. Vadodara, Dahej, Hazira and Jamnagar have major petrochemical complexes.

Accidents

A total of 4,00,517 accidental deaths were reported in the country during 2013 and Gujarat accounts for 6.6% of this. It includes road accidents, rail-road accidents and other rail accidents. The figure has ever been increasing due to an ever-increasing number of vehicles, rage driving, smooth highways and road infrastructure that allows over speeding, non- adherence of traffic rules, etc.

Gujarat falls under the jurisdiction of the Western Railways Division of Indian Railways. The major railway stations in Gujarat are Ahmedabad Railway Station, Surat Railway Station, Vadodara Railway Station and Rajkot Railway Station. Vadodara Railway Station is the third busiest railway station in the country. The State has around 241 railway stations and a dense railway network.

Other accidents include building or bridge collapses, failure of dam or levee, breaks in water, gas, or sewer lines, oil spill, etc.

Epidemic

Gujarat has faced severe epidemic or epidemic like situations which includes Swine Flu breakout during 2015 and 2010, Hepatitis B outbreak during 2009, Plague Epidemic of 1994 and Corona Virus Pandemic in 2020.

Additionally, there are also high chances of outbreak of epidemic in the aftermath of any disaster due tooverstressed health resources, infrastructure and compromised conditions of hygiene and sanitation. This is particularly seen in case of hydrological disasters like flood leading to threats of water borne diseases and epidemic.

Heat Wave

During summer the maximum temperature often peaks to 45 degrees Celsius leading to severe heat wave conditions. This results in loss of life of many people particularly, homeless, gardeners, daily wagers who work out under direct sun, auto drivers, etc.

Stampede

Gujarat is a culturally vibrant state; it celebrates and hosts many national and regional festivals and fairs with huge enthusiasm. This attracts large number of people at one place. Apart from it, Gujarat attracts large number of religious and other tourists from across the world. This makes it prone to stampede like incidents if proper arrangements of crowd management are not put in place or in case of any rumor or any disaster.

Lightening Risk of Gujarat

Lightning is one of the Weather related Natural Disasters which normally is associated with Thunderstorms. During Lightning, due to the friction between the ice particles in the cloud, a sudden electrostatic discharge occurs between electrically charged regions of a cloud called intracloud lightning (IC), between Cloud to Cloud (CC lightning), or between a cloud and the ground (CG lightning). The charged regions in the atmosphere temporarily equalize themselves through this discharge referred to as a flash. A lightning flash can also be a strike if it involves an object on the ground. Lightning creates light in the form of black body radiation from the very hot plasma created by the electron flow, and sound in the form of thunder. The lightning causes several deaths and loss of property across India and Gujarat.

Gujarat is prone to lightning risk. Lightning & thunderstorm occurs mostly between June - October in Gujarat. According to National Crime Record Bureau, between 2008-2018, 576 deaths were caused due to lightning & thunderstorm. According to the report, Gujarat witnessed 2,14,474 lightning counts during the period 01 April 2019 to 31 July 2019 which accounted for several fatalities in the state.

Neclear & Radiological Disaster

The growth in the application of nuclear science and technology in the fields of power generation, medicine, industry, agriculture, research and defence has led to an increase in the risk of occurrence of Nuclear and Radiological emergencies. Any radiation incident resulting in or having a potential to result in exposure and/or contamination of the workers or the public in excess of the respective permissible limits can lead to a nuclear/radiological emergency. For Gujarat State, the Kakrapar Atomic Power Station (KAPS) is a nuclear power which lies in the proximity of the Surat city in the State of Gujarat. It consists of two 220 MW pressurized water reactors with heavy water as moderator and another two power station with the capacity of 700MW each is under construction. KAPS-1 went critical on 3 September 1992 and began commercial electricity production a few months later on 6 May 1993. KAPS-2 went critical on 8 January 1995 and began commercial production in 1 September 1995. In addition, there are two heavy water plants in Gujarat (at Vadodara and Hazira).

Cyber Attack

A cyber attack is any type of offensive maneuver that targets computer information systems, infrastructures, computer networks, or personal computer devices. An attacker is a person or process that attempts to access data, functions or other restricted areas of the system without authorization, potentially with malicious intent. Cyber attacks can be part of cyber warfare or cyber terrorism. Cyber attack can be employed by sovereign states, individuals, groups, society or organizations and it may originate from an anonymous source.

History of Disasters

As discussed above, Gujarat is prone to large number of natural and manmade disasters. The list of The major disasters faced by the State is given in **Annexure 1 (Refer Page 199).**

Seasonality of Hazards

By understanding the approximate occurrence of hazard, the state may remain prepared for the respective hazards by activating the relevant departments for the same. The table below is only indicative of the occurrence.

Hazards	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Cyclone												
Drought												
Earthquake												
Epidemic												
Fire												
Flood												
Heat Wave												
Industrial/ Chemical												
Road/ Train Accidents												
Stampede												
Tsunami												
Legend	E	ligh O	ccurre	nce	Moc	lerate ()ccurr	ence	L	ow Oc	curren	ce

Table 3.1: Seasonality of Hazards

Vulnerability Analysis

Vulnerable strata of the society:

The potential vulnerable sections of the society include:

(1) Below Poverty Line (BPL) population

According to the Ministry of Social Justice and Empowerment;

- The percentage of population Below Poverty Line (BPL) for Gujarat State accounts for 16.8%
- The total population Below Poverty Line (BPL) is 1,05,33,600

(Source: Ministry of Social Justice and Empowerment, Govt. of India)

(2) Classification of Marginal Workers

Sr. No.	Category	Male	Female	Total
1.	Labourers in Agriculture,Forestry and Fishing	6644	7095	13739
2.	Labourers Mining & Quarrying, Manufacturingand Construction	99050	38407	137457
	Total	105694	45502	151196

The classification of Marginal Workers is as follows

Table 3.2: Classification of Marginal Workers (Source: Census 2011)

(3) Persons with Disability

The disability according to type is classified as follows:

Sr. No.	Type of Disability	Male	Female	Total
1.	In Seeing	113617	100533	214150
2.	In Hearing	100441	90234	190675
3.	In Speech	35277	25077	60332
4.	In Movement	149263	96616	245879
5.	Mental Retardation	39309	27084	66393
6.	Mental Illness	24943	17094	42037
7.	Mental Disability	42539	32572	75111
8.	Others	107415	90310	197725
Total		612804	479498	1092302

Table 3 3.	Classification	of Disabled	Population	(Source.	Census 2011)
Tuble J.J.	Classification	<i>oj Disubieu</i>	і оришион	Source.	Census 2011)

(4) Old Age Population (Above the age of 60)

- The total population above the age of 60 is 47,86,559
- Out of which total male population is 22,45,601 and total female population is 25,40,958 *(Source: Census 2011)*

(5) Population below the age of 6 years

- The total population below the age of 6 years is 77,77,262
- Out of which total male population is 41,15,384 and total female population is 36,61,878 *(Source: Census 2011)*

(6) **Pregnant Women**

Often disregarded are the special needs of pregnant women during disasters and emergencies. Pregnant women face increased risk during disasters which includes premature deliveries, underweight infants and infant mortality. Pandemic outbreak may be particularly life threatening for pregnant women and their unborn children and can often expose them to other illnesses and viruses. The registered number of pregnancies according to the National Family Health Survey (NFHS) for Gujarat State was around 4894 for Gujarat State (*Source: Report published by NFHS in 2019*).

Structural Vulnerability

	Total	Good	Livable	Dilapidated
Total	1,17,67,057	79,73,324	36,11,222	1,82,511
Rural	64,36,493	38,87,921	24,12,055	1,36,517
Urban	53,30,564	40,85,403	11,99,167	45,994

As per Census 2011, the following is the state of housing in Gujarat:

	Total	Good	Livable	Dilapidated
Total	4,14,661	2,19,852	1,90,185	4,624
Rural	3,28,910	1,60,663	1,64,322	3,925
Urban	85,751	59,189	25,863	699
		1		

Table 3.4: Status of Residential Households

Table 3.5: Status of Residential-cum-other use Households

As per Census 2011, the material of roof and walls of housing also varies widely and include grass/ thatch/ bamboo, mud/un-burnt brick, wood, stone, burnt bricks, concrete, etc. Thus the material of housing is adding to the structural vulnerability if proper building codes and other safety guidelines are not adhered to. This would increase the damage and loss during any disaster particularly earthquake, cyclone, floods, etc.

Economical Vulnerability

Gujarat has many economically vulnerable groups. They have limited resources for daily basic needs. The structures they dwell in are mostly not safe enough to face hazards. Thus the limited resources they have are highly prone to loss and damage in case of any disaster.

These groups include BPL and antoadhya households. According to Census 2011, Gujarat has a total of 247.68 lakhs workers, out of which around 17.8% are marginal workers. Gujarat has around 3.46 lakhs of slum households and around 1.4 lakhs of houseless population. All these groups are economically vulnerable and have limited financial capacity to recover from disaster loss.

Gujarat being developed and industrialized is a hub of important commercial houses, factories, corporate, etc. Manufacturing sector contributes significantly to the state GDP. Many fuel pipelines also cross the state. With respect to the hazard profile of the state, any significant damage to the infrastructure can cause a major economical set back to the State and would take its development many year back.

Different sectors of economy are also vulnerable due to hazard profile of the State. Thus any damage to related sector or any part of supply chain can have serious impact on economy of the State.

Environmental Vulnerability

Gujarat is among the most industrialized states. Around 42 % of its population lives in towns and cities and the State has a decade growth rate of urban population as 5.24 % (2001-2011). Urbanization leading to deforestation, pollution caused by chemical and pharmaceuticals companies to rivers and air, loss of biodiversity, damage to mangroves and coastlines, etc. severely affects local communities and wider ecological systems. Such environmentally degraded area compromises a community's ability to respond to and recover from a hazard event.

Capacity Analysis

Capacity includes all such resources human, equipment, infrastructure, etc. that aid in responding to any phase of disaster management.

A comprehensive database of disaster management related inventory is essential for an organized response. Lack of proper and adequate information hampers and delays timely response during golden hours.

Human Resources

Staff and officials of various line departments form a huge human resource for various critical functions in both pre and post disaster phase.

Trainings are regularly conducted at state level by GSDMA, GIDM and departmental training institutes. Trainings are also delivered at district, taluka, municipality and village level under Disaster Risk Management Programme. These trainings include trainings on search and rescue, first responders, EOC management, architect and engineer's training for safe construction, flood rescue and many other training of trainers. This has created a large trained human resource both in district and at state level.

Equipment

Over the years GSDMA has provided various fire fighting, search & rescue and other emergency equipment to District Collectorate, Municipal Corporations, ERCs and Municipalities, etc. The detail of same in mentioned in **Annexure 2. (Refer Page 203)**

Infrastructure

Infrastructure acts as great resource during disaster phase as it forms critical part of logistics and supply chain management of responding agencies, relief material, evacuated masses, etc. A brief of infrastructural capacity of the State is mentioned below in table 3.6.

-			
5257.22 route kms. (3506.55 kms – Broad-gauge, 1191.77 kms –			
Meter gauge, 558.90 kms – Narrow gauge)			
102501 Kms			
25201084, 2680808 - transport vehicles, 22520277 -Non Transport Vehicles			
41 minor and intermediate ports (14 south Gujarat23 Saurastra and 4in Kutch)			
1 major port of Kandla is under Administrative control of CentralGovt.			
PostOffice/Branches:8903 Telephone Exchange: 3226			
Wireless Subscriber base - 71046166			
Wire line subscriber base – 1220010			
Total nos. of branches 7485			
Primary -	37551		
Secondary and Higher Secondary	10406		
Higher Education Institutions	1857		
	Meter gauge, 558.90 kms – Narrow ga 102501 Kms 25201084 , 2680808 - transport vehicle Vehicles 41 minor and intermediate ports (14 so Kutch) 1 major port of Kandla is under Admir PostOffice/Branches:8903 Telephone I Wireless Subscriber base - 71046166 Wire line subscriber base - 1220010 Total nos. of branches 7485 Primary - Secondary and Higher Secondary		

Health	Major Hospitals with Education Institute	8
	District Level Hospitals	24
	Sub-District Hospital	30
	Community Health Centres	318
	Primary Health Centres	1158
	Sub Centres	7274
ERCs	In Five Region of the State	5
DEOC	In all District of Gujarat State	33

Table 3.6: Infrastructural Capacity

Chapter 4: Disaster Risk Governance in the State

Disaster risk governance is the system of institutions, mechanisms, policy and legal frameworks and other arrangements to guide, coordinate and oversee disaster risk reduction and related areas of policy. Disaster governance goes beyond governmental settings, powers, processes and tools by encouraging collective actions through the engagement of all stakeholders operating at all scales—from village to country.

The legal framework in the country and in Gujarat provides direction to government all other stakeholders for Disaster Risk Management (DRM). The role, composition and key decision making bodies for disaster management at national, State, districtand below level are described below. The extent of involvement of central agencies will depend on the type, scale, and administrative spread of the disaster. If the situation requires, the state government shall request central government to provide necessary support. Disaster management strure is in place right from the national to local level. This institutional mechanism plays a crucial role in all activities from policy making to implementation across the entire disaster management cycle.

National Level

Agencies	Composition	Roles & Responsibilities
National Disaster Management Authority (NDMA)	 Prime Minister (Chairperson) Members (not exceeding nine, nominated by the Chairperson) 	 Lays down policies, plans and guidelines for disaster management Coordinates their enforcement and implementation Lays down guidelines for Disaster Management to be followed by the different Central Ministries and departments and the State Government.
National Executive Committee (NEC)	 Union Home Secretary (Chairperson) Secretaries to the GOI in the Ministries / Departments of Agriculture, Atomic Energy, Defence, Drinking Water and sanitation, Environment, Forests and Climate Change Finance (Expenditure), Health and Family Welfare, Power, Rural Development, Science and Technology, Space, Telecommunications, Urban Development, Water Resources, River Development and Ganga Rejuvenation, The Chief of the Integrated Defence Staff of the Chiefs of Staff Committee, ex officio as members. Secretaries in the Ministry of External Affairs, Earth Sciences, Human Resource Development, Mines, Shipping, Road Transport and Highways and Secretary, NDMA are special invitees to the meetings of the NEC. 	 Executive committee of the NDMA Assists the NDMA in the discharge of its functions and also ensure compliance of the directions issued by the Central Government Coordinates the response in the event of any threatening disaster situation or disaster. Monitors the implementation of guidelines issued by NDMA Act as the coordinating and monitoring body for disaster management
National Institute of Disaster Management (NIDM)	• Union Home Minister; Vice Chairman, NDMA; Members including Secretaries of various nodal Ministries and Departments of Government of India and State Governments and heads of national levels scientific, research and technical organizations, besides eminent scholars, scientists and practitioners.	 Develops and builds capacity through training, research, documentation Develops national level information base Functions within the broad policies and guidelines laid down by the NDMA Develop educational materials for disaster management Undertake, organize and facilitate conferences, lectures, seminars.

Agencies	Composition	Roles & Responsibilities
National Disaster Response Force (NDRF)	Specially trained force headed by a Director General Structured like para military forces for rapid deployment.	 Provides specialized response and emergency search & rescue to a threatening disaster situation The general superintendence, direction and control of this force is vested in and exercised by the NDMA Command and supervision of the force is vested in the Director General of Civil Defence and National Disaster Response Force Comprises 12 battalions and 4 battalions are equipped and trained to respond to situations arising out of CBRN emergencies Imparts basic training to all the stakeholders identified by the state governments in their respective locations.

	Sr. No.	Disaster	Nodal Department
	1	Accident – Air (Civil Aviation)	Min. of Civil Aviation (MOCA)
	2	Accident – Rail	Min. of Railways (MOR)
	3	Accident – Road	Min. of Road Transport & Highways (MRTH)
	4	Avalanche	Min. of Defence (MOD)-Border Road organization (BRO)
	5	Biological Emergencies	Min. of Health and Family Welfare (MHFW)
	6	Cold Wave	Min. of Agriculture and Farmers Welfare (MAFW)
	7	Cyclone/Tornado	Min. of Earth Sciences (MOES)
	8	Drought	Min. of Agriculture and Farmers Welfare (MAFW)
Agencies	9	Earthquake	Min. of Earth Science (MOES)
providing	10	Flood	Min. of Jal Sakti
Early Warning	11	Floods-Urban	Min. of Housing and Urban Affairs (MHUA)
Information	12	Forest Fire	Min. of Environment, Forests and Climate Change (MEFCC)
	13	Frost	Min. of Agriculture and Farmers Welfare (MAFW)
	14	Hailstorm	Min. of Agriculture and Farmers Welfare (MAFW)
	15	Industrial and Chemical	Min. of Environment, Forests and Climate Change (MEFCC)
	16	Landslides	Min. of Mines (MOM)
	17	Nuclear and Radiological	Dept. of Atomic Energy (DAE)
	18	Oil Spills	Min. of Defence (MOD) – Indian Coast Guard
	19	Pest Attack	Min. of Agriculture & Farmers Welfare (MAFW)
	20	Tsunami	Min. of Earth Sciences

State Level

The DM structure in the State is as per the Gujarat State Disaster Management Act, 2003.

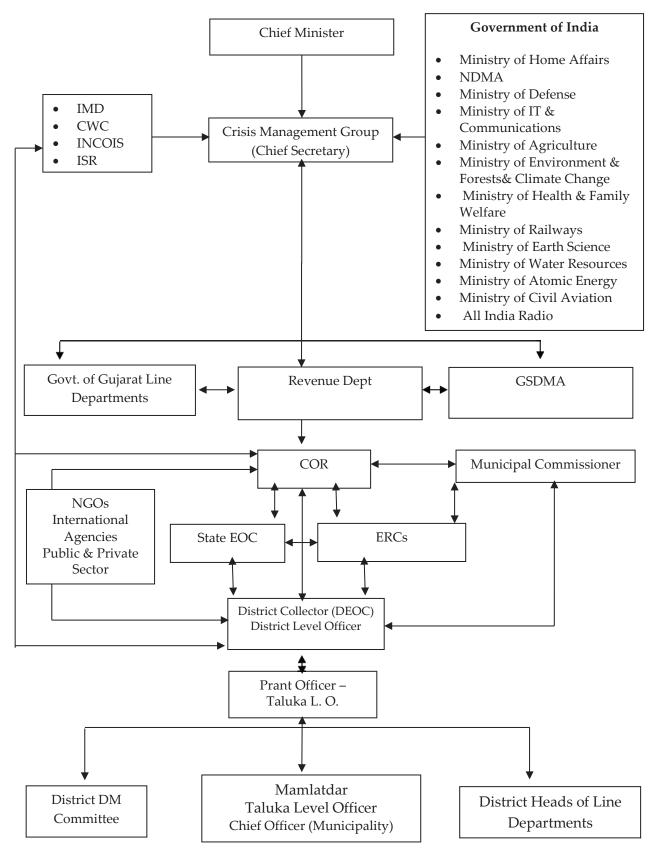


Figure 4.1: Institutional Mechanism at State Level

The State Disaster Management Authority and the Office of the Commissioner of Relief, Revenue Department, are the major institutions in the State that deal with all the phases of disaster management. All the major line departments of the State Government the District Collectors, other technical institutions, community at large, local self governments, NGOs, CBOs, etc. are the stakeholders of the SDMP.

The role of the stakeholders have been prepared with the avowed objective of making the concerned organizations understand their duties and responsibilities regarding disaster management at all levels, and accomplishing them.

Agencies	Roles & Responsibilities
	• Promotes an integrated and coordinated system of disaster management including prevention or mitigation of disaster by the State, local authorities, stakeholders and communities.
Gujarat State Disaster	• Collect/cause to be collected data on all aspects of disasters and disaster management and analyze it and further cause and conduct research and study relating to the potential effects of events that may result in disasters.
Management Authority	• Acts as a repository of information concerning disasters and disaster management
(GSDMA)	• Lays down the policies and plans for disaster management in the State.
	• Promotes or causes to promote awareness and preparedness, advices and trains the community and stakeholders
	• Co-ordinating Rehabilitation and Reconstruction activities by different government departments.
	• On the recommendation of COR, State Government may declare disaster.
	• Primary responsibility of co-ordinating an effective emergency response and relief on the occurrence of a disaster.
	• Prepare, review and update State level emergency plans and guidelines and ensure that the district level plans are prepared, revised and updated
Commissioner of Relief (COR)	• Develop an appropriate relief implementation strategy for the State in consultation with the Authority, taking into account the unique circumstances of each district and deficiency in institutional capacity and resources of the State.
	• Provide directions to the District Collector and the local authority having jurisdiction over the affected area to provide emergency relief in accordance with disaster management plans to minimize the effects of disaster.

Agencies	Roles & Responsibilities
	• Develop a strategic policy framework for disaster management for the State.
	• Ensure that the disaster operations in the state are consistent with the State Disaster Management Authority and in line with the policy framework for disaster management for the state.
State Crisis Group (SCG)	• Identify resources in and outside the State that may be used for disaster operations.
	• Provide reports and make recommendations about matters relating to disaster management and disaster operations.
	• Develop a thorough approach to disaster management - Prevention / Preparation / Response and Recovery.
	Establish District and Local Crisis Group
	• To serve as the apex institute in the State for Disaster Management Capacity Building.
	• To provide disaster management related training to all the stakeholders.
Gujarat Institute	• To act as a resource centre and clearing house of information on disaster management by documentation of field experiences including case studies, lessons learnt and best practices.
of Disaster Management (GIDM)	• To undertake quality research projects on Disaster Management and mitigation covering both natural and human induced disasters.
	• To facilitate partnership with reputed national and international organizations, universities, institutions, bodies and individuals specialized in Disaster Management.
	• To run and award degree/diploma/certificate courses on Disaster Management on its own or with the affiliation to any other institute/ universities, local/ national/ international.
State Fire &	Provides crucial immediate response during any disaster
Emergency Services (F&ES)	 Provides regular training to the fire staff and all in using and maintaining the equipment and containing fire in the state.
	Engaged in dedicated seismological research
.	• Monitors seismic activity of Gujarat round the clock through a dense network of instruments installed in Gujarat
Institute of Seismological Research (ISR)	• Reports earthquake location along with magnitudes at the earliest of the arrival of seismic waves
	• Engaged in seismic microzonation of areas prone to earthquakes
	• Provide consultancy services to various private companies in feasibility studies related to seismicity of the area prior to establishing a major project

Agencies	Roles & Responsibilities
Bhaskaracharya Institute for Space	• State level nodal agency to facilitate the use of spatial and geo-spatial technologies for the planning and developmental activities pertaining to agriculture, land and water resource management, wasteland development, watershed development, forestry, disaster management, infrastructure and education.
Applications and Geo-Informatics	• Provides specialized services and solutions in implementing map-based Geo-Spatial Information Systems.
(BISAG)	• Provides GIS solutions for disaster management and specialized needs of Public Safety agencies like police, fire and ambulance services.
	• Provides e-governance solutions to address varying GIS and MIS needs of governments and municipal corporations.
State Disaster Response Force (SDRF)	 GSDMA, through the Home Department, has created 11 State Disaster Response Force (SDRF) Companies with a total strength of around 1100 personnel 11 Companies of SDRF are stationed at Vadodara (2 Companies), Ahmedabad, Madana, Godhra, Nadiad, Gondal, Valiya, Vav, Gandhinagar and Rajkot. Around 140 types of search and rescue equipments were provided for training. The SDRF teams are deployed at various locations based on the severity of the disaster.
Local Authorities	 Provide assistance to GSDMA, COR and District Collector in disaster management activities. Ensure training of its officers and employees and maintenance of resources so as to be readily available for use in the event of a disaster. Ensure that all construction projects under it conform to the standards and specifications lay down. Each department of the Government in a district shall prepare a disaster management plan for the district. Carry out relief, rehabilitation and reconstruction activities in the affected area within its jurisdiction.

 Table 4.0: Institutional Mechanism at State Level

4.2.1 Agencies competent for issuing Disaster Specific Early Warnings:

Early warnings will be published/ issued by the respective agencies during different disaster which are as follows:

Disaster	Agencies
Earthquakes	ISR, IMD
Floods	IMD, Irrigation Dept., CWC
Cyclones	IMD
Tsunami	IMD, INCOIS, ISR
Drought	Agriculture Dept.
Epidemics	Health & Family Welfare Dept.
Industrial & Chemical Accidents	DISH, Labour & Employment Dept.,
Fire	Director, State Fire Prevention Services

District Level

All the districts in the state have District Emergency Operation Centre (DEOC) headed by the Collector. Further, every DEOCs act as the planning, coordinating and implementing body for disaster management at the District and below level and take all necessary measures for the purposes of disaster management in accordance with the guidelines laid down by the NDMA and GSDMA.

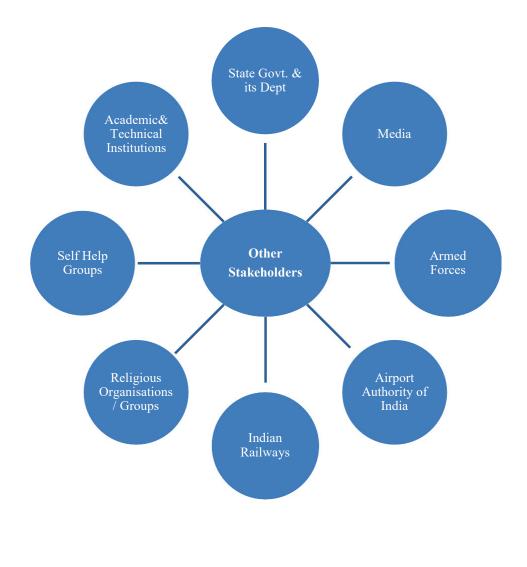
Agencies	Roles & Responsibilities
	• Facilitate and, coordinate with, local Government bodies to ensure that pre and post - disaster management activities in the district are carried out.
District Collector	• Assist community training, awareness programmes and the installation of emergency facilities with the support of local administration, non-governmental organizations, and the private sector.
	• Take appropriate actions to smoothen the response and relief activities to minimize the effect of disaster.
	• Recommend CoR and State Government for declaration of disaster.
	• Ensure that disaster management and disaster operations in the district are consistent with the State.
	• Develop effective disaster management for the district, including a district disaster management plan and regularly review and assess the disaster management arrangements in the disaster district.
	• Provide reports and make recommendations to the State group about matters relating to disaster management and disaster operations in the district.
	• Regularly review and assess the disaster management of Local Groups in the district.
District Critics	• Ensure that any relevant decisions made by the State group are incorporated in its disaster management arrangements, and the disaster management arrangements of Local Groups in the district.
District Crisis Group (DCG)	• To ensure the community is aware of ways of mitigating the adverse effects of an event, and preparing for, responding to and recovering from a disaster.
	• Coordinate the provision of State resources and services provided to support Local Groups in the district.
	• Identify resources that may be used for disaster operations in the district.
	• To make plans for the allocation of resources that may be used for disaster operations within the district and the coordination of their use.
	• Establish and review communications systems in the group, and also with Local Groups in the district for use when a disaster happens.
	• Ensure information about an event of a disaster in the district is promptly given to the State group and each Local Group in the district;
	• To assist the district administration in the preparation of a district disaster management plan.

Agencies	Roles & Responsibilities
	• Ensure that disaster management and disaster operations in the area are consistent with the State and in line with the policy framework for disaster management for the state.
	• Develop effective disaster management, and regularly review and assess the disaster management activities.
	• Help the local administration for its area to prepare a local disaster management plan.
	• Identify, and provide advice to the relevant district group about, support services required by the local group to facilitate disaster management and disaster operations in the area.
Local Crisis Group (LCG)	• Ensure the community is aware of ways of mitigating the adverse effects of an event, and preparing for, responding to and recovering from a disaster.
	• Manage disaster operations in the area under procedures decided by the state group.
	• Provide reports and make recommendations to the relevant district group about matters relating to disaster operations.
	• Identify, and co-ordinate the use of resources that may be used for disaster operations in the area.
	• Establish and review communications systems in the group with the relevant district group and other local groups when a disaster happens.
	• Ensure information about a disaster in the area is promptly given to the relevant district group.

Other Stakeholders in Disaster Management

Agencies	Roles & Responsibilities
Private Sector	• The private sector should ensure their active participation in the pre- disaster activities in alignment with the overall plan developed by the GSDMA or the Collector.
	• They should also adhere to the relevant building codes and other specifications, as may be stipulated by relevant local authorities.
Community Groups and	• Local community groups, "Aapda Mitra" and voluntary agencies including NGOs should actively assist in prevention and mitigation activities under the overall direction and supervision of the GSDMA or the Collector.
Voluntary agencies	• They should actively participate in all training activities as may be organised and should familiarise themselves with their role in disaster management.
Citizen	• It is a duty of every citizen to assist the Commissioner, the Collector or such other person entrusted with or engaged in disaster management whenever his aid is demanded generally for the purpose of disaster management.

Other than these, there are various agencies, organizations, departments and authorities that constitute a core network for implementing various disaster management related functions and activities. It also includes academic, scientific and technical organizations, media, community, etc. which play important role in various facets of disaster management.



Chapter 5 : Disaster Risk Reduction for Resilience

5. Building Disaster Resilience:

Resilience is the ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management.

The Disaster risk Reduction (DRR) strategies and policies are aimed at preventing the creation of disaster risk and the reduction of existing risk. As per the provisions of the GSDM Act, 2003 all departments and agencies must have their own DM Plan. Unlike other components of a prevention and mitigation of disaster risk must be incorporated into the overall plans, policies and programs rather than as a subcomponent of the DMP. DRR must become an integral part of every development plan and the DMP must provide indications how that will be accomplished in the DMP.

The DM Act 2005 and The National Policy 2009 had made paradigm shift towards proactive disaster management by laying emphasis on long term DRR. The global frameworks Hyogo (2005-2015) and Sendai (2015-2030) - signify calibrated shift towards internalization of DRR and making it an integral part of development initiatives.

A major component of DRR undoubtedly is various types of mitigation measures. The DM Act 2005 defines, "Mitigation as measures aimed at reducing risk, the impact or effects of a disaster or threatening disaster situation". The Gujarat State DM Act, 2003 defines, "Mitigation as measures aimed at reducing the impact or effects of a disaster".

The State Disaster Management Plan (SDMP) incorporates key principles enunciated in the DM Act 2005, National Policy, the three major post 2015 global frameworks, and the PM's 10 Point Agenda, a special focus on social inclusion and an emphasis on mainstreaming DRR. For each hazard, the approach used in this SDMP incorporates into the planning framework the key themes enunciated in the Sendai Framework and additional ones based on a broader approach to DRR.

These are grouped under the following six Thematic Areas for DRR:

- 1. Understanding Risk
- 2. Inter-Agency Coordination
- 3. Investing in DRR Structural Measures
- 4. Investing in DRR Non-Structural Measures
- 5. Capacity Development
- 6. Climate Change Risk Management

Seismic	lic				Understanding Disaster Risk
Ś	Sub – Thematic Area for	State / District	State / District Agencies and their Responsibilities		
No.	DRR	State	Responsibility – state	District	Responsibility - District
1.	• Earthquake Monitoring		Recurring/Regular (RR)	District Magistrate &	Recurring/ Regular (RR)
	Services	ISR	•Estimate the earthquake parameters	Collector, DEOC	Share information widely
	• National Seismological	IMD	quickly after detection		
	Network		• Disseminate information		
	Real Time Seismic		• Share information relating to		
	Monitoring Network		undersea		
	(RTSMN)		earthquakes capable of generating		
	• Earthquake Hazard		tsunamis in the Indian coastal		
	and Risk Assessment		regions with		
	(EHRA)		INCOIS to issue of tsunami related		
			messages and warnings		
			• Share seismic activity data with		
			national		
			and international scientific,		
			academic and R&D		
			institutions		
			Medium Term (T2)		
			Seismic hazard assessment		
			Seismic zoning		
			Seismic micro-zoning		
2.	Scientific Seismic	ISR, IMD	Short Term (T1)	District Magistrate &	Recurring/ Regular (RR)
	Zonation		Inter-Agency Coordination and	Collector, DEOC	Ensuring implementation,
			Collaboration		enforcement, compliance and
			for publishing the guidelines		monitoring; Awareness creation

Earthquake / Seismic

Understanding Disaster Risk

Seismic	ic				Understanding Disaster Risk
S.	Sub – Thematic Area for	State / District	State / District Agencies and their Responsibilities		
No.	DRR	State	Responsibility – state	District	Responsibility - District
3.	Seismic Micro zonation	ISR, IMD	Medium Term (T2)	District Magistrate &	Long Term (T3)
			Develop a status paper based on a	Collector, DEOC	Carry out need assessment from
			consensus among the professionals		end users, conduct micro-
			on the methodologies for micro-		zonation studies, prioritize
			zonationstudies		important urban areas for micro
					zonation, do professional review
					before adoption
4.	Hazard Risk Vulnerability	ISR,	Recurring/ Regular (RR)	District Magistrate &	Recurring/ Regular (RR)
	and Capacity Assessment	GSDMA,	• Promote studies, documentation	Collector	Undertake HRVCA as part of
	(HRVCA)	UDD, ULB	and research		preparing and
			• Studies on vulnerabilities and		periodic revision of DM plans
			capacities covering social, physical,		Short Term (T1)
			economic, ecological, gender, social		Constitute/ strengthen the
			inclusion and equity aspects		mechanisms
			• Provide technical support and		for consultation with experts and
			guidance for comprehensive		stakeholders
			HRVCA		
			• Undertake HRVCA as part of		
			preparing and periodic revision of		
¥		C C	DM plans	Distained Manifermeter 0.	
С	-	COK,	Kecurring/ Kegular (KK)	District Magistrate ∞	Kecurring/ Kegular (KK)
	and Management	GSDMA, All	Systematic data management of data	Collector, DEOC	Systematic data management of
		Departments.	on disaster damage and loss		data on
			assessments		disaster damage and loss
			Short Term (T1)		assessments
			Disaster Damage and Losses 2005-		Short Term (T1)
			2015		Disaster Damage and Losses
			baseline		2005-2015
					baseline

Seismic	nic				Inter – Agency Coordination
Ś	Sub – Thematic		State / District Agene	State / District Agencies and their Responsibilities	bilities
N0.	Area for DRR	State	Responsibility – state	District	Responsibility - District
1.	Overall disaster	RD, CoR,	Recurring/ Regular (RR)	District Magistrate	Recurring/ Regular (RR)
	governance	GSDMA	• Providing coordination, technical	& Collector, DEOC	• Preparation and implementation of
			inputs, and support		DM plans and ensure the functioning
			• Preparation and implementation of		of
			DM plans and ensure the functioning		agencies with DM tasks
			of		• All aspects of disaster risk
			agencies with DM tasks		management
			• All aspects of disaster risk		and mainstreaming DRR
			management		• Ensuring coherence and mutual
			and mainstreaming DRR		reinforcement of DRR, CCA and
			• Ensuring coherence and mutual		development
2.	Response	RD, CoR, All	Recurring/ Regular (RR)	District Magistrate	Recurring/ Regular (RR)
		relevant	• Organising and coordinating	& Collectors	• Organizing and coordinating the
		departments	central assistance.		immediate response
			• Coordinate with central agencies		• Coordinate with State agencies
3.	Non-structuralmeasures	RD, CoR, All	Recurring/ Regular (RR)	District Magistrate	Recurring/ Regular (RR)
		Relevant	Coordination among central andstate	& Collectors,	Coordination among state agencies for
		Departments	agencies for	Municipal	ensuring implementation, enforcement
			a) revised/ updated rules, norms	Commissioners	and
			b) adoption of new/updated		monitoring of norms/ codes.
			standards,		
			c) enact/amend laws, regulations		
			and adopt/ review policies		

Inter – Agency Coordination

Measures
Structural
DRR -
Investing in

Investing in DRR – Structural Measures	esponsibilities	Responsibility - District	 Recurring/ Regular (RR) Ensure that earthquake resistant features are incorporated in planning and execution of social housing schemes Ensure compliance with relevant building codes 	Medium Term (T2) Implementation strengthening and seismic retrofitting as per recommendations of safety audits in all govt. departments, agencies, public utilities, schools, colleges, community halls, etc.	Recurring/ Regular (RR) Collaboration with technical agencies and implementation
Investing	State / District Agencies and their Responsibilities	District	District Magistrate & Collectors, District Development Commissioner, Municipal Commissioners	District Magistrate& Collectors, District Development Commissioner, Municipal Commissioners	District Magistrate & Collectors, District Development Commissioner, Municipal Commissioners
	State / District A	Responsibility – state	Recurring/ Regular (RR) Ensure that multi-hazard resistant features are incorporatedin features are incorporatedin of social housing schemes (with special focus on earthquake)	Medium Term (T2) Implementation strengthening and seismic retrofitting as per recommendations of safety audits	Recurring/ Regular (RR) Guidance and implementation
		State	CoR, RD, UDD, RDD, ULB, PRI	RD, UDD, ULB, R&B	R&B, UDD, ULB
	Sub – Thematic Area for	DRR	Social Housing Schemes	Strengthening and seismic retrofitting of prioritized lifeline structures and buildings	Hazard resistant construction, strengthening, and retrofitting of all lifelinestructures and critical infrastructure
Seismic	S. No.			~	ю.

Seismic S. No.	Sub – Thematic Area for	State / District A	gencies and thei	Investing in DRR – Non – Structural Measures ir Reenonsihilities	ıral Measures
	DRR	State	Responsibility – state	District	Responsibility - District
	Regulations and model codes for town planning,civil works and public infrastructure	UDD, ULB, R&B	 Recurring/ Regular (RR) Periodic update of codes, rules, rules, regulations Work with all central ministries, and state governments to implement techno-legal regime by modifying/ developing mecessary rules 	District Magistrate & Collectors, District Development Commissioner, Municipal Commissioners	 Medium Term (T2) Adopt suitable byelaws for rural and urban areas, put model codes (e.g., NBC 2016) into practice and ensure proper compliance Micro-zonation for seismic risk reduction Long Term (T3) Ensure strict compliance with code implementation through relevant Departments and agencies
4	 Structural safety audit of lifeline structures and buildings Prioritization of lifeline structures and buildings for strengthening and seismic retrofitting 	R&B, UDD, ULBs	Recurring/ Regular (RR) Periodically provide clarifications in line with the relevant national standards Medium Term (T2) Formulate standard procedures and guidelines. Ensure implementation, monitoring, enforcement and proper compliance within state by	District Magistrate & Collectors, District Development Commissioner, Municipal Commissioners	Recurring/ Regular (RR) Carry out safety audit of lifeline buildings and critical infrastructure Medium Term (T2) Ensure implementation, monitoring, enforcement and propercompliance within District by public, private and individuals

nvesting in DRR – Non – Structural Measures

Seismic			Investing in DF	Investing in DRR - Non - Structural Measures	al Measures
S. No.	Sub – Thematic Area for	State / District A	Agencies and their Responsibilities	lities	
	DRR	State	Responsibility – state	District	Responsibility - District
			public, private and individuals.		
3.	l certificationof	Relevant	Medium Term (T2)		Medium Term (T2)
	professionals	Departments	Implement licensing of		Ensure strict compliance with code
		professional	engineers through		implementation through relevant
		bodies of	appropriate legal		Departments and agencies
		architects and	framework and		
		engineers	institutional		
			mechanism		
4.	Public Private Partnerships	RD, CoR,	Recurring/ Regular (RR)	District	Recurring/ Regular (RR)
		GSDMA, UDD	Promote private participation Magistrate &	Magistrate &	Promote private participation in
			in	Collectors,	disaster management facilities.
			disaster management		
			lacilities.		
5.	Risk Transfer	RD, CoR,	Recurring/ Regular (RR)	District	Recurring/ Regular (RR)
		GSDMA, FD,	Implementation of Risk	Magistrate &	Implementation of Risk Transfer
		UDD	Transfer Arrangements	Collectors,	Arrangements including multi hazard
			including multi-hazard	District	insurance for life and property
			insurance for life and	Development	
			property	Commissioner,	
			Short Term (T1)	Municipal Commissioners	
			Policy Framework		

Seisinic				Capacity Development	evelopment
S. No.	Sub – Thematic Area for		State / District A	State / District Agencies and their Responsibilities	onsibilities
	DRR	State	Responsibility – state	District	Responsibility - District
1.	Training	GIDM, SIRD,	Recurring/ Regular	District Magistrate &	Medium Term (T2)
		GSDMA, ISR	(RR)	Collectors, District	• Carry out the national effort to build
			 Support regular training 	Development	the requisite number of trained
			programs	Commissioner,	personnel to handle seismic safety in
			 Training support for 	Municipal	India
			SDRF, Govt. officials,	Commissioners	
			community, Volunteers		Recurring/ Regular (RR)
			Medium Term (T2)		• Carry out regular trainings of
			Promote state efforts to		community and volunteers
			build the requisite		• Trainings in search and rescue for
			number of trained		community, and volunteers
			personnel to handle		
			seismic		
			Safety in India.		
2.	Curriculum Development	GIDM,	Medium Term (T2)		Medium Term (T2)
		GSDMA,	Facilitate the		DM related aspects to be included in
		Education	introduction of subjects		undergraduate and professional
		Department.	related to DM, in the		courses
			undergraduate and		
			professional courses		

Capacity Development

Seismic				Capacity D	Capacity Development
S. No.	Sub – Thematic Area for		State / District	State / District Agencies and their Responsibilities	onsibilities
	DRR	State	Responsibility – state	District	Responsibility - District
3.	Awareness Generation	Information	Recurring/ Regular	District Magistrate &	Recurring/ Regular (RR)
		Department,	(RR)	Collectors, District	• Carry out mass media campaigns
		RD, CoR,	• Carry out mass media	Development	• Promote culture of disaster risk
		GSDMA	campaigns	Commissioner,	prevention, mitigation, and better risk
			• Promote culture of	Municipal	management
			disaster risk	Commissioners	• Promote attitude and behavior
			prevention, mitigation,		change in the awareness
			and better risk		campaigns/IEC
			management		Medium Term (T2)
			• Promote attitude and		• Promote use of insurance/ risk
			behavior change in the		transfer
			awareness campaigns/		• Promote Community Radio
			IEC		• Strengthening network of civil
			Medium Term (T2)		society
			• Promote use of		organizations for awareness
			insurance/ risk transfer		generation about DRR and DM
			Promote Community		• Information on care and protection
			Radio		of
			• Strengthen network of		disaster-affected animals
			civil society		
			organizations for		
			awareness generation		
			about		
			DRR and DM		

Seismic				Capacity D	Capacity Development
S. No.	Sub – Thematic Area for		State / District	State / District Agencies and their Responsibilities	onsibilities
	DRR	State	Responsibility – state	District	Responsibility - District
4.	Mock Drills/ Exercises	GSDMA,	Recurring/ Regular	District Magistrate &	Recurring/ Regular (RR)
		GIDM, RD,	(RR)	Collectors, District	Monitoring Emergency Preparedness
		CoR, SDRF	Monitoring Emergency	Development	of
			Preparedness of all	Commissioner,	Departments
			Departments	Municipal	Short Term (T1)
			Short Term (T1)	Commissioners	Joint planning and execution of
			Promoting the planning		emergency drills
			and execution of		
			emergency drills by		
			all departments and in all		
			districts.		
5.	Documentation and	GSDMA,	Medium Term (T2)	District Magistrate &	Recurring/ Regular (RR)
	Dissemination	GIDM, RD,	Undertake	Collectors	Popularization and distribution of
		CoR	documentation of		documentation in local languages
			major earthquakes and		
			ensure wider		
			dissemination		
6.	Empowering women,	WCD, SJED,	Medium Term (T2)	District Magistrate &	Medium Term (T2)
	marginalised, and	GSDMA,	Incorporating gender	Collectors, District	Incorporating gender sensitive and
	persons with	GIDM	sensitive and equitable	Development	equitable approaches in capacity
	disabilities		approaches in capacity	Commissioner,	development covering all aspects of
			development covering	Municipal	disaster management at the district,
			all aspects of disaster	Commissioners	and local levels
			management at state,		
			district and local level		

S. No. Sub – Thematic Area for DRR 7. Community-Based Disaster Management	for State RD, CoR, UD, ULBs, GSDMA, GIDM	State / District / Responsibility - state Recurring/ Regular (RR) Promotion, Guidance, and Support.	State / District Agencies and their Responsibilitiesbility - stateDistrictResponsibilities/ RegularDistrict Magistrate &Recurring	onsibilities
7. Community-Based Disaster Management	State RD, CoR, UD, ULBs, GSDMA, GIDM	Responsibility – state Recurring/ Regular (RR) Promotion, Guidance, and Support.	District District Magistrate &	
7. Community-Based Disaster Management	RD, CoR, UD, ULBs, GSDMA, GIDM	Recurring/ Regular (RR) Promotion, Guidance, and Support.	District Magistrate &	Responsibility - District
Disaster Management	ULBs, GSDMA, GIDM	(RR) Promotion, Guidance, and Support.		Recurring/ Regular (RR)
	GSDMA, GIDM	Promotion, Guidance, and Support.	Collectors	Training for PRI, SHG, NCC, NSS,
	GIDM	and Support.		Youth, local community
				organizations
		Training for PRI, SHG,		Short Term (T1)
		NCC, NSS, Youth, local		Strengthen ability of communities to
		community		manage and cope with disasters based
		organizations.		on a multi-hazard approach
		Short Term (T1)		
		Strengthen ability of		
		communities to		
		manage and cope with		
		disasters based		
		on a multi-hazard		
		approach.		

 S. No. Sub - Thematic Area for DRR Area for DRR I. Observation Networks, Networks, Monitoring, Research, Forecasting & Early Warning 	ematic			Understa	Understanding Disaster Risk
Area for 1. Observation Networks, Networks, Informatic Monitorin Research, Forecastin Warning Warning		State / District Agencies a	Agencies and their Responsibilities		
1. Observatio Networks, Informatic Monitorin Research, Forecastir Warning	DRR	State	Responsibility – state Distri	District/MC	Responsibility – District
Networks, Informatic Monitorin Research, Forecastir Warning	on	IMD, INCOIS,	Recurring/Regular (RR)	District Magistrate &	Coordination and
Informatic Monitorin Research, Forecastir Warning		RMSC,	• Promote research and studies –	Collector, Municipal	Implementation with the
Informatic Monitorin Research, Forecastir Warning		GSDMA, CoR.	both in-house and extra-mural by providing	Commissioner	state authorities
Monitorin Research, Forecastin Warning	InformationSystems,	GIDM	research grants to researchers and institutions		
Research, Forecastin Warning	ά		• Studies on ecosystem and shoreline		
Forecastin Warning			changes		
Forecastin Warning			• Promote availability in public domain		
Warning	ıg & Early		cyclone database and forecasts		
			Short Term (T1)		
			• Constitute State Level Coastal advisory		
			Committee as per need		
			• Enhancement of Observational Network		
			Stations (ONS)		
			• Establishment of planned Automatic		
			Weather Stations (AWS) and Rain-Gauge		
			Network (RGN)		
			• Enhancement of a Doppler Weather Radar		
			Network over coastal regions		
			• Integration of all ONS with AWS & RGN		
			In one single platform		
			Medium Term (T2)		
			• Studies on socio-economic on coping		
			capabilities and impacts		
			• Modernization of observation network,		
			equipment, systems, technology		
			Long Term (T3)		
			Research and studies to improve forecasts		

Cyclone and Wind

48

istrict is trained in the second seco	Cyclone	Cyclone and Wind			Understandin	Understanding Disaster Risk
for DRRStateResponsibility - stateDistrictZoning/ MappingBISAG, ISRO,Recurring/ Regular (RR)DistrictZoning/ MappingBISAG, ISRO,Support the preparation of detailed maps to cCD, GSDMASupport the preparation of detailed maps to abilither and tracts for coastal bio-shields using best tools, field studies, and satellite dataHazard RiskGSDMA,GIDMRecurring/ Regular (RR)Vulnerability and Capacity Assessment- Promote studies, documentation and research(HRVCA)- Studies on vulnerabilities and capacities covering social, physical, economic, ecological, gender, social inclusion and equity aspects.(HRVCA)- Provide technical support and guidance for comprehensive HRVCA- Provide technical support and guidance for comprehensive HRVCA- Undertake HRVCA as part of preparing and periodic revision of DM plans, and for development planningShort Term (T1)Constitute/ strengthen the mechanism for development planning	S. No.	Sub – ThematicArea	State / District A	Agencies and their Responsibilities		
Zoning/ MappingBISAG, ISRO,Recurring/ Regular (RR)F&E Dept.,Support the preparation of detailed maps to cCD, GSDMACCD, GSDMAdelineate coastal wetlands, mangroves and shelterbelts and tracts for coastal bio-shields using best tools, field studies, and satellite dataHazard RiskGSDMA,GIDMWulnerability and Capacity Assessment- Promote studies, documentation and research(HRVCA)- Studies on vulnerabilities and capacities covering social, physical, economic, ecological, gender, social inclusion and equity aspects.(HRVCA)- Drovide technical support and guidance for comprehensive HRVCA as part of preparing and periodic revision of DM plans, and for development planningShort Term (T1)Constitute, strengthen the mechanism for constitute, strengthen the mechanism for		for DRR	State		istrict/MC	Responsibility – District
F&E Dept.,Support the preparation of detailed maps to CCD, GSDMACCD, GSDMAdelineate coastal wetlands, mangroves and shelterbelts and tracts for coastal bio-shields using best tools, field studies, and satellite dataHazard RiskGSDMA,GIDMNulnerability and Capacity Assessment (HRVCA)• Promote studies, documentation and research • Studies on vulnerabilities and capacities covering social, physical, economic, ecological, gender, social inclusion and equity aspects.• INVCA)• Promote studies support and guidance for comprehensive HRVCA• Undertake HRVCA• Undertake HRVCA• Browide technical support and guidance for comprehensive HRVCA• Undertake HRVCA• Undertake HRVCA• Constitute revision of DM plans, and for development planningShort Term (T1)Constitute Arreaded for development planning	2.	Zoning/ Mapping		Recurring/ Regular (RR)	District Magistrate &	Recurring/ Regular (RR)
CCD, GSDMA delineate coastal wetlands, mangroves and shelterbelts and tracts for coastal bio-shields using best tools, field studies, and satellite data using best tools, field studies, and satellite data Hazard Risk GSDMA,GIDM Recurring/ Regular (RR) Vulnerability and Capacity Assessment - Promote studies, documentation and research (HRVCA) - Studies on vulnerabilities and capacities covering social, physical, economic, ecological, gender, social inclusion and equity aspects. - Provide technical support and guidance for comprehensive HRVCA - Undertake HRVCA as part of preparing and periodic revision of DM plans, and for development planning Short Term (T1)			F&E Dept.,	Support the preparation of detailed maps to		Collector, Municipal Carry out the mapping and
Hazard Risk shelterbelts and tracts for coastal bio-shields using best tools, field studies, and satellite data by ulnerability and Vulnerability and • Promote studies, documentation and research Vulnerability and • Promote studies, documentation and research (HRVCA) • Studies on vulnerabilities and capacities covering social, physical, economic, ecological, gender, social inclusion and equity aspects. • Provide technical support and guidance for comprehensive HRVCA • Undertake HRVCA • Undertake HRVCA • Undertake HRVCA • Short Term (T1) • Constitute/ strengthen the mechanism for			CCD, GSDMA	delineate coastal wetlands, mangroves and	Commissioner	related studies
Hazard Risk using best tools, field studies, and satellite data Hazard Risk GSDMA,GIDM Recurring/ Regular (RR) Vulnerability and - Promote studies, documentation and Capacity Assessment - Promote studies, documentation and Capacity Assessment - Studies on vulnerabilities and capacities (HRVCA) - Studies on vulnerabilities and capacities covering social, physical, economic, ecological, gender, social inclusion and (HRVCA) - Provide technical support and guidance for comprehensive HRVCA - Provide technical support and guidance for equity aspects. - Provide technical support and guidance for comprehensive HRVCA - Undertake HRVCA as part of preparing and periodic revision of DM plans, and for development planning Short Term (T1) Constitute/ strengthen the mechanism for				shelterbelts and tracts for coastal bio-shield	ls	
Hazard Risk GSDMA,GIDM Recurring/ Regular (RR) Vulnerability and • Promote studies, documentation and Capacity Assessment • Studies on vulnerabilities and capacities (HRVCA) • Studies on vulnerabilities and capacities covering social, physical, economic, ecological, gender, social inclusion and equity aspects. • Provide technical support and guidance for comprehensive HRVCA • Undertake HRVCA and periodic revision of DM plans, and for development planning Short Term (T1) Constitute/ strengthen the mechanism for				using best tools, field studies, and satellite c	data	
 Promote studies, documentation and research Studies on vulnerabilities and capacities covering social, physical, economic, ecological, gender, social inclusion and equity aspects. Provide technical support and guidance for comprehensive HRVCA Provide technical support and guidance for and periodic revision of DM plans, and for development planning Short Term (T1) 	3.	Hazard Risk	GSDMA,GIDM	Recurring/ Regular (RR)	District Magistrate &	Coordination with the state
 research Studies on vulnerabilities and capacities covering social, physical, economic, ecological, gender, social inclusion and equity aspects. Provide technical support and guidance for comprehensive HRVCA Undertake HRVCA as part of preparing and periodic revision of DM plans, and for development planning Short Tern (T1) Constitute/ strengthen the mechanism for 		Vulnerability and		• Promote studies, documentation and	Collector, Municipal	authorities and
		Capacity Assessment		research	Commissioner	Implementation of HRVCA
 covering social, physical, economic, ecological, gender, social inclusion and equity aspects. Provide technical support and guidance for comprehensive HRVCA Undertake HRVCA as part of preparing and periodic revision of DM plans, and for development planning Short Term (T1) Constitute/ strengthen the mechanism for 		(HRVCA)				in DM plans
 ecological, gender, social inclusion and equity aspects. Provide technical support and guidance for comprehensive HRVCA Undertake HRVCA as part of preparing and periodic revision of DM plans, and for development planning Short Term (T1) Constitute/ strengthen the mechanism for 				covering social, physical, economic,		
 equity aspects. Provide technical support and guidance for comprehensive HRVCA Undertake HRVCA as part of preparing and periodic revision of DM plans, and for development planning Short Term (T1) Constitute/ strengthen the mechanism for the strengthen the				ecological, gender, social inclusion and		
 Provide technical support and guidance for comprehensive HRVCA Undertake HRVCA as part of preparing and periodic revision of DM plans, and for development planning Short Term (T1) Constitute/ strengthen the mechanism for 				equity aspects.		
 comprehensive HRVCA Undertake HRVCA as part of preparing and periodic revision of DM plans, and for development planning Short Term (T1) Constitute/ strengthen the mechanism for the strengthen the strengthen				• Provide technical support and guidance fo)r	
Undertake HRVCA as part of preparing and periodic revision of DM plans, and for development planning Short Term (T1) Constitute/ strengthen the mechanism for				comprehensive HRVCA		
and periodic revision of DM plans, and for development planning Short Term (T1) Constitute/ strengthen the mechanism for				• Undertake HRVCA as part of preparing		
development planning Short Term (T1) Constitute/ strengthen the mechanism for				and periodic revision of DM plans, and for		
Short Term (T1) Constitute/ strengthen the mechanism for				development planning		
Constitute/ strengthen the mechanism for				Short Term (T1)		
and the second				Constitute/ strengthen the mechanism for		
consultation with experts and stakenolders.				consultation with experts and stakeholders.		

Cyclone	Cyclone and Wind			Understan	Understanding Disaster Risk
S. No.	Sub – Thematic	State / District Agencies a	Agencies and their Responsibilities		
	Area for DRR	State	Responsibility – state Di	District/MC	Responsibility – District
4.	Dissemination of	CoR, RD,	Recurring/ Regular (RR)	District Magistrate &	Recurring/ Regular (RR)
	warnings, data, and	Dept. of	• Quick, clear, effective dissemination	Collector, Municipal	• Dissemination of warnings
	information	Information	among state agencies	Commissioner	to all
		and	Deployment of communication equipment		(including fishermen), down
		Technology,	• Warnings using all types of options, typesof	of	to the last mile - remote, rural
		GSDMA	technologies, and media		or urban; Regular updates to
			• Providing weather information online and		people in areas atrisk
			offline and interface with mobile network		• Warnings using all types
			service		of options, types
			• Providing warnings on radio, TV, and cell		of technologies, and media
			phones		 Monitoring compliance by
			Medium Term (T2)		various network operators
			Facilitating last-mile connectivity and accessto	sto	and service providers
			disaster risk information		Short Term (T1) Establishing
					seamlessinterface between
					national and state networks
					Medium Term (T2)
					• Ensure facilities and
					infrastructure for the
					implementation of adequate
					access of information to
					communities at risk
					• Deployment of
					communication equipment
5.	Disaster Data	RD, CoR,	Recurring/ Regular (RR)	District Magistrate &	Recurring/ Regular (RR)
	Collection and	GSDMA,	Systematic data management of data on disaster		Systematic data management of
	Management	UDD.	damage and loss assessments	Commissioner.	data on disaster damage andloss
			Disaster Damage and Losses 2005-2015 haseline		Short Term (T1)
					Disaster Damage and Losses
					2005-2015 baseline

S. Sub - Thematic State / District Agencies and their Responsibilities No. Area for DRR State Responsibility - District District Agencies and their Responsibility - District 1 Overal disaster R. Recurring/Regular (RN) District Aggistrate& Recurring/Regular (RN) 1 Overal disaster R. District Aggistrate& Recurring/Regular (RN) 2000 CORN - Providing coordination. District Magistrate Recurring/Regular (RN) 1 Overal disaster RCUDD. - Providing coordination. District Magistrate Recurring/Regular (RN) 2 Properation and implementation District Magistrate Recurring/Regular (RN) - Proparation and implementation of DM 2 Response - District Magistrate Recurring/Regular (RN) - All aspects of disaster risk management 2 Response - All aspects of disaster risk management and mainstreaming DRR - All aspects of disaster risk management 2 Response - RD, COR, Reutring Regular (RN) - Collectors 2 Response - All aspects of disaster risk management - All asp	Cyclo	Cyclone and Wind				Inter – Agency Coordination
Area for DRR State Responsibility - state District Overall disaster RD, CoR, Recurring/Regular (RR) District Magistrate& governance GSDMA, - Providing coordination, District Magistrate& governance GSDMA, - Providing coordination, Municipal UDD. - Providing coordination, Municipal rechnical inputs, and support Commissioner. of DM plans andensure the Municipal functioning of agencies with DM tasks pRR - All aspects of disaster risk management and mainstreaming District Magistrate& DR - All aspects of disaster risk management of DRR, CCA and evelopment. DR - Ensuring coherence and mutual reinforcement of DRR, CCA and development. DR All relevant - Condinating development. Response RD, COR, All relevant - Organising and coordinating Collectors departments - Condinate with central - Condinate with central	Ś	Sub – Thematic		State / District Ag	gencies and their Resp	onsibilities
Overall disaster RD, CoR, GSDMA, Recurring/ Regular (RR) District Magistrate& governance GSDMA, - Providing coordination, Municipal UDD. - Providing coordination, Municipal UDD. - Providing coordination, Municipal Collector, and Municipal Municipal rechnical inputs, and support Commissioner. Collector, and All aspects of disaster tisk Municipal Municipal functioning of agencies with DM tasks - All aspects of disaster risk management and mainstreaming DRR - All aspects of disaster risk Response RD, CoR, Recurring/ Regular (RR) District Magistrate& All relevant - Organising and coordinating Collectors departments - Fisture assistance. Collectors All relevant - Organising and coordinating Collectors departments - Organising and coordinating Collectors departments - Organising and coordinating Collectors departments - Coordinate with central - Coordinate with central	No.	Area for DRR	State	Responsibility – state	District	Responsibility - District
UDD. • Providing coordination, technical inputs, and support Municipal • Preparation and implementation of DM plans andensure the functioning of agencies with DM tasks • Municipal • Preparation and implementation of DM plans andensure the functioning of agencies with DM tasks • Preparation and implementation of DM plans andensure the functioning of agencies with DM Municipal • Preparation and implementation functioning of agencies with DM • Preparation tasks • Preparation all sales Municipal • All aspects of disaster risk management and mainstreaming DRR • All aspects of disaster risk management and mainstreaming DRR • All aspects of disaster risk management and mainstreaming DRR • Ensuring coherence and mutual reinforcement of DRR, CCA and development. Response RD, CoR, Resuring coherence and mutual reinforcement of DRR, CCA and development. District Magistrate& Collectors Response RD, CoR, Returring/Regular (RR) District Magistrate& All relevant departments • Organising and coordinating central/state assistance. • Collectors	1	Overall disaster governance	RD, CoR, GSDMA,	Recurring/ Regular (RR)	District Magistrate& Collector, and	Recurring/ Regular (RR)
Response RD, Conditional Commissioner. Response Preparation and implementation of DM plans andensure the functioning of agencies with DM tasks Preparation of DM plans andensure the functioning of agencies with DM tasks Commissioner. • All aspects of disaster risk management and mainstreaming DRR Response • Ensuring coherence and mutual reinforcement of DRR, CCA and development. • Ensuring coherence and mutual reinforcement of DRR, CCA and development. District Magistrate& Response RD, CoR, All relevant • Organising and coordinating Collectors District Magistrate& Response RD, CoR, All relevant • Organising and coordinating Condinate with central District Magistrate&			UDD.		Municipal	• Preparation and implementation of DM
• Preparation and implementation • Preparation and implementation of DM plans andensure the functioning of agencies with DM functioning of agencies with DM tasks • All aspects of disaster risk • All aspects of disaster risk management and mainstreaming DRR DRR • Ensuring coherence and mutual reinforcement of DRR, CCA and development. Response RD, CoR, Recurring Regular (RR) All relevant • Organising and coordinating Collectors departments • Organising and coordinating collectors departments • Organising and coordinating collectors agencies • Coordinate with central agencies				technical inputs, and support	Commissioner.	plans and ensure the functioning of
Response RD, CoR, All aspects of disaster risk functioning of agencies with DM tasks • All aspects of disaster risk functioning of agencies with DM tasks • All aspects of disaster risk management and mainstreaming DRR • Ensuring coherence and mutual reinforcement of DRR, CCA and development. Response RD, CoR, All relevant • All aspects of disaster risk management and mainstreaming DRR • Cordinating coherence and mutual reinforcement of DRR, CCA and development. • Cordinating departments • Organising and coordinating departments • Coordinate with central agencies				• Dranotion and immlamentation		A rearries with DM tocks of district to inke
functioning of agencies with DM functioning of agencies with DM tasks • All aspects of disaster risk management and mainstreaming • BRR DRR • Ensuring coherence and mutual reinforcement of DRR, CCA and development. Response RD, CoR, Recurring/ Regular (RR) All relevant • Organising and coordinating departments • Organising and coordinating departments • Coordinate with central agencies • Coordinate with central				of DM plans and ensure the		Agencies with Dividance at district, tatura, local and community level.
tasks • All aspects of disaster risk management and mainstreaming DRR • All aspects of disaster risk management and mainstreaming DRR • Ensuring coherence and mutual reinforcement of DRR, CCA and development. Response RD, CR, development. Response RD, CR, development. All relevant • Organising and coordinating Central/state assistance. • Coordinate with central agencies				functioning of agencies with DM		
• All aspects of disaster risk management and mainstreaming DRR • All aspects of disaster risk management and mainstreaming DRR • Ensuring coherence and mutual reinforcement of DRR, CCA and development. • Ensuring coherence and mutual reinforcement of DRR, CCA and development. Response RD, CoR, All relevant • Ensuring/Regular (RR) District Magistrate& Collectors All relevant • Organising and coordinating Central/state assistance. District Magistrate& Collectors				tasks		• All aspects of disaster risk management
management and mainstreaming DRRmanagement and mainstreaming DRRreinforcement of DRR, CCA and development.•Ensuring coherence and mutual reinforcement of DRR, CCA and development.ResponseRD, CoR, development.•Ensuring coherence and mutual reinforcement of DRR, CCA and development.ResponseRD, CoR, development.•Ensuring coherence and mutual reinforcement of DRR, CCA and development.ResponseRD, CoR, development.•Ensuring coherence and mutual reinforcement of DRR, CCA and development.ResponseRD, CoR, development.•Condinating CollectorsAll relevant departments•Organising and coordinating CollectorsAll relevant departments•Organising and coordinating CollectorsAll relevant departments•Organising and coordinating CollectorsAll relevant departments•Organising and coordinating condinatingAll relevant departments•Organising and coordinating condinatingAll relevant departments•Organising and coordinating collectors				• All aspects of disaster risk		and mainstreaming DRR
• Ensuring coherence and mutual • Ensuring coherence and mutual reinforcement of DRR, CCA and development. Response RD, CoR, All relevant ecurring/ Regular (RR) District Magistrate& All relevant • Organising and coordinating Collectors departments • Organising and coordinating Collectors agencies • Coordinate with central agencies				management and mainstreaming		
Responsee. Ensuring coherence and mutual reinforcement of DRR, CCA and development.ResponseRD, CoR, development.Bistrict Magistrate&All relevantOrganising and coordinating Central/state assistance.District Magistrate&epartments• Organising and coordinating central/state assistance.Collectorsagenciesagencies• Coordinate with central						
Responsereinforcement of DRR, CCA and development.ResponseRD, CoR, development.All relevantRecurring/ Regular (RR)All relevantOrganising and coordinating Contectorsdepartments• Organising and coordinating Central/state assistance.• Coordinate with central agencies				• Ensuring coherence and mutual		
ResponseRD, CoR,development.ResponseRD, CoR,Recurring/ Regular (RR)District Magistrate&All relevantAll relevantOrganising and coordinatingCollectorsdepartments• Organising and coordinatingCollectorsCollectorsdepartments• Organising and coordinatingentral/state assistance.entral/state assistance.agenciesagenciesagenciesentral				reinforcement of DRR, CCA and		
ResponseRD, CoR,Recurring/ Regular (RR)District Magistrate&All relevantAll relevantCollectorsCollectorsdepartments• Organising and coordinatingCollectorsCollectorsdepartments• Organising and coordinating• CondinatingCollectorsdepartments• Organising and coordinating• Contral/state assistance.Pageoreagencies• Coordinate with central• Coordinate with centralPageore				development.		
 Organising and coordinating Central/state assistance. Coordinate with central agencies 	2		RD, CoR,	Recurring/ Regular (RR)	District Magistrate&	Recurring/ Regular (RR)
 Organising and coordinating Central/state assistance. Coordinate with central agencies 			All relevant		Collectors	
Ia			departments	• Organising and coordinating		• Organizing and coordinating the
nate with central				Central/state assistance.		immediate response
aate with central						- - - - - - - - - - - - - - - - - - -
agencies				• Coordinate with central		• Coordinate with State / central agencies
-				agencies		

Inter – Agency Coordination

Cyclo	Cyclone and Wind				Inter – Agency Coordination
Ś.	Sub – Thematic		State / District A	State / District Agencies and their Responsibilities	onsibilities
No.	Area for DRR	State	Responsibility – state	District	Responsibility - District
б	Warnings, Information, Data	IMD, RD, CoR,	Recurring/ Regular (RR)	District Magistrate& Collector, and	Recurring/ Regular (RR)
		GSDMA.	Effective coordination and	Municipal	Coordinating the dissemination of warnings
			seamless communication among	Commissioner,	to all, down to the last mile - remote, rural
			central and state agencies to	ULBs, PRIs	or urban; Regular updates topeople in areas
			ensure quick, clear, effective		at risk
			dissemination of warnings,		
			information and data		
4.	Non-structural	RD, CoR,	Recurring/ Regular (RR)	District Magistrate&	Recurring/ Regular (RR)
	measures	All Relevant		Collectors,	
		Departments	Coordination among central and	Municipal	Coordination with state agencies for ensuring
			state agencies for	Commissioners	implementation, enforcement andmonitoring.
			•		
			d) revised/ updated rules,		
			norms		
			e) adoption of new/updated		
			standards,		
			f) enact/amend laws,		
			regulations and		
			g) adopt/ review policies		

Cycl	Cyclone and Wind		Investir	Investing in DRR – Structural Measures	asures
Ś	Sub – Thematic		State / District Agencies and their Responsibilities	nd their Responsibilities	
No.	Area for DRR	State	Responsibility – state	District	Responsibility - District
<u> </u>	 Establishment/ strengthening of Emergency Operation Centres 	CoR, RD, GSDMA, UDD.	Recurring/ Regular (RR) Ensure round the clock operations of SEOCs during the Flood season with adequate manpower/resources	District Magistrate & Collectors, Municipal Commissioners, ULBs & PRIs.	Recurring/ Regular (RR) Ensure round the clock operations of ERC, DEOCs, & TEOCs during the flood seasonwith adequate human resourcesto respond to urban flood.
4	Multi-Purpose Cyclone Shelters	GSDMA R&B	Medium Term (T2) Construction of multi-purpose shelters in coastal villages/habitations prone to frequent cyclones Long Term (T3) Ensure compliance with relevant building codes	District Magistrate & Collectors, Municipal Commissioners	Short Term (T1) Identification of safe buildings and sites to serve as temporary shelters for people and livestock evacuated from localities at risk Medium Term (T2) Identification of land for MPCS.

Investing in DRR - Structural Measures

3. S.	Sub – Thematic		State / District Agencies and their Responsibilities	d their Decnancibilities	
N N				in mon weaponaignmes	
	Area for DRR	State	Responsibility – state	District	Responsibility - District
Ň	Social Housing	R&B, CORD, ULBs,	Short Term (T1)	District Magistrate &	Short Term (T1)
	Schemes	UDD, GSDMA.	Review all housing schemes to ensure	Collectors, District	Review all housing schemes to
			that appropriate multi-hazard safety	Development Officer,	ensure that appropriate
			norms, including cyclone-resistant	Municipal Commissioner.	multi-hazard safety norms,
			features are incorporated in all social		including cyclone-resistant
			housing		features are incorporated in all
			Schemes.		social housing schemes
					Medium Term (T2)
			Medium Term (T2)		• Ensure that multi-hazard,
			Ensure that cyclone resistant features		especially cyclone-resistant
			are incorporated in planningand		features are incorporated in
			execution of social housing schemes		planning and execution of social
			Long Term (T3)		housing schemes
			Carry out retrofitting of all social		• Ensure compliance with
			housing without multi-hazard,		relevant building codes
			especially cyclone-resistant features		Long Term (T3)
					Carry out retrofitting of social
					housing without multi hazard,
					especially cyclone-resistant
					features
4. H	Hazard resistant	R&B, UDD,	Recurring/ Regular (RR)	District Magistrate &	Recurring/ Regular (RR)
ŏ	construction,	Education, Health, Port	Guidance and implementation	Collectors, District	Implementation
st	strengthening,	& Transportation, All		Development Officer,	
aı	and retrofitting	line departments.		Municipal	
0]	of all			Commissioners	
li:	lifeline structures				
aı	and critical				
in	infrastructure				

Cyclo	Cyclone and Wind		Investing	Investing in DRR – Non – Structural Measures	uctural Measures	
Ś	Sub – Thematic		State / District Ag	State / District Agencies and their Responsibilities	sponsibilities	
N0.	Area for DRR	State	Responsibility – state	District	Responsibility - District	
1	. • Laws	UDD, ULB,	Recurring/ Regular (RR)	District	Recurring/ Regular (RR)	
	 Regulations 	R&B, Forest	 Guidance and Support 	Magistrate &	Ecologically sound land-use zonation	
	• Enforcement	&	• Oversight and monitoring of	Collectors,	Regulating aquaculture, and groundwater	
	mechanisms	Environment	compliance with coastal zone	District	extraction	
	 Techno-Legal 	dept., All	laws	Development	Strengthen land-use planning	
	regimes	Line Dept.	Short Term (T1)	Officer,	Recurring/ Regular (RR)	
	 Institutional 		Review and Update relevant	Municipal	Consider shoreline erosion, risk to structures,	
	Arrangements		Codes.	Commissioner,	monitoring shoreline changes paying	
	 Codes for disaster 		Notification of coastal zones for	ULBs.	attention to the preservation of natural	
	risk reduction		different purposes as per CRZ		Barriers.	
	 Compliance 		guidelines and techno-legal			
	monitoring		framework of town and country			
			planning rules; enforcement and			
			Monitoring.			
2.	. Public Private	RD, CoR,	Recurring/ Regular (RR)	District	Recurring/ Regular (RR)	
	Partnerships	GSDMA,	Promote private participation in	Magistrate &	Promote private participation in disaster	
		UDD	disaster management facilities.	Collectors,	management facilities.	
3.	. Risk Transfer	RD, CoR,	Recurring/ Regular (RR)	District	Recurring/ Regular (RR)	
		GSDMA,	Implementation of Risk Transfer	Magistrate &	Implementation of Risk Transfer	
		FD, UDD,	Arrangements including multi-	Collectors,	Arrangements including multi hazard	
		CoRD.	hazard insurance for life and	District	insurance for life and property	
			property	Development		
			Short Term (T1)	Officer,		
			Policy Framework	Municipal		
				Commissioners		

Investing in DRR - Non - Structural Measures

+
en
nem
lop
elc
evel
Ď
it
apacity
ap
Ű

Cyclo	Cyclone and Wind				Capacity Development
Ś	Sub – Thematic		State / District Agencies and their Responsibilities	cies and their Res	ponsibilities
No.	Area for DRR	State	Responsibility – state	District	Responsibility – District
1.	Training	GIDM, SIRD,	Recurring/ Regular (RR)	District	Recurring/ Regular (RR)
		GSDMA,	Training and orientation programs	Magistrate &	Training and orientation programs for state
		SPIPA, Police	for State govt. staff, SDRF,	Collectors,	govt. staff, and other direct stakeholders
		Training	Community, Volunteers, and other	DSP, District	such as: civil society, media-persons,
		Academy,	direct stakeholders	Development	elected representatives, professionals for
		SDRF.	Incorporating disaster response,	Officer,	veterinary care and support to disaster
			search and rescue in the training	Municipal	affected animals
			programs of youth such as NCC,	Commissioners	Incorporating disaster response, search and
					rescue in the training programs of
			NYKS, Scouts and Guides and		youth such as village volunteers, protection
			NSS, Aapda Mitra, Community		of disaster-affected animals
			Volunteers, NGO, CSO, CBO,		
			PRIs.		
2.	Curriculum	GIDM,	Medium Term (T2)	District	Implementation in the district, taluka &
	Development	GSDMA,	Update curriculum for	Magistrate &	village.
		Education	undergraduate engineering and	Collectors,	
		Department,	professional courses to include	District	
		Health Dept.	topics relevant to cyclone risk	Development	
			management.	Officer.	
			Introducing basic DM concepts in		
			curriculum/crisis management.		

Cyclo	Cyclone and Wind				Capacity Development
Ś	Sub – Thematic		State / District Agencies and their Responsibilities	icies and their Resl	ponsibilities
N0.	Area for DRR	State	Responsibility – state	District	Responsibility – District
Э.	Awareness	Information	Recurring/ Regular (RR)	District	Recurring/ Regular (RR)
	Generation	Department, RD, CoR,	• Carry out mass media	Magistrate & Collectors,	• Carry out mass media campaigns
		GSDMA,UDD,	campaigns	District	• Promote attitude and behavior
		GIDM	• Promote attitude and behavior	Development	change in the awareness campaigns/IEC
			change in the awareness	Officer, Municinal	Medium Term (T2)
			campaigns/ IEC	Commissioners.	 Promote culture of disaster risk
			Medium Term (T2)	PRIs, NGOs,	prevention, mitigation, and better risk
			• Promote culture of disaster risk	CBOs, Youth	management
			prevention, mitigation, and better	Volunteers etc.	• Promote use of insurance/ risk transfer
			risk management		• Promote Community Radio
			• Promote use of insurance/ risk transfer		 Strengthening network of civil society
			 Promote Community Radio 		organizations for awareness
			• Strengthen network of civil		generation about DRR and DM Information on care and protection of
			society organizations for		disaster-affected animals
			awareness generation about		
			DRR and DM		

	Cyclume and willing				Capacity Development
S.	Sub – Thematic		State / District Agencies and their Responsibilities	ncies and their Res	ponsibilities
No.	Area for DRR	State	Responsibility – state	District	Responsibility – District
	Mock Drills/ Exercises Vocational Training/ Skill Development	GSDMA, GIDM, RD, CoR, SDRF, All Line Dept. GSDMA, GIDM, RD, SIRD.	Recurring/ Regular (RR)Monitoring EmergencyPreparedness of all DepartmentsPromoting EmergencyShort Term (T1)Promoting the planning andexecution of emergency drills byall departments and in alldistricts.Recurring/ Regular (RR)• Promote skill development formulti hazard resistantconstruction in cyclone proneareas for different infrastructure.• Creating ToT teams fordifferent Trades relevant to	District Magistrate & Collectors, District Development Officer, Municipal Commissioner, Industry, NGOs. District Magistrate & Collectors, District Development Officer.	Recurring/ Regular (RR) Monitoring Emergency Preparedness of Districts Short Term (T1) Joint planning and execution of emergency drills with centre / state emergency drills with centre / state emergency drills with centre / state of emergency drills with centre / state emergency drills with centre / state for PRIs and GP level.
			cyclone resistant construction.		

Cyclo	Cyclone and Wind				Capacity Development
Ś	Sub – Thematic		State / District Agencies and their Responsibilities	cies and their Resl	oonsibilities
N0.	Area for DRR	State	Responsibility – state	District	Responsibility – District
6.		WCD, SJED,	Medium Term (T2)	District	Medium Term (T2) Incorporating
	marginalised, and	GSDMA,	Incorporating gender sensitive	Magistrate &	gender sensitive andequitable
	persons with	GIDM	and equitable approaches in	Collectors,	approaches in capacity
	disabilities		capacity development covering	District	development covering all aspects of disaster
			all aspects of disaster	Development Officer,	management at ure uisurct, taluka, vimage and local levels
			management at state, district and	Municipal	
			local level	Commissioners	
7.	. Community-Based	RD, UDD,	Recurring/ Regular (RR)	District	Recurring/ Regular (RR)
	Disaster Management	ULBs,	Training for PRI, SHG, NCC,	Magistrate &	Training for PRI, SHG, NCC, NSS, Youth,
		GSDMA,	NSS, Youth, local community	Collectors,	local community organizations at district,
		GIDM, SIRD.	organizations.	Municipal	taluka and GP level
			Short Term (T1)	Commissioner, DDO PRIs	Short Term (T1)
			Strengthen ability of communities	NGOs, CBOs,	Strengthen ability of communities to
			to manage and copewith disasters	Youth	
			based on a multi- hazard approach.	Volunteers,	manage and cope with disasters based on a
				Aapda Mitra.	111uuu-11azauu approacu

Cyc]	Cyclone and Wind				Climate Change Risk Management
Ś	Sub – Thematic		State / District	t Agencies and	State / District Agencies and their Responsibilities
No.	Area for DKR	State	Responsibility – state	District	Responsibility – District
	1 Research,	RD,	Recurring/ Regular (RR)	District	Recurring/ Regular (RR)
	Forecasting, Data Management,	GSDMA, GIDM, TILRs	Promote studies and research on climate change-related risks and	Magistrate & Collectors	 Support national risk reduction efforts related to GACC
	Zoning, Mapping	UDD,	adaptation options	DDO.	 Coordination with state agencies
		SIRD.	Short Term (T1)		• Sponsor and promote district-specific efforts and
			• Studies on GACC driven		local efforts for GACC
			ecosystem and shoreline changes		mitigation and adaptation
			• Assess enhanced risks (Fconomic social etc.) under		Medium Term (T2)
			different GACC impact scenarios		Document district-specific GACC impacts and coping
			• Carry out risk zonation /		mechanisms
			mapping of climate change		Long Term (T3)
			impacts considering various sea- level rise and shoreline change scenarios		• Promote district-specific studies on enhanced risks (economic, social, etc.) under different GACC impact scenarios
			Research studies on mutual coherence and mutual reinforcement of GACC and		 Promote research studies with State specific contexts on GACC and consequent changes in hazards
			risk management along the coast		
			Long Term (T3)		
			Develop Data base management system for GACC impacts		

Climate Change Risk Management

Cycl	Cyclone and Wind				Climate Change Risk Management
Ś	Sub – Thematic		State / District	t Agencies and t	State / District Agencies and their Responsibilities
No.	Area for DKK	State	Responsibility – state	District	Responsibility – District
5	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	RD, SJ&ED, UDD.	Long Term (T3) • Promote state-specific studies on vulnerabilities, capacities and risks under GACC impact scenarios	District Magistrate & DDO DDO	Long Term (T3) Assess GACC risks of vulnerable and marginalized sections
ς,	Climate Change Adaptation (CCA)	CCD, RD, F&ED, SJ&ED, UDD,R&B.	 Medium Term (T2) Understanding CCA needs Study GACC coping mechanisms Develop CCA mechanisms Develop CCA mechanisms Promote appropriate combination of Green and Blue infrastructure approach Support the implementation GACC adaptation programs Promote adaptive measures in social protection programmes for the vulnerable groups 	District Magistrate & Collectors, DDO, PRIs, NGOs, CBOs, Youth Volunteers.	 Recurring/ Regular (RR) Sensitization and awareness creation Support national CCA efforts Support national CCA efforts Coordination with central agencies Sponsor and promote state-specific efforts and local efforts for GACC mitigation and adaptation Medium Term (T2) Develop local adaptation strategies and pilot projects Long Term (T3) Sponsor and promote state-specific efforts and local efforts Innote appropriate combinations of Green and Blue infrastructure approach Implementation of GACC adaptation programs Integrate adaptive measures in social protection programmes for the vulnerable groups

GACC: Global Climate Change Adaptation

Tsunami

Risk
Disaster
lerstanding l
Und

Tsunami	ni			Understanding Disaster Risk	Disaster Risk
S. No.	Sub – Thematic	State / District A	State / District Agencies and their Responsibilities		
	Area for DRR	State	Responsibility – state	District	Responsibility - District
1.	Research and	BISAG,	Medium Term (T2)	DM &	Medium Term (T2)
	Development Efforts	ISRO,	• Encourage development of	Collectors,	Supplement the relevant data for
		GSDMA,	standardised methods for tsunami	DDU, NGUS	research.
		GIDM	risk assessment and scenario		
			development, support studies to		
			collect the data and compile		
			knowledge		
			• Develop suitable large-scale digital		
			maps indicating the tsunami hazard basis on past		
			tsunami events		
			 Develop detailed computerized maps and databases of vulnerable areas along 		
			the coast for planning and coordination of DM activities		

Tsunami	ni			Understanding Disaster Risk	Disaster Risk
S. No.		State / District 2	State / District Agencies and their Responsibilities		
	Area for DRR	State	Responsibility – state	District	Responsibility - District
2.	Zoning/ Mapping	ISR, ISRO,	Recurring/ Regular (RR)	DM &	Recurring/ Regular (RR)
		CoR, BISAG GSDMA, GIDM	Ensure support to the Central / State Government agencies in zoning/ mapping and carry out at their level	Collectors.	Ensure support to the State Government agencies in zoning/ mapping and carry out at their level
			Long Term (T3)		
			Database of Tsunami Risk and Vulnerability in the coastal areas with information on trends of storm surge, high tides, local bathymetry, etc.		
3.	Observation	IMD, INCOIS,	Medium Term (T2)	DM &	Recurring/ Regular (RR)
	Networks, Information	CoR,GSDMA.	Assess the status of existing immortant installations in coastal	Collectors, DDO	Support, cooperation for data collection
	Systems,		areas to withstand tsunami.		and aparton.
	Monitoring,		Medium Term (T2)		
	Research,		Securing critical instrumentation to ensure failsafe functioning of		
			these critical instruments and		
	Forecasting & Early		their protection		
	Warning				

Tsunami	ni			Understanding Disaster Risk	Disaster Risk
S. No.	Sub – Thematic	State / District	State / District Agencies and their Responsibilities		
	Area for DRR	State	Responsibility – state	District	Responsibility - District
4.	Dissemination of	INCOIS,	Recurring/ Regular (RR)	DM &	Recurring/ Regular (RR)
	warnings, data,	IMD, ISRO, Cor	 Monitoring seismic activity, 	Collectors,	• Dissemination of warnings to all
		GSDMA, TIDD	provide warnings based on seismic models and issue periodic		(including fishermen), down to the last mile – remote, rural or urban; Regular
			bulletins		updates to people in areas at risk
			• Quick, clear, effective		• Warnings using all types of options,
			dissemination among central and		types of technologies, and media
			state agencies		Medium Term (T2)
			• Warnings using all types of options, types of technologies, and media		• Ensure facilities and infrastructure for the
			• Providing weather information		implementation of adequate access of
			online and offline and interface with mobile network service		information to communities at risk
			 Providing warnings on radio, TV, and cell phones 		• Deployment of communication equipment
			Medium Term (T2)		
			Facilitating last-mile connectivity and access to disaster risk information		

Tsunami	ni			Understanding Disaster Risk	Disaster Risk
S. No.		State / District /	State / District Agencies and their Responsibilities		
	Area for DRR	State	Responsibility – state	District	Responsibility - District
5.	Hazard Risk	GIDM,	Recurring/ Regular (RR)	DM &	Recurring/ Regular (RR)
	Vulnerability and	GSDMA,	Undertake HRVCA as part of	Collectors.	Undertake HRVCA as part of preparing
	Capacity Assessment	MOEF, SI&FD	preparing and periodic revision ofDM		and
	(HRVCA)	SIMED.	plans, and for development planning		periodic revision of DM plans, and for
			• Promote studies, documentation and research		development planning
			 Studies on vulnerabilities and capacities covering social, physical, 		
			economic, ecological, gender, social inclusion and equity aspects.		
			• Provide technical support and guidance for comprehensive HRVCA		
6.	Disaster Data	CoR,	Recurring/ Regular (RR)	DM &	Recurring/ Regular (RR)
	Collection and Management	GSDMA, all depts.	Systematic data management of data on disaster damage and loss assessments	Collectors, DDO, MC.	Systematic data management of data on disaster damage and loss assessments
					Short Term (T1)
			Short Term (T1) Disaster Damage and Losses 2005- 2015 baseline		Disaster Damage and Losses 2005-2015 baseline

Tsunami	mi			Inter – Agei	Inter – Agency Coordination
S.	Sub – ThematicArea	State / District	State / District Agencies and their Responsibilities		
N0.	for DRR	State	Responsibility – state	District	Responsibility - District
1	Overall disaster	RD, CoR,	Recurring/ Regular (RR)	District	Recurring/ Regular (RR)
	governance	GSDMA	 Providing coordination, technical inputs, and support 	Magistrate & Collector.	• Preparation and implementation of DM plans and ensure the functioning of
			• Preparation and implementation of State DM plans and ensure the functioning of agencies with State DM tasks		agencies with DM tasks • Ensuring coherence and mutual reinforcement of DRR, CCA and development
			• All aspects of disaster risk management and mainstreaming DRR		
			• Ensuring coherence and mutual reinforcement of DRR, CCA and development		
7	Response	RD, CoR, All	Recurring/ Regular (RR)	District	Recurring/ Regular (RR)
		relevant departments	• Organizing and coordinating central and state assistance.	Magistrate & Collectors, MC	• Organizing and coordinating the immediate response
			• Coordinate with central and		• Coordinate with central and State agencies
			state agencies		

Inter – Agency Coordination

S. Sub-Thematic State / District Agencies and their Responsibility - District No. Area for DRR State / District Agencies and their Responsibility - District No. Area for DRR State Responsibility - state District Responsibility - District 3 Wamings, Information, Data IMD, NCOIS, Effective coordination and COR, seamless communication annong COR, seamless communication annong COR, seamless communication annong COR, seamless communication annong COR, seamless communication annong COR, seamless communication annong COR, seamless communication annong dissemination of warnings, dissemination of warnings, dissemination of warnings, dissemination of warnings, dissemination of warnings, dissemination of warnings, dissemination annong canta agencies for neasures Recurring/ Regular (RR) 4 Non-structural RD. COR, AII Recurring/ Regular (RR) District 4 Non-structural RD. COR, AII Recurring/ Regular (RR) District 4 Non-structural RD. COR, AII Recurring/ Regular (RR) District 4 Non-structural RD. COR, AII Recurring/ Regular (RR) District 5 Non-structural RD. CoR, AII Recurring/ Regular (RR) District 6 Non-structural RD.	Tsunami	ami			Inter – Agency Coordination	Coordination
Area for DRRStateResponsibility - stateDistrictWarnings,IMD,Recurring/Regular (RR)DistrictWarnings,IND,Recurring/Regular (RR)DistrictInformation, DataINCOIS,Effective coordination and coR,Seamless communication annongMagistrate & Collectors, MC.GSDMA.central and state agencies to ensure quick, clear, effectiveMagistrate & MC.Magistrate & MC.Non-structuralRD, CoR, AllRecurring/Regular (RR)DistrictNon-structuralRD, CoR, AllRecurring/Regular (RR)DistrictneasuresDepartmentsstate agencies for state agencies forDistrictDepartmentsstate agencies for borDistrictDistricti)adoption of new/updated rules, normsMunicipali)in eavinesi)in eavinesCommissionersii)adoption of new/updated rules, normsMunicipalii)adoption of new/updatedCommissionersii)adoption of new/updatedcommissionersii)enections andii)in enections andiii)in enections andk)adoptions and	Ś	Sub – Thematic	State / District	Agencies and their Responsibilities		
Warnings, Information, Data IMD, Securring/ Recurring/ Regular (RR) District Information, Data NNCOIS, CoR, CoR, SEMA. Effective coordination and Seamless communication among Collectors, MC. District CoR, CoR, CoR, GSDMA. eamless communication among central and state agencies to ensure quick, clear, effective dissemination of warnings, information and data District Non-structural RD, CoR, All Recurring/ Regular (RR) District Non-structural RD, CoR, All Recurring/ Regular (RR) District measures Relevant Coordination among central and Collectors, DSP, District h) revised/ updated rules, norms Municipal DSP, i) adoption of new/updated Commissioners Standards, j) enact/anneh laws, regulations and K) Adopt/ review policies	N0.	Area for DRR	State	Responsibility – state	District	Responsibility - District
Information, Data INCOIS, CoR, CoR, Seamless communication among CoR, GSDMA. Effective coordination and CoR Magistrate & Collectors, MC. Non-structural RD, CoR, All Remunication and data Magistrate & Collectors, MC. Non-structural RD, CoR, All Recurring/ Regular (RR) District Incasures Departments state agencies for District Incordination among central and the revised/ updated rules, norms Municipal Incordination i) adoption of new/updated Condinations Incordination i) adoption of new/updated Commissioners Incordinations and i) enact/annend laws, Incipal Incordinations and i) incorties Municipal	3	Warnings,	IMD,	Recurring/ Regular (RR)	District	Recurring/ Regular (RR)
CoR, GSDMA. seamless communication among GSDMA. central and state agencies to ensure quick, clear, effective dissemination of warnings, information and data Collectors, MC. Non-structural RD, CoR, All Recurring/ Regular (RR) District Non-structural RD, cordination and data District Non-structural RD, cord, vldated rules, norms Magistrate & Collectors, bepartments District Non-structural RD, cordination anong central and bepartments District District Non-structural RD, condination among central and bepartments District District Nuncipal in revised/ updated rules, norms Municipal District Nuncipal i) adoption of new/updated Commissioners Standards, Standards, j) enact/amend laws, tregulations and K) adopt/review policies		Information, Data	INCOIS,	Effective coordination and	Magistrate &	Coordinating the dissemination of warnings to
CODMAA. central and state agencies to ensure quick, clear, effective dissemination of warnings, information and data MOL. Non-structural RD, CoR, All Recurring/ Regular (RR) District Non-structural RD, CoR, All Recurring/ Regular (RR) District neasures Relevant Coordination among central and state agencies for District Departments Rate agencies for District Magistrate & District Image: Relevant Coordination among central and state agencies for District Image: Relevant Condination among central and state agencies for District Image: Relevant Condination among central and state agencies for District Image: Relevant Condination among central and state agencies for Collectors, District Image: Relevant District District Image: Relevant Condination among central and state agencies for Collectors, District Image: Relevant District District Image: Relevant District District Image: Relevant Condination among central and state agencies for Collectors, District Image: Relevant District District Image: Relevant District District Image: Relevant District District			CoK,	seamless communication among	Collectors,	all, down to the last mile - remote, rural or
Image: service of the service of t			USDIMA.	central and state agencies to	MC.	urban; Regular updates to people in areas at
Image: Non-structural All semination of warnings, information and data Non-structural RD, CoR, All Recurring/Regular (RR) Image: Non-structural Rober Condination among central and collectors, state agencies for Image: Non-structural Departments State agencies for District Image: Non-structural Image: Non-structural Magistrate & Collectors, Display Image: Non-structural Image: Non-structural Non-structural Image: Non-structural Image: Non-structural<				ensure quick, clear, effective		risk
Image: Non-structural Information and data Non-structural RD, CoR, All Recurring/Regular (RR) Departments Relevant Coordination among central and District Relevant Relevant Coordination among central and District Departments Relevant Coordination among central and District Image: Relevant Departments State agencies for District Departments Intervised/updated rules, norms Municipal Image: Relevant Intervised/updated District Image: Relevant Intervised/updated Commissioners Image: Relevant Intervised/updated Commissioners Image: Relevant Intervised intervise Runicipal Image: Relevant Intervised intervise Runicipal				dissemination of warnings,		
Non-structuralRD, CoR, AllRecurring/ Regular (RR)DistrictmeasuresRelevantCoordination among central andMagistrate &Departmentsstate agencies forDSP,Departmentsi) revised/ updated rules, normsMunicipali) adoption of new/updatedi) adoption of new/updatedConmissionersi) enact/amend laws,j) enact/amend laws,regulations andk) adopt/ review policiesk) adopt/ review policiesconmissioners				information and data		
RelevantCoordination among central and bepartmentsMagistrate & Collectors, DSP,Departmentsstate agencies for b)Eollectors, DSP, DSP,i)adoption of new/updated rules, normsMunicipal Nunicipali)adoption of new/updated standards,Commissioners regulations and k)j)enact/amend laws, regulations and k)Adopt/review policies	4	Non-structural	RD, CoR, All	Recurring/ Regular (RR)	District	Recurring/ Regular (RR)
state agencies forDSP,h) revised/ updated rules, normsDSP,i) adoption of new/updatedMunicipali) adoption of new/updatedCommissionersstandards,Commissionersj) enact/amend laws,regulations andk) adopt/ review policiesk		measures	Relevant	Coordination among central and	Magistrate &	Coordination among state agencies for
rles, norms Municipal pdated Commissioners sies			Departments	state agencies for	DSP.	ensuring implementation, enforcement and
pdated				h) revised/ updated rules, norms	Municipal	monitoring.
j) enact/amend laws, regulations and k) adopt/review policies				i) adoption of new/updated	Commissioners	
j) enact/amend laws, regulations and k) adopt/review policies				standards,		
k) adopt/ review policies				j) enact/amend laws,		
k) adopt/review policies				regulations and		
				k) adopt/ review policies		

Measures
Structural
in DRR -
Investing i

Tsur	Tsunami		Investing in DRI	Investing in DRR - Structural Measures	tes
Ś	Sub – Thematic Area for DRR	State / District	State / District Agencies and their Responsibilities	lities	
No.		State	Responsibility – state	District	Responsibility – District
	1. Strengthening of lifeline structures	R&B, UDD,	Recurring/ Regular (RR)	District Magistrate	Recurring/ Regular (RR)
	and high prioritybuildings	CoR, RD,	Implementation as per	& Collectors,	Implementation as per
		GSDMA and	recommendations of safety	Municipal	recommendations of safetyaudit
		all relevant	audit where applicable	Commissioners	where applicable
		departments			
C A	2. • Shelters from storm surges and	R&B, UDD,	Recurring/ Regular (RR)	District Magistrate	Recurring/ Regular (RR)
	tsunamis	CoR, RD,	Guidance to implementing	& Collectors,	Implementation in compliance with
	Construction of large-scale	GSDMA and	Agencies.	Municipal	relevant building codes/ standards/
	submerged sand	all relevant	Implementation in	Commissioners	technical guidance
	barriers	departments	compliance with relevant		
	• Periodical dredging of the inlets		building codes/ standards/		
	and		technical guidance		
	associated water bodies so as to				
	absorb the influx during tsunami				
	Construction of submerged				
	dykes (one or two rows along the				
	stretch of the coast) so as to				
	decrease the impact due to the				
	incoming				
	tsunami and inland dykes to				
	safeguard vital installations				
	3. Hazard resistant construction,	R&B, UDD,	Recurring/ Regular (RR)	District Magistrate &	Recurring/ Regular (RR)
	strengthening and retrofitting of	ULB all	Guidance and	Collectors, District	Implementation
	all lifeline structures and critical	relevant	Implementation.	Municipal	
	infrastructure	departments	Collaboration with	rommissioners	
			technical agencies and		
			Implementation.		
I		ľ			

eir Responsibilities- stateDistrict- stateDistrictular (RR)Districtcerns in planMagistrate &n-plan proposalsCollectors,rtments as pernormsMC.ular (RR)DistrictSupportDistrictSupportDistrictnonitoring ofDistrictnonitoring ofDistrictnonitoring ofDistrictnonitoring ofDistrictnonitoring ofCollectors,nonitoring ofDistrictnonitoring ofDistrictnentation ofCollectors,p allDDO, DSP,numoritingDDO, DSP,numoritingDDO, DSP,numoritingDDO, DSP,numoritingDDO, DSP,numoritingDDO, DSP,numoritingDDO, DSP,numoritingDDO, DSP,numoritingDDO, DSP,numoritingDDO, DSP,numoritingDDOnumoritingDDOnumoritingDDOnumoritingDDOnumoritingDDOnumoritingDDOnumoritingDDOnumoriting <th>Tsunami</th> <th>ımi</th> <th></th> <th>Investing in DRR</th> <th>Investing in DRR - Non - Structural Measures</th> <th>al Measures</th>	Tsunami	ımi		Investing in DRR	Investing in DRR - Non - Structural Measures	al Measures
Area for DRR State Responsibility - state District 1. Mainstreaming DM GAD Recurring/Regular (RR) District 1. Mainstreaming DM GAD Recurring/Regular (RR) District 1. PD, All Line by various departments as permorms Magistrate & MC. 2. Regulation and Ervisionment, -Guidance and Support Collectors, MC. 2. Regulation and Forest and Recurring/Regular (RR) District 2. Regulation and Forest and Recurring/Regular (RR) District 2. Regulation and Forest and Recurring/Regular (RR) Magistrate & MC. 2. Regulation and Forest and Nonitoring of Collectors. 2. Regulation and Forest and Nonitoring of Collectors. 2. Regulation and Forest and Nonitoring of Collectors. 2. Regulation and Forest and support Collectors. Collectors. 2. Regime Oversight and monitoring of Co	S.	Sub – Thematic	State / District	Agencies and their Responsibilities		
I. Mainstreaming DM GAD Recurring/ Regular (RR) District into Development (Planning), ED, All Line Schemes and non-plan proposals Collectors, Planning ED, All Line schemes and non-plan proposals Collectors, Magistrate & 2. Regulation and Forest and Recurring/ Regular (RR) District 2. Regulation and Forest and Recurring/ Regular (RR) District 2. Regulation and Forest and Recurring/ Regular (RR) District 2. Regulation and Forest and Recurring/ Regular (RR) District 2. Regulation and Forest and Support Collectors, 2. Regulation and Forest and Support Collectors, 2. Regular (RR) District Magistrate & 3. Techno-Legal BIS, R&B, Recurring/ Regular (RR) District 3. Techno-Legal BIS, R&B, Recurring/ Regular (RR) District 3. Techno-Legal All Depts / Ensure implementation of Collectors, standards through all <td< th=""><th>No.</th><th>Area for DRR</th><th>State</th><th>Responsibility – state</th><th>District</th><th>Responsibility - District</th></td<>	No.	Area for DRR	State	Responsibility – state	District	Responsibility - District
into Development (Planning), FD, All Line Include DM concerns in plan Magistrate & Collectors, by various departments as pernorms Magistrate & Collectors, by various departments as pernorms 2. Regulation and enforcement of relevant laws FD, All Line Number, Schemes and non-plan proposals Collectors, District 2. Regulation and enforcement of relevant laws FO various departments as pernorms MC. 2. Regulation and Planning FO various departments as pernorms MC. 2. Regulation and Planning Forest and Regular (RR) District 2. Regular (RR) District Magistrate & Collectors, standards through all 2. Techno-Legal BIS, R&B, Regime Recurring/ Regular (RR) District 3. All Depts / Regime • Ensure implementation of fusitutions Collectors, standards through all DDO, DSP, departments/ institutions District 3. Develop suitable byelaws for rural areas (for both engineersand non engineered buildings)considering Collectors, postitioners	1.	Mainstreaming DM	GAD	Recurring/ Regular (RR)	District	Recurring/ Regular (RR)
Planning FD, All Line schemes and non-plan proposals Collectors, by various departments as pernorms Collectors, MC. 2. Regulation and enforcement of Environment, relevant laws Forest and Environment, and monitoring of Depts. • Couldance and Support Oversight and monitoring of Collectors. District 0 Versight and monitoring of compliance with CRZ laws • Oversight and monitoring of Collectors. Collectors. 1 Techno-Legal BIS, R&B, Recurring/Regular (RR) District Collectors. 1 Techno-Legal BIS, R&B, Recurring/Regular (RR) District Collectors. 1 All Depts / Regime • Ensure implementation of Institutions District Collectors. Collectors. 1 All Depts / Regime • Ensure implementation of Institutions District Municipal Municipal 1 All Depts / Regime • Ensure implementation of Institutions District Collectors. 1 All Depts / Regime • Ensure implementation of Institutions Collectors. Collectors. 1 All Depts / Regime • Ensure implementation of Institutions Collectors. Collectors. 1		into Development	(Planning),	Include DM concerns in plan	Magistrate &	Include DM concerns all schemes and pronosals
2. Regulation and enforcement of Environment, relevant laws Dop. Environment, Guidance and Support District enforcement of relevant laws Environment, Guidance and Support Collectors. District relevant laws Depts. • Oversight and monitoring of compliance with CRZ laws Collectors. Techno-Legal BIS, R&B. Recurring/ Regular (RR) District Regime All Depts • Ensure implementation of departments/ institutions District Institutions. BIS, R&B. Recurring/ Regular (RR) District Regime All Depts / departments/ institutions Magistrate & Collectors, standards through all Medium Term (T2) District		Planning	FD, All Line	schemes and non-plan proposals		by various departments as per norms
2. Regulation and enforcement of relevant laws Forest and Environment, Depts. Recurring/ Regular (RR) District All Line relevant laws Oversight and monitoring of compliance with CRZ laws Odlectors. Collectors. Depts. Oversight and monitoring of compliance with CRZ laws Environment, compliance with CRZ laws Magistrate & Collectors. Techno-Legal BIS, R&B, Regime Recurring/ Regular (RR) District All Depts / Institutions. Ensure implementation of tarta through all departments/ institutions District Develop suitable byelaws for rural areas (for both engineersand non engineered buildings)considering Commissioners		_	Dept.	by various ucpartificates as periorities		
enforcement of relevant laws Environment, All Line • Guidance and Support Magistrate & Collectors. Depts. • Oversight and monitoring of compliance with CRZ laws • Collectors. Techno-Legal BIS, R&B, Recurring/ Regular (RR) District Regime All Depts / Institutions. • Ensure implementation of tandards through all departments/ institutions District Develop suitable byelaws for rural areas (for both engineersand non engineered buildings)considering District Municipal	6.		Forest and	Recurring/ Regular (RR)	District	Short Term (T1)
Televant Iaws Depts. • Oversight and monitoring of compliance with CRZ laws Techno-Legal BIS, R&B, Recurring/ Regular (RR) Techno-Legal BIS, R&B, Recurring/ Regular (RR) Regime All Depts / Institutions. • Ensure implementation of standards through all departments/ institutions District Municipal Medium Term (T2) Doo, DSP, Municipal Municipal Institutions. Develop suitable byelaws for rural areas (for both engineered buildings)considering horal conditions Postidering		enforcement of	Environment, All Line		Magistrate & Collectors.	• Ensure compliance with coastal environment
Techno-Legal BIS, R&B, Recurring/ Regular (RR) Techno-Legal BIS, R&B, Recurring/ Regular (RR) Regime All Depts / • Ensure implementation of Regime All Depts / • Ensure implementation of Institutions. standards through all District Regime All Depts / • Ensure implementation of Collectors, Regime All Depts / • Ensure implementation of District Regime All Depts / • Ensure implementation of District Regime All Depts / • Ensure implementation of District Regime All Depts / • Ensure implementation of District Regime All Depts / • Ensure implementation of District Regime All Depts / • Ensure implementation of Collectors, Regime Bistitutions Municipal District Redium Term (T2) Downissioners Municipal Resincered buildings)considering Inceal conditions Inceal conditions		relevant laws	Depts.			protection laws and regulations such as the CRZ
Techno-Legal BIS, R&B, Recurring/ Regular (RR) Techno-Legal BIS, R&B, Recurring/ Regular (RR) Regime All Depts / • Ensure implementation of lnstitutions. District All Depts / • Ensure implementation of lnstitutions. Collectors, District District Regime All Depts / • Ensure implementation of lnstitutions. District Regime All Depts / • Ensure implementation of lnstitutions. District Regime All Depts / • Ensure implementation of lnstitutions. District Regime All Depts / • Ensure implementation of lnstitutions. District All Depts / • Ensure implementation of lnstitutions. District Magistrate & Collectors, District Regime All Depts / • Ensure implementation of lnstitutions. District Regime All Depts / • Ensure implementation of departments/ institutions. District Regime Bevelop suitable byelaws for rural areas (for both engineers and non engineered buildings)considering Commissioners				compliance with CRZ laws		 Regulating aquaculture, and groundwater
Techno-Legal BIS, R&B, Recurring/ Regular (RR) District Techno-Legal BIS, R&B, Recurring/ Regular (RR) District Regime All Depts / • Ensure implementation of lastitutions. District Regime All Depts / • Ensure implementation of lastitutions. District Regime All Depts / • Ensure implementation of lastitutions. District Regime All Depts / • Ensure implementation of lastitutions. District Regime All Depts / • Ensure implementation of lastitutions. Municipal Doc, DSP, Docylop suitable byclaws for rural areas (for both engineersand non engineered buildings)considering local conditions. Docylop suitable byclaws for rural areas (for both engineersand non engineered buildings)considering local conditions.						extraction
Techno-Legal BIS, R&B, Recurring/ Regular (RR) District Techno-Legal BIS, R&B, Recurring/ Regular (RR) District Regime All Depts / • Ensure implementation of standards through all departments/ institutions District Magistrate & • Ensure implementation of linstitutions. • Ensure implementation of standards through all departments/ institutions District Municipal • Ensure implementation of linstitutions. • Ensure implementation of standards through all departments/ institutions District Municipal • Ensure implementation of departments/ institutions • Ensure implementation of bDO, DSP, DDO, DSP, • Collectors, Municipal Municipal • Ensure four of engineers and non engineered buildings)considering • Commissioners						Medium Term (T2)
Techno-Legal BIS, R&B, Recurring/ Regular (RR) District Techno-Legal BIS, R&B, Recurring/ Regular (RR) District All Depts / • Ensure implementation of Institutions. • Ensure implementation of standards through all departments/ institutions District Magistrate & • Ensure implementation of atmost and						• Ecologically sound land-use zonation
Techno-Legal BIS, R&B, Recurring/ Regular (RR) District Regime All Depts / • Ensure implementation of District All Depts / • Ensure implementation of Collectors, Institutions. standards through all DDO, DSP, Municipal Municipal DDO, DSP, Municipal Tevelop suitable byelaws for rural areas (for both engineersand non engineersand non engineersand non engineersand non engineered buildings)considering						Discourage inappropriate/ risky use of
Techno-LegalBIS, R&B,Recurring/ Regular (RR)DistrictRegimeAll Depts / All Depts / Institutions.• Ensure implementation of standards through all departments/ institutionsDistrict Magistrate & Collectors, DDO, DSP, Municipal Municipal areas (for both engineersand non engineered buildings)consideringDistrict						coastal areas
All Depts / Institutions. • Ensure implementation of standards through all departments/ institutions Magistrate & Collectors, DDO, DSP, Municipal Medium Term (T2) DDO, DSP, Dorelop suitable byelaws for rural areas (for both engineersand non engineered buildings)considering local conditions	3.	Techno-Legal	BIS, R&B,	Recurring/ Regular (RR)	District	Recurring/ Regular (RR)
standards through all departments/ institutions departments/ institutions Municipal Municipal DDO, DSP, Municipal Commissioners Develop suitable byelaws for rural areas (for both engineersand non engineered buildings)considering local conditions		Regime	All Depts /	• Ensure implementation of	Magistrate &	Ensure implementation of standards through
(T2) c byelaws for rural mgineersand non dings)considering			Institutions.	standards through all	Collectors, DDO, DSP,	all departments/ institutions
(T2) e byelaws for rural engineersand non lings)considering					Municipal	
Develop suitable byelaws for rural areas (for both engineersand non engineered buildings)considering local conditions				Medium Term (T2)	Commissioners	
areas (for both engineersand non engineered buildings)considering local conditions				Develop suitable byelaws for rural		
engineered buildings)considering				areas (for both engineersand non		
				engineered buildings)considering local conditions		

Investing in DRR - Non - Structural Measures

ural Measures		Responsibility - District	 Developing sand dunes along the coast with sea weeds or shrubs or casuarinas trees for stabilization of the sand dunes Raising the ground level (above the design water level) with natural beach sand Long Term (T3) Development of coastal forest (greenbelt) by planting casuarinas or coconut trees along the coastline to cover minimum of about 500m width of the beach Establishment of bio-shields (e.g., mangrove plantations, as a natural defence) for communities residing along the estuaries
Investing in DRR – Non – Structural Measures		District	Magistrate & Collectors, DDO, Municipal Commissioners
Investing in DRI	State / District Agencies and their Responsibilities	Responsibility – state	 Guidance and Support Guidance and Support Medium Term (T2) Developing sand dunes along the coast with sea weeds or shrubs or casuarinas trees for stabilization of the sand dunes Raising the ground level (above the design water level) with natural beach sand Long Term (T3) Development of coastal forest (greenbelt) by planting casuarinas or coconut trees along the coastline to cover minimumof about 500m width of the beach Establishment of bio-shields (e.g., mangrove plantations, as a natural defence) for communities residing along the estuaries
	State / District	State	Agriculture dept. CCD.
ni	Sub – Thematic	Area for DRR	stabilization measures and bio- shields
Tsunami	S.	No.	ŕ

Tsunami	imi		Investing in DRI	Investing in DRR – Non – Structural Measures	ral Measures
Ś	Sub – Thematic	State / District	State / District Agencies and their Responsibilities		
N0.	Area for DRR	State	Responsibility – state	District	Responsibility - District
5.	Safety audits and evaluation of all lifeline structures and important facilities	All depts., GSDMA.	 Recurring/ Regular (RR) Guidance and Support Long Term (T3) Detailed assessment of tsunami hazard to the structure and foundation and the benefits of strengthening Carry out structural safety audit of all lifeline structures and important facilities. 	District Magistrate & Collectors, DDO, Municipal Commissioners	 Long Term (T3) Detailed assessment of tsunami hazard to the structure and foundation and the benefits of strengthening Carry out structural safety audit of all lifeline structures and important facilities.
6.	Public Private Partnerships	RD, CoR, GSDMA, UDD, F&ED, All Line Depts.	Recurring/ Regular (RR) Promote private participation in disaster management facilities.	District Magistrate & Collectors, MC.	Recurring/ Regular (RR) Promote private participation in disaster management facilities.
7.	Risk Transfer	RD, CoR, GSDMA, FD, UDD	Recurring/ Regular (RR) Implementation of Risk Transfer Arrangements including multi- hazard insurance for life and property Short Term (T1) Policy Framework	District Magistrate & Collectors, District Development Commissioner, Municipal Commissioners	Recurring/ Regular (RR) Implementation of Risk Transfer Arrangements including multi hazard insurance for life and property

Capacity Development	esponsibilities	Responsibility – District	Recurring/ Regular (RR) Training and orientation programs for state govt. staff, and other direct stakeholders such as: civil society, media- persons, elected representatives, professionals for veterinary care and support to disaster affected animals Incorporating disaster response, search and rescue in the training programs of youth such as village volunteers, protection of disaster-affected animals	
	ncies and their R	District	District Magistrate & Collectors, District Development Commissioner, Municipal Commissioners	District Magistrate & Collectors, DDO.
	State / District Agencies and their Responsibilities	Responsibility – state	Recurring/ Regular (RR) Training and orientation programs for State govt. staff, SDRF, Fire, Police, Community, Volunteers, and other direct stakeholders Incorporating disaster response, search and rescue in the training programs of youth such as NCC, NYKS, Scouts and Guides and NSS	Medium Term (T2) Introducing basic DM concepts in curriculum including Tsunami and develop technical expertise on various subject related to DM including Tsunami
		State	GIDM, SIRD, GSDMA, SPIPA.	GIDM, GSDMA, Education Department.
Tsunami	Sub – Thematic	Area for DKK	Training and Capacity Development of Professionals	Curriculum Development
	S. No.			5

Capacity Development

	Tsunami				Capacity Development
S. No.	Sub – Thematic		State / District Agencies and their Responsibilities	ncies and their Re	sponsibilities
	Area for DRR	State	Responsibility – state	District	Responsibility – District
3.	Awareness	Information	Recurring/ Regular (RR)	District	Recurring/ Regular (RR)
	Generation	Department,	• Carry out mass media	Magistrate &	• Carry out mass media campaigns
		RD, CoR,	campaigns	Collectors,	• Promote attitude and behavior
		GSDMA	• Promote attitude and behavior	District	change in the awareness campaigns/IEC
			change in the awareness	Development	Medium Term (T2)
			campaigns/ IEC	Commissioner,	 Promote culture of disaster risk
			Medium Term (T2)	Municipal	prevention, mitigation, and better risk
				Commissioners	management
			• Promote culture of disaster risk		• Promote use of insurance/ risk transfer
			prevention, mitigation, and better		 Promote Community Radio
			risk management		 Strengthening network of civil society
			Promote use of insurance/ risk		organizations for awareness
			transfer		generation about DRR and DM
			Promote Community Radio		 Information on care and protection of
			Strengthen network of civil		disaster-affected animals
			society organizations for		
			awareness generation about		
			DRR and DM		
4.	Mock Drills/	GSDMA,	Recurring/ Regular (RR)	District	Recurring/ Regular (RR)
	Exercises	GIDM, RD, Car sdrf	Monitoring Emergency	Magistrate & Collectors	Monitoring Emergency Preparedness of
			Preparedness of all Departments	District	Departments
			Short Term (T1)	Development	Short Term (T1)
			Promoting the planning and execution of emergency drills by	Municipal Commissioners	Joint planning and execution of emergency drills with State. Local and Community
			all departments and in alldistricts.		
			· · ·		
			Joint planning and execution of emergency drills with Central,		
			State, Local and Community.		

	Tsunami				Capacity Development
;	Sub – Thematic		State / District Agencies and their Responsibilities	ncies and their Re	sponsibilities
S. No.	Area for DRR	State	Responsibility – state	District	Responsibility – District
5.	Documentation	GSDMA	Short Term (T1)	District	Recurring/ Regular (RR)
			• Prepare and distribute manuals	Magistrate & Collectors	• Create awareness on tsunami risk and
			and tsunami hazard zonation maps to the public through relevant Departments	Municipal Commissioners.	vulnerability among the coastal communities by distributing the hazard
			Documentation of lessons		zonation maps
			learnt, best practices, success		• Documentation of lessons learnt, best
			stories		practices, success stories
6.	Empowering women,	WCD, SJED,	Medium Term (T2)	District	Medium Term (T2) Incorporating
	marginalised, and	GSDMA,	Incorporating gender sensitive	Magistrate &	gender sensitive andequitable
	persons with	GIDM	and equitable approaches in	Collectors,	approaches in capacity
	disabilities		canacity development covering	District	development covering all aspects of
				Development	disaster management at the district, and
			all aspects of disaster management at state district and local level	Commissioner,	local levels
				Municipal Commissioners	
7.	Community-Based	RD, CoR,	Recurring/ Regular (RR)	District	Recurring/ Regular (RR)
	Disaster Management	UD, ULBs,	Training for PRI, SHG, NCC,	Magistrate &	Training for PRI, SHG, NCC, NSS, Youth,
		GSDMA,	NSS, Youth, local community	Collectors	local community organizations
		GIUM	organizations.		Short Term (T1)
			Short Term (T1)		Strengthen ability of communities to manage
			Strengthen ability of communities to		and cope with disasters based on a multi-
			manage and cope with disasters		hazard approach
			based on a multi-hazard approach.		

Flood					Understanding Disaster Risk
S. No.	Sub – Thematic		State / District Agencies and their Responsibilities	es and their Res	ponsibilities
	Area for DRR	State	Responsibility – state	District	Responsibility - District
1.	Observation		Regular/ Recurring		Regular/ Recurring
	Networks, Information	1. CWC	• Assessment, Monitoring, and	1. DM &	□ Support and cooperate with state
	Systems, Monitoring,	2. IMD	Scientific studies	Collector	agencies
	Research, Forecasting	3. WRD	Short term	2. DDO	Support local efforts for
	& Early Warning	4. CoR	• Assist districts in the	3. ULBs	flood management
		5. GSDMA	identification of priority flood	4. GPs	□ Support local information systems and
			protection and drainage		update data
			ent works.		for better flood management
			Monitoring of flood		Short Term (T1)
			preparedness, river basin and		□ Implementing and monitoring of flood
			reservoir management plans.		preparedness, river basin and reservoir
			Medium Term		management plans including updatingrule
			• Specialized efforts for different		curves, improve system of water release
			types of floods and causes of		from reservoirs
			flooding, including cloudburst.		□ Identification of priority flood protection
			• Studies and monitoring of rivers		and drainage improvement
			flowing from neighboring		Medium Term (T2)
					□ Studies on land use and hydrological
			Long Term		changes relevant to flood management in
			 Developing/ improving/ 		river basins and reservoir command areas
			updating forecasting methods		of district.
			and models for quantification of		
			inflows and storage of dams		Execution of flood protection and drainage improvement schemes

Understanding Disaster Risk

Floods

Flood					Understanding Disaster Risk
S. No.	Sub – Thematic		State / District Agencies and their Responsibilities	ies and their Rea	sponsibilities
	Area for DRR	State	Responsibility – state	District	Responsibility - District
2.	Zoning, mapping, and		Short Term (T1)		Recurring/ Regular (RR)
	classification flood	1. WRD	• Preparation of large-scale hazard	1. DM &	• Support and cooperate with state agencies
	prone areas	2. ISRO	maps of flood prone areas	Collector	• Sponsor district-specific efforts; support
		3. BISAG	identifying areas of high	2. NGOs	local efforts
			vulnerability	3. CSOs	
3.	Research and		Short Term (T1)		Recurring/ Regular (RR)
	Development	1. WRD	• Studies on support systems for	1. DM &	• Support and cooperate with State agencies
		2. ISRO	people living in flood prone areas	Collector	Sponsor/ carry out district-specific effortsin
		3. R&B	• Evolving designs of shelters in	2. DDO	all these areas; support local efforts
		4. GSDMA	flood prone areas	3. NGOs	1
		5. GIDM	 Socio-economic impacts of flood 	4.CSOs	
		6. SIRD	Medium Term (T2)	5.WASMO	
		7. WASMO	River basin studies		
			• Studies on flood related problems		
			such as soil losses caused by		
			flooding of rivers, sediment		
			transport, river course changes,		
			and appropriate use of		
			embankments		
			Long Term (T3)		
			•Hydrological and morphological		
			studies before undertaking major		
			flood control or prevention		
			measures		

Understanding Disaster Risk	State / District Agencies and their Responsibilities	Responsibility - state District Responsibility - District	Recurring / Regular (RR) Recurring/ Regular (RR)	• Promote studies, documentation	earch and periodic revision of DM plans	Studies on vulnerabilities and Short Term (T1)	ies covering social, • Constitute/strengthen the mechanisms for	physical, economic, ecological, consultation with experts and stakeholders	gender, social inclusion and	Ispects	Provide technical support and	guidance for comprehensive	P
		Respons	Rec	• Promot	and research	 Studies 	capacities	physica	gender	equity aspects	• Provide	guidan	HRVCA
		State	1. GSDMA	2. GIDM	3. BISAG	4. UDD							
	Sub – Thematic	Area for DRR	Hazard Risk	Vulnerability and	Capacity Assessment	(HRVCA)							
Flood	S. No.		-	ŕ									

Flood					Understanding Disaster Risk
S. No.	Sub – Thematic		State / District Agencies and their Responsibilities	ies and their Re	sponsibilities
	Area for DRR	State	Responsibility – state	District	Responsibility - District
5	Dissemination of	1. IMD	Recurring/ Regular (RR)	1.DM &	Recurring/ Regular (RR)
	warnings, data, and	2. CoR	Quick, clear, effective	Collector	• Inter-district data and information
	information	3. GSDMA	dissemination among central	2.DEOC	sharing where applicable
			and state agencies	3.DDO	Coordination and cooperation with the
			Short Term (T1)	4. ULBs	central agencies
			• Facilitate the distribution of	5. WASMO	• Ensure facilities and infrastructure for
			necessary communication		the implementation of adequate access to
			equipment, last-mile		communities at risk
			connectivity and access to		Dissemination of warnings to all, downto
			disaster risk information		the last mile – remote, rural or urban;
			Promoting reliable networking		• Regular updates to people in areas at
			systems for data and information		risk
			sharing among central and state		• Warnings using all types of options,
			agencies		types of technologies, and media
			Monitoring of Warning systems		Monitoring compliance by various
			Providing information in all		network operators and service provider
			possible ways and using all types		
			of media		
			• Interface with mobile network		
			service providers or warnings		
9	Disaster Data	1. CoR	Recurring/ Regular (RR)	1. DM &	Recurring/ Regular (RR)
	Collection and	2. RD	Systematic and proper data	Collector	Systematic and proper data management
	Management	3. GSDMA	management and	2. DEOC	and documentation on disaster damage
			documentation on disaster		and loss assessments
			damage and loss assessments		

measures
-Structural
n DRR
Investing in

S. No.	Sub – Thematic		State / District Age	State / District Agencies and their Responsibilities	onsibilities
	Area for DRR	State	Responsibility – state	District	Responsibility – District
	Establishment/	1. GSDMA	Recurring/ Regular (RR)	1.DM & Collector	Recurring/ Regular (RR)
	Emergency	2. CON 3. Municipal	• Elisate Toulid die Clock operations of EOCsduring	2. INTUILUIPAL Commissioner	EDISURE FOULD THE FLOOR OPERATIONS OF EOCs during the flood season with
	Response	Commissioner			adequate human resources to respond to
	Centers/Operation Centers		adequate manpower/resources		flood
1.	Flood control	1. WRD	Recurring/ Regular	1. DM &	Short Term (T1)
	measures such as	2. R&B	(RR)	Collector	Identification suitable sites fortemporary
	construction of	3. SSNNL	• Technical support and		shelters for people and livestock
	embankments and		studies	3. Municipal Commissioner	evacuated from localities at risk Modium Torm (T3)
				4. PRI	Construction of multi-purpose shelters
				5. ULB	in villages/ habitations prone to floods
					Proper monitoring and maintenance of
					river embankments
2	Social Housing	1. SJED	Recurrino/ Reoular	000	Medium Term (T2)
	Schemes	2. CRD		2. Municipal	Ensure that flood-resistant features are
			• Ensure that flood-		incorporated in the planning and
			resistant features are	3. PRI	execution of social housing schemesin
			incorporated in	4. ULB	flood prone areas
			planning and execution		
			of social housing		
			schemes		

S. No.	Sub – ThematicArea		State / District Age	State / District Agencies and their Responsibilities	onsibilities
	for DRR	State	Responsibility – state	District	Responsibility – District
3.	Multipurpose Flood	1. GSDMA	Recurring/ Regular	1. DM &	Medium Term (T2)
	Shelters	2. UDD	(RR)	Collector	• Ensure availability of shelters,
			• To provide with	2. DDO	undertake proper maintenance, and
			Advisory		make arrangements to support the
					people shied to temporary shelters
4.	Water ways and	1. R&B	Recurring/ Regular	1. DM &	Recurring/ Regular (RR)
	drainage systems for	2. WRD	(RR)	Collector	Coordination and cooperation with the
	roads, high ways,	3. NHAI	Proper alignment and	2. DDO	state agencies and ensure proper
	and express ways		design		alignment and design in all district
					projects
5.	Enhancing the safety	1. WRD	Recurring/ Regular	1. DM &	Recurring/ Regular (RR)
	of dams and	2. SSNNL	(RR)	Collector	• Carry out measures to increase safety,
	reservoirs		Issuing Advisories and		reduce risks from flooding
			guidance	3. DEOC	Undertake pre- and post-monsoon
					inspections of dams and reservoirs
					Monitor the implementation of
					safety enhancements in accordance
					with norms
6.	Hazard resistant	1. R&B	Recurring/ Regular	1.DM &	Recurring/ Regular (RR)
	construction,	2. WRD	(RR)	Collector	Collaboration with technical
	strengthening, and	3. UDD	Guidance and		agencies and implementation
	retro fitting of all		implementation		
	lifeline structures				
	and critical				
	infrastructure				

Area of DACStateResponsibility - stateDistrictRegulation and enforcement of ansy, norms, regulations, including1. WRDRecurring/ Regular (RR) Guidance and Support a Guidance and Support Guidance and Support a Conscipt and monitoring of 3. PRU havs bincluding1. DM & a Collector Collector Guidance and Support a Collector a compliance with coastal zone bincluding1. DM & a Collector Collector a Collector a compliance with coastal zone bincluding1. DM & a Collector Collector a compliance with coastal zone bind havs1. DM & a Collector conditance with coastal zone bind havs1. DM & a Collector collector constance1. DM & a Collector collector constance1. DM & a Collector collector constance a duance and management management (WRM)1. DM & a Collector a constance bind and find management and find1. DM & a cuilding a dual and find management a doption of revised reservoir operation manuals (WRM)1. DM & a cuilding sin find management a doption of revised reservoir operation a policable to buildings in flood-prone areas applicable to buildings in flood-prone areas applicable to buildings in flood-prone areas and their sub-basins and their sub-basins and their sub-basins and their sub-basins
Regulation for eservoir nanagement Integrated Vater Resources fanagement (WRM)

Investing in DRR-Non Structural Measures

Ś	Sub – Thematic		State / District Agencies and their Responsibilities	encies and their	· Responsibilities
N0.	Area for DRR	State	Responsibility – state	District	Responsibility – District
3.	• Wetland	1. Forest and	Recurring/ Regular (RR)	1.District	• Discourage reclamation of wetlands, natural
	conservation and	Environment	Guidance and Support	conservator	depressions
	restoration	dept		of forest	Medium Term (T2)
		2. Climate			Action plan managing wetlands and natural
		change			drainage systems for flood moderation
					Long Term (T3)
	 Catchment 				• Implementation of watershed management
	Area				including catchment area treatment and
	Treatment/				Afforestation programmes
	• Afforestation				

S. No.	Sub –		State / District Agencies and their Responsibilities	cies and their	Responsibilities
	Thematic Area for DRR	State	Responsibility – state	District	Responsibility – District
			Recurring/ Regular (RR)		Recurring/ Regular (RR)
			• Training and orientation programs for state govt. staff, SDRF, community, and volunteers	1. Police	• Training and orientation programs for district govt. staff, SDRF, community, and volunteers
		1. GIDM	Recurring/ Regular (RR)	2. Civil	Recurring/ Regular (RR)
	11111111 11111111111111111111111111111	2. GSDMA	rating disaster response, and rescue in the training is of youth such as NCC, Scouts and Guides, NSS,	Defense	• Incorporating disaster response, search andrescue in the training programs of youth such as village volunteers, and for protection of disaster-affected animals
			SDRF, CDEF, Community, Volunteers		• Training for CDEF, Community, Volunteers
			Recurring/ Regular (RR)		Medium Term (T2)
		1. Education	• Strengthen coverage of flood		Recurring/ Regular (RR)
		dept. 2. GIDM 3. GSDMA	damage mitigation, flood tolerant designs/ crops, and construction techniques		• Include awareness about flood and some aspects of flood management in school and college teaching while reviewing the curriculum
2.	Curriculum		Recurring/ Regular (RR)	<u> </u>	Medium Term (T2)
	reverobritent		 Improve coverage of community health and epidemic management medical curriculum 		 Introduction of Crisis Management, emergency medical response/recovery and trauma management at Diploma /UG/ PG levels for
			• Update curriculum for undergraduate engineering courses to include topics relevant for flood Risk Management		Health Professionals

Capacity Development

S. No.	Sub –		State / District Agencies and their Responsibilities	cies and the	r Responsibilities
	Thematic Area for DRR	State	Responsibility – state	District	Responsibility – District
ι.	Awareness Generation	1. CoR 2. Revenue 3. GSDMA	Regular (RR) ss media campaigns ture of disaster risk uitigation, and better risk titude and behavior awareness campaigns/ a network of civil nizations for awareness out DRR and DM m (T2) m (T2) insurance/ risk transfer munity Radio	1. DM & Collec tor 3. CSO 4. NGO	 Recurring/ Regular (RR) Carry out mass media campaigns Promote culture of disaster risk prevention, mitigation, and better risk management Promote attitude and behavior change in the awareness campaigns/ IEC Strengthening network of civil society organizations for awareness generation about DRR and DM Medium Term (T2) Promote use of insurance/ risk transfer Promote Community Radio
4.	Mock Drills/ Exercises	1. GSDMA 2. GIDM	 Recurring/ Regular (RR) Promoting the planning and execution of emergency drills by all departments and in all districts 	DM & Collector	 Recurring/ Regular (RR) Joint planning by district administration and all the departments and execution of emergencydrills

Management
Risk
Change
Climate

onsibilities	Responsibility – District	 Recurring/ Regular (RR) Coordination with state agencies Short Term (T1) Sponsor and promote state- specific efforts and local efforts for GACC mitigation and adaptation Medium Term (T2) Document state-specific GACC impacts and coping mechanisms Long Term (T3) Promote state-specific studies on enhanced risks (economic, social, etc.) under different GACC impact scenarios Promote research studies with district specific contexts on GACC and consequent changes in hazards
es and their Resp	District	1. DM& Collector 2. DDMA 3.ULBs 4. PRIs
State / District Agencies and their Responsibilities	Responsibility – state	 Recurring/ Regular (RR) Assessment, Monitoring and Scientific Studies Short Term (T1) Assessing GACC effects on catchments and river basins including trends over past decades. Assess enhanced economic and social risks Medium Term (T2) Develop Database management system relating to climate change impact on floods Improve the flood forecasting catababilities consistent with the anticipated GACC impacts on flood- prone areas Coordinate with all neighboring states to understand and monitor GACC impacts on major rivers associated with or flowing from proving contrines
	State	1. CCD 2. F&E Dept 3. DST
Sub –	Thematic Area for DRR	Research, Forecasting / Early Warning, Data Management, Zoning, Mapping
S. No.		_;

sibilities	Responsibility – District	 Recurring/ Regular (RR) Undertake HRVCA as part of preparing and periodic revision of DM plans Develop strategies for structural and non-structural measures based on HRVCA 	 Recurring/ Regular (RR) Sensitization on and awareness creation Coordination with central agencies Sponsor and promote state- specific efforts and local efforts for GACC mitigation and adaptation Medium Term (T2) Develop local adaptation strategies and pilot projects Long Term (T3) Sponsor and local efforts
cies and their Respor	District	1. DM& Collector 2. DDMA	DM & Collector
State / District Agencies and their Responsibilities	Responsibility – state	 Medium Term (T2) Improve the understanding of the enhanced vulnerabilities of communities in flood-prone areas to extreme hydro-climatic events Assess GACC risks of vulnerable and marginalized sections Provide technical support and guidance for comprehensive HRVCA considering GACC impacts Undertake detailed studies on vulnerability and risk under GACC scenarios along the coast 	 Short-Term (T1) Understanding adaptation needs Study coping mechanisms Develop GACC adaptation mechanisms Medium & Long Term (T2, T3) Implement GACC adaptation programs Promote adaptive measures in social protection programmes for the vulnerable groups
	State	1. GIDM 2. GSDMA 3. DST	1. CCD 2. F&E Dept
Sub –	Thematic Area for DRR	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	Climate Change Adaptation (CCA)
S. No.			κ

ds
0
9
Γ ,
I
3
Q
_ 🍋

Understanding Disaster Risk

Urban Flood	Flood			Un	Understanding Disaster Risk
S. No.			State / District Agencies and their Responsibilities	sponsibilities	
	Area for DRR	State	Responsibility – state	District	Responsibility - District
1.	Mapping/		Recurring/ Regular (RR)	Municipal	Recurring/ Regular (RR)
	Zoning,		Technical support	Commissioner	
	Estimation of		Recurring/ Regular (RR)	DM &	• Implement and
	Possible		Develop land use planning based on multi-hazarddisaster	Collector UDA	enforcement of
	Inundation		risk assessment		Recommendations
	levels,		• Place land-use planning maps in public domain		
	monitoring	UDD	• Undertake adequate studies, evaluations, and planning		
	networks	RD	considering land use constraints to prevent flooding		
			• Coordinate with the central agencies and implement		
			recommendations		
			• Undertake HRVCA as part of preparing and periodic		
			revision of DM plans		
			• Constitute/ strengthen the mechanisms for consultation		
			with experts and stakeholders		
2.	Information	IMD	Recurring/ Regular (RR)	Municipal	Recurring/ Regular (RR)
	Systems,	UDD	Regular monitoring	Commissioner	Regular monitoring
	Monitoring,		Short Term (T1)	DM &	 Support coordination
	Forecasting,		• State urban flood monitoring system	Collector UDA	with state agencies/dept.
	Early Warning		• Set up EOC by ULBs connected to Automatic RainGauge	ULBs	
			Network.		
			Long Term (T3)		
			Develop capacities to make quantitative forecasts and simulate inundation levels under various scenarios		

Urban Flood	Flood			Under	Understanding Disaster Risk
S. No.			State / District Agencies and their Responsibilities	esponsibilities	
	Area for DRR	State	Responsibility – state	District	Responsibility - District
З.	Hazard Risk	UDD	Recurring/ Regular (RR)	Municipal	Recurring/ Regular (RR)
	Vulnerability	GIDM	Promote studies, documentation and research	Commissioner	
	and Capacity	GSDMA	Studies on vulnerabilities and capacities covering	DM &	 Support coordination with
	Assessment		social, physical, economic, ecological, gender, social	Collector UDA	state agencies/dept.
	(HRVCA)		inclusion and equity aspects	ULBs	
			• Provide technical support and guidance for		
			comprehensive HRVCA		
4	Disaster Data	UDD	Recurring/ Regular (RR)	Municipal	Recurring/ Regular (RR)
	Collection and	CoR	• Systematic data management of data on disaster	Commissioner	• Systematic data
	Management	RD	damage and loss assessments	DM &	management of data on
		GSDMA	Short Term (T1)	Collector	disaster damage and loss
			• Disaster Damage and Losses 2005-2015 baseline		assessments
					Short Term (T1)
					• Disaster Damage and
					Losses 2005- 2015 baseline

•	Ination
	a
•	
	2
	00L
7	Oordin
	5
	gency
	50
-	
	-
	lter

Urbai	Urban Flood			Unde	Understanding Disaster Risk
Ś	Sub – Thematic		State / District Agencies and their Responsibilities	es and their Respons	ibilities
No.	Area for DRR	State	Responsibility – state	District	Responsibility - District
1.	Overall disaster	CoR	Recurring/ Regular (RR)	• Municipal	Recurring/ Regular (RR)
	governance	RD	• Providing coordination, technical inputs,	Commissioner	Preparation and implementation of
		UDD	and support	• DM &	District DM plans and ensure the
		GSDMA	• Preparation and implementation of DM	Collector	functioning of agencies with DM tasks
			plans and ensure the functioning of		
			agencies with DM tasks		
			• All aspects of disaster risk management		
			and mainstreaming DRR		
2.	Response	CoR	Recurring/ Regular (RR)	Municipal	Recurring/ Regular (RR)
		RD	Organizing and coordinating the	Commissioner	 Organizing and coordinating the
		UDD	immediate response	DM &	immediate response
		GSDMA	Coordinate with central agencies	Collector	Coordinate with state agencies
3.	Warnings,	CoR	Recurring/ Regular (RR)	Municipal	Recurring/ Regular (RR)
	Information,	RD	Effective coordination and seamless	Commissioner	• Coordinating the dissemination of
	Data	UDD	communication among central and state	DM &	warnings to all, down to the last mile -
		GSDMA	agencies to ensure quick, clear, effective	Collector	remote, rural or urban;
			dissemination of warnings, information		Regular updates to people in areas at
			and data		risk
4	Non-structural	UDD	Recurring/ Regular (RR)	Municipal	Recurring/ Regular (RR)
	measures	RD	Coordination central agencies for	Commissioner	Regular implementation, enforcement
		Line	a) revised/ updated rules, norms	DM &	and monitoring
		dept.	b) adoption of new/updated standards,	Collector	
			c) enact/amend laws, regulations and		
			d) adopt/ review policies		
	-				

Urban Flood	Flood				Understanding Disaster Risk
S. No.	Sub –		State / I	District Agenc	State / District Agencies and their Responsibilities
	Thematic Area for DRR	State	Responsibility – state	District	Responsibility - District
1.	Civil Works	UDD	City Bridge Design	MC	Short Term (T1)
		R&B	Considerations	UDAs	All road re-leveling works or strengthening/ overlav worksto
			City Road Level Design	ULBs	be carried out by milling the existing layers of the road sothat
			 Technical Support 		the road levels will not be allowed to increase.
					Medium Term (T2)
					• Upgrade the existing drainage and storm water systems
					Managing drainage systems
					Protection of Water Bodies
					• Ensure protection of Water Bodies and its restoration/ revival
					Long Term (T3)
					• Bus and Metro Terminals, Railway stations and Airports to be made flood-proof by providing efficient drainage for much higher rainfall intensity.
					• All future road and rail bridges in cities crossing drains to be designed such that they do not block the flows resultingin backwater effect.
					• Remove encroachments and take strict action against the encroachers as per the laws/regulations

Investing in DRR – Structural Measures

Urban Flood	Flood				Understanding Disaster Risk
S. No.	Sub – Thematic		State / Di	strict Agenci	State / District Agencies and their Responsibilities
	Area for DRR	State	Responsibility – state	District	Responsibility - District
2.	Establishment/	CoR	Recurring/ Regular (RR)	MC	Recurring/ Regular (RR)
	strengthening of Emergency	KD UDD	Ensure round the clock operations of ERCs/OCs	UDAs ULBs	• Ensure round the clock operations of EOCs during the flood season with adequate human resources to respond
	Operation Centers	GSDMA All line	<u> </u>		 to urban flood
		dept.	with aucquate mainpower/ resources		
З.	Hazard	R&B	Guidance and	MC	Medium Term (T2)
	resistant	UDD	implementation		 Collaboration with tachnical acanciae and immlamentation
	construction,	CBRI,			
	strengthening,	Roorkee			
	and retrofitting	BMTPC			
	of all lifeline				
	structures and				
	critical				
	infrastructure				

Urban Flood	Flood				Understanding Disaster Risk
S. No.	Sub – Thematic		State / District Agencies and their Responsibilities	nd their Resl	oonsibilities
	Area for DRR	State	Responsibility – state	District	Responsibility - District
1.	Preparation of	UDD	Medium Term (T2)	MC	Recurring/ Regular (RR)
	comprehensive		• Consider current national practices, specific		• Take initiative and collaborate with
	Urban Storm		locations and rainfall pattern of the cities and		state agencies
	Drainage Design		future needs for preparing USD DM		
	Manual (US D				
	DM)				
2.	Preparation of	UDD	Long Term (T3)	MC	Long Term (T3)
	Storm Water	R&B	• Coordinate in preparing the inventory		• Implementation
	Drainage System		through ULBs		
	Inventory				
3.	Operation and	aan	Recurring/ Regular (RR)	MC	Recurring/ Regular (RR)
	Maintenance of	R&B	• Provide guidelines, and carry out		• O&M of drainage systems on a periodic
	Drainage Systems		monitoring		basis
			• Adequate budget to be provided to take		
			care of the human resource, material,		
			equipment and machinery		
4.	Environmental	DDD	Short Term (T1)	MC	Short Term (T1)
	Impact	F&E	• Issue guidelines to corporations for	UDAs	• Ensure strict compliance with the
	Assessment	Dept.	making storm water drainage concerns a	ULBs	guidelines and land-use planning
			part of all EIA norms	DM &	consistent with sound storm water
				Collector	management
					Medium Term (T2)
					Minimize loss of ecologically important
					areas and natural wetlands

Investing in DRR – Non-Structural Measures

Urban	Urban Flood				Understanding Disaster Risk
S. No.	Sub – Thematic		State / District Agencies and their Responsibilities	nd their Res	ponsibilities
	Area for DRR	State	Responsibility – state	District	Responsibility - District
S.	• Techno-Legal	UDD	Short Term (T1)	MC	Proper land use planning while ensuring
	Regime	FD	• Ensure strict compliance of Techno-Legal	UDAs	compliance with techno-legal regime.
	• Land use	RD	Regime especially of land use through	ULBs	• Proper land use planning to minimize
	planning		ULBs		flooding of free flow of storm water
	• City/Town		 Strengthen land-use planning 		• Proper implementation and periodic O
	Planning				& M
			Medium Term (T2)		
			 Incorporate water sensitive urban design 		
			considerations into land use planning		
			Incorporate the topography and specific		
			terrain elements such as hilly, coastal, etc.		
			in the land use plan to minimize flooding all		
			owing free flow of storm water along		
			natural contours		
6.	Constitution of	UDD	Recurring/ Regular (RR)	MC	Short Term (T1)
	Urban Flooding		• Lead role in the establishment of the	UDAs	 Nodal Department to constitute Urban
	Cell for		technical umbrella at the state level	ULBs	Flooding Cell at district level and a DM
	Integrated UFDM				Cell to be constituted at the ULB level
					for managing urban flooding at local level
7.	Risk Transfer	UDD	Recurring/ Regular (RR)	MC	Recurring/ Regular (RR)
			• Implementation of Risk Transfer		• Implementation of Risk Transfer
			Arrangements including multi-hazard	ULBs	Arrangements including multi-hazard
			insurance for life and property		insurance for life and property
			Short Term (T1)		
			Policy Framework		

*UFDM-Urban Flood Disaster Management

Urban Flood	Flood				Understanding Disaster Risk
S. No.	Sub – ThematicArea		State / District Agencies and their Responsibilities	es and their]	Responsibilities
	for DRR	State	Responsibility – state	District	Responsibility - District
1.	Education and	Education	Medium Term (T2)	MC	Recurring/ Regular (RR)
	Training	dept.	• Introduce UFDM modules in school	UDA	• Trainings for urban flood rescue and
			curricula	ULBs	management for Civil Defense, community,
		UDD	• Support to training of SDRF,		volunteers and others
			community, and volunteers		Short Term (T1)
			• State Government will encourage		• Upgrade equipment and skills of F&ES for
			school boards to develop similar		Urban Flood Disaster Manangement.
			content in school curriculum		• Enlist professionals for veterinary care and
					support to disaster-affected animals
2.	• Awareness	UDD	Recurring/ Regular (RR)	MC	Recurring/ Regular (RR)
	Generation	GSDMA	• Carry out mass media campaigns	UDA	• Carry out mass media campaigns
			• Promote culture of disaster risk	ULBs	• Promote culture of disaster risk prevention,
			prevention, mitigation, and better risk		mitigation, and better risk management
			management		Medium Term (T2)
			Medium Term (T2)		• Promote attitude and behavior change in the
			• Promote attitude and behavior change		awareness campaigns/ IEC
			in the awareness campaigns/IEC		• Promote use of insurance/ risk transfer
			• Promote use of insurance/ risk		Promote Community Radio
			transfer		Strengthening network of civil society
			• Promote Community Radio		organizations for awareness genera on about
			• Strengthening network of civil		DRR and DM
			society organizations for awareness		• Information on care and protection of
			generation about DRR and DM		disaster-affected animals

Capacity Development

Urban Flood	Flood				Understanding Disaster Risk
S. No.	Sub – ThematicArea	я	State / District Agencies and their Responsibilities	and their R	esponsibilities
	for DRR	State	Responsibility – state	District	Responsibility - District
З.	• Documentation	GIDM	Recurring/ Regular (RR)	MC	Recurring/ Regular (RR)
		GSDMA	• Ensure accurate documentation of all	UDA	• Ensure accurate documentation of all
			aspects of disaster events for creating good	l ULBs	aspects of disaster events for creating
			historical records f or future research and		good historical records for future
			Risk Management planning		research and Risk Management planning
4.	• Empowering		Short Term (T1)		Short Term (T1)
	women,		• Incorporating gender sensitive and	þ	• Incorporating gender sensitive and
	marginalized,		equitable approaches in capacity	y	equitable approaches in capacity
	and persons		development covering all aspects of	f	development covering all aspects of
	with disabilities		disaster management		disaster management at the district, and
					local levels
5.	• Community-	GIDM	Recurring/ Regular (RR)	MC	Recurring/ Regular (RR)
	Based Disaster	GSDMA	• Promotion, guidance, support, training for		Regular training of community
	Management		Civil Defense, community, volunteers	ULBs	volunteers
			Short Term (T1)		
			• Strengthen ability of communities to	0	
			manage and cope with disasters based on a	a	
			multi- hazard approach		
			Medium Term (T2)		
			• Training for RWA, SHG, NCC, NSS,	· · · · · · · · · · · · · · · · · · ·	
			Youth, Ward Committees, localcommunity	y	
			organizations		
6.	Mock Drills/	UDD	Recurring/ Regular (RR)	MC	Recurring/ Regular (RR)
	Exercises	GSDMA	• Promoting the planning and execution of	of DM &	Joint planning and execution of
		Line dept.	emergency drills by all line dept in all	II Collector	emergency drills
				Police	

	Understanding Disaster Risk	r Responsibilities	District Responsibility - District	MC Recurring/ Regular (RR)	UDA • Support state risk reduction efforts	ULBs related to GACC	 Coordination with state agencies 		Medium Term (T2)	Document state-specific GACC	impacts and coping mechanisms at	local level.																
		State / District Agencies and their Responsibilities	Responsibility – state	Recurring/ Regular (RR)	• Assessment, Monitoring, and Scientific studies	• Support national risk reduction efforts related to	GACC	• Coordination with central agencies	• Sponsor and promote state- specific efforts and local	efforts or GACC mitigation and adaptation	Short Term (T1)	• Flood vulnerability maps under GACC scenario	• Assessing GACC effects on catchments and river	basins including trends over past decades	• Assess enhanced economic and social risks under	GACC scenarios	Medium Term (T2)	• Document state-specific GACC impacts and coping	mechanisms	• Long Term (T3)	• Improve the flood forecasting capabilities consistent	with the anticipated GACC impacts on flood- prone	areas	• Promote state-specific studies on enhanced risks	(economic, social, etc.) under different GACC	impact scenarios	• Promote research studies with districts specific	
)			State																									
,	Flood	Sub – Thematic	Area for DRR	• Research,	Forecasting /	Early Warning,	Data	Management,	Zoning,	Mapping																		
,	Urban Flood	S. No.		1.																								-

Climate Change Risk Management

Urban Flood	Flood			Unders	Understanding Disaster Risk
S. No.	Sub – Thematic		State / District Agencies and their Responsibilities	eir Responsi	bilities
	Area for DRR	State	Responsibility – state	District	Responsibility - District
2.	Hazard Risk	UDD	Medium Term (T2)	MC	Recurring/ Regular (RR)
	Vulnerability		• Undertake HRVCA as part of preparing and		• Undertake HRVCA as part of
	and Capacity		periodic revision of DM plans	ULBs	preparing and periodic revision of
	Assessment		• Improve the understanding of the enhanced		District DM plans
	(HRVCA)		vulnerabilities of communities in flood-prone areas		• Develop strategies for structural and
			to extreme hydro- climatic events		non-structural measures based on
			• Provide technical support and guidance for		HRVCA
					Medium Term (T2)
			• Assess GACC risks of vulnerable and		 Assess GACC risks of vulnerableand
			marginalized sections		marginalized sections
			Long Term (T3)		
			• Undertake detailed studies on vulnerability and risk		
			under GACC scenarios along the coast		
<i>с</i> .	• Climate	CCA	kecurring/ kegular (KK)	MC	Kecurring/ Kegular (KK)
	Change	Dept	 Sensitization and awareness creation 	DD	• Sensitization and awareness
	Adaptation		 Support national CCA efforts 	ULBs	creation
	(CCA)	F& E	 Coordination with central agencies 		• Support National/State CCA
		Dept	• Sponsor and promote state- specific efforts and local		efforts
		UDD	efforts for GACC mitigation and adaptation		• Coordination with state agencies
			Medium Term (T2))
		GSDMA	Develop local adaptation strategies and pilotprojects		
			Long Term (T3)		
			• Sponsor and promote disaster- specific efforts and		
			local efforts		
			 Implementation of GACC adaptation programs 		
*GACC	*GACC-Global Anthropogenic Climate Change	genic Climate	Change		

*F&E- Forest & Environment

*CCA-Climate Change Adaptation

Understanding Risk	es	Responsibility- District	 Follow and support the safety and regulatory requirements 	 Short Term (T1) To extend Logistics
	their Responsibiliti	District	District Collector, Municipal Commissioner	District Collector, Municipal Commissioner
	State/District Agencies and their Responsibilities	Responsibility-State	 Short Term (T1) Establish set ups for monitoring, warning including Indian Environment Radiation Monitoring Network (IERMON) system network. Strengthening radiation monitoring and detection systems in Public Domain 	 Short Term (T1) To set up reliable and dedicated communication network at the state level
		State	(DAE, MHA, MoD- Center) CoR, UDD & GSDMA	CoR, UDD & GSDMA
Nuclear and Radiological		Major Themes	Monitoring and Warning Network Strengthening Radiation Warning	Setting up reliable and dedicated communication network
Nuclea	Sr.	No.	1.	2.

Nuclea	Nuclear and Radiological				Understanding Risk
Sr.			State/District Agencies and their Responsibilities	d their Responsibilitie	
No.	Major Themes	State	Responsibility-State	District	Responsibility- District
		(DAE, MHA, MoD-	Short Term (T1)		Short Term (T1)
	Ectablich monitoring machanicm to	Center)	Install Radiation		 Co-ordination
ſ	Establish inolinu ing inconalish to		Detectors at all	District Collector,	with and support
.с		CoR, UDD, Health,	Identified locations	Municipal	to state
	radiorsoupes	Home Department,	at border posts and	Commissioner	authorities.
		GSDMA	ports		
4.	Disaster Data Collection and Management	(MHA, MOSPI, all relevant departments)-Center UDD, GSDMA, Directorate of Economics & Statistics	 Recurring/Regular (RR) Systematic data management of data on disaster damage and loss assessments. Short Term (T1) Disaster Damage and Losses 2005- 2015 baseline 	District Collector, Municipal Commissioner	 (RR) Systematic Systematic data managementof data on disaster <lidata disaster<="" li="" on=""> </lidata>
					Losses 2003- 2015 baseline

Nucle	Nuclear and Radiological	cal			Inter-Agency Co-ordination
Sr.	Maior Thomas		State/District Agencies and their Responsibilities	and their Responsibilities	ities
N0.		State	Responsibility-State	District	Responsibility-District
_;	Overall Disaster Governance	DAE-Center CoR/Revenue Department, UDD, GSDMA, Health Dept	 Recurring/Regular (RR) Nodal Authority for providing co-ordination and inputs All aspects of disaster risk management and mainstreaming DRR. 	District Collector, Municipal Commissioner	 Recurring/Regular (RR) Preparation and Implementation of DM Plans and ensure the functioning of agencies with DM tasks.
	*Response	DAE, MHA – Center CoR/Revenue Dept, and GSDMA	 Recurring/Regular (RR) Organizing the immediate response and seeking assistance from central agencies. 	District Collector, Municipal Commissioner	 Recurring/Regular (RR) Organizing the immediate response and seeking assistance from state agencies.

Inter-Agency Co-ordination

Inter-Agency Co-ordination		Responsibility-District	 Recurring/Regular (RR) Dissemination of warnings to all, 	updates to people in riskareas.		• Follow and support the requirements
	State/District Agencies and their Responsibilities	District	District Collector,	Municipal Comnissioner		District Collector, Municipal Commissioner
	State/District Agencies	Responsibility-State	Recurring/Regular (RR) Quick, Clear, effective 	and district agencies.	Short Term (T1)	• Auapung ure norms/couces as per state requirement, enforcement and monitoring.
al		State	DAE, MHA, NDMA - Center	CoR/Revenue Dept, and GSDMA	AERB - Center	CoR/Revenue Dept, UDD and GSDMA
Nuclear and Radiological	Major Themes	<u>I</u>	Warnings,	Information and Data		*Non- Structural Measures
Nucles		N0.		с.		4.

*Guidelines framed by Govt. of India will be followed

Structural Measures		Responsibility-District	Recurring/Regular (RR) • Co-ordination with and support to state agencies.	 Recurring/Regular (RR) Co-ordination with and support to state agencies.
	State/District Agencies and their Responsibilities	District	District Collector, Municipal Commissioner and Urban Local Bodies (ULB's)	District Collector, Municipal Commissioner
	State/District Agenci	Responsibility-State	 Recurring/Regular (RR) Identification of safe buildings and sites to serve as temporary shelters near nuclear installations. Construction of multi-purpose shelters near nuclear installations Ensure compliance with relevant building codes. 	 Short Term (T1) Strengthen physical protection systems along with proper inventory and control proceduresof the radiation sources Co-ordination with and support to central agencies.
		State	R&B Dept, UDD, GSDMA	DAE – Center UDD & GSDMA
Nuclear and Radiological	Maior Thamas		Shelters	 Decontamination Centers Strengthen Protection Systems of nuclear facilities
Nuclea	Sr.	No.		Ċ

Investing in DRR-Structural Measures

Nucle :	Nuclear and Radiological			Non-	Non-Structural Measures
Sr.	Maton Thomas		State/District Agencies and their Responsibilities	ir Responsibilities	
N0.	Major Inemes	State	Responsibility-State	District	Responsibility-District
			Short Term (T1)		
	*Setting of safety		Prepare safety and regulatory		
	standards and other	DAE, AERB - Center	documents for all	District Collector,	Short Term (T1)
1.	safety and		nuclear/radiological applications,	Municipal	• To follow the
	regulatory	UDD & GSDMA	transport, safe custody, waste	Commissioner	requirements.
	documents		handling, personal safety and		
			medical aspects etc by center.		
			Short Term (T1)		Docurring/Docular (DB)
			• To set up regional regulatory		Necuri IIIg/Negular (NN)
Ċ	Improve regulatory	AEKB – Center	centers for better coverage of	District Collector,	Co-ordination with
<i>i</i>	cover	UDD & GSDMA	safety and regulatory aspects.	Commissioner	and support to state agencies.
			:_ E		0
			• I o enforce compliance.		
		NDMA, DAE, MCA,			
	Dublic Duringto	MCF,	Recurring/Regular (RR)	District Collector,	Kecurring/Kegular (KK)
З.	Doutrouching	MEIN Conter	Promote Private participation in	Municipal	
	r ai uicisiiips		disaster management facilities	Commissioner	compty with the
		UDD & GSDMA			state agencies.
		MFIN, NDMA, MHA,	Recurring/Regular (RR)		
		MAFW - Center	 Implementation of Risk 		
			Transfer Arrangements		Dogunating/Dogular (DD)
		Revenue Department,	including multi-hazard	District Collector,	Necult Ing/Negulat (NN)
4.	Risk Transfer	UDD, Dept of	insurance for life and	Municipal	
		Agriculture, Farmers	property.	Commissioner	
		Welfare and Co-	Short Term (T1)		agencies.
		operation Department,	Policy Framework		
		GSDMA			

Investing in DRR- Non Structural Measures

*Guidelines framed by Govt. of India will be followed

Nucles	Nuclear and Radiological			Capac	Capacity Development
Sr.			State/District Agencies and their Responsibilities	ieir Responsibilities	
No.	Major Themes	State	Responsibility-State	District	Responsibility- District
	Training	GSDMA, GIDM	 Recurring/Regular (RR) Enhancing Public Awareness on nuclear/radiological application, safety, training of first responders and staff. Training support for SDRF, CDEF, community and volunteers. 	District Collector, Municipal Commissioner	Recurring/Regular (RR) • To follow and comply with the state authorities.
		MHA, DAE, NDMA - Center H&FW Dept	 Recurring/Regular (RR) Training of medical and paramedics on various aspects of medical management of radiological events. 	District Collector, Municipal Commissioner	Recurring/Regular (RR) • To train local staff, PRI's, NGO's, CBO's etc.
5	Curriculum Development	MHRD, DAE – Center GSDMA, Education Dept, GIDM	 Short Term (T1) Relevant subjects should be included in the school/college Syllabus throughoutthe state. 	District Collector, Municipal Commissioner	T

Capacity Development

Nuclear and Radiological			Capac	Capacity Development
		State/District Agencies and their Responsibilities	ieir Responsibilities	
Major Themes	State	Responsibility-State	District	Responsibility- District
Awareness Generation	NDMA, NDRF, CAPF and NIDM - Center GSDMA, GIDM, SDRF	 Recurring/Regular (RR) Carry out mass media campaigns Promote culture of disaster risk prevention, mitigation and better risk management. Promote attitude and behavior change in the awareness campaigns/IEC Promote community Radio Strengthening network of civil society organizations for awareness generation about DRR and DM. 	District Collector, Municipal Commissioner	 Recurring/Regular (RR) Promote (RR) Promote community Radio Strengthening network of civil society organizations for awareness generation about DRR and DM. Information on safety, care and protection of disaster affected animals.
Mock Drills/Exercise	GSDMA, GIDM, SDRF, All Government Authorities	 Recurring/Regular (RR) Promoting the planning and execution of emergency drills by all ministries. 	District Collector, Municipal Commissioner	Recurring/Regular (RR) • Joint planning and execution of emergency drills

Nuclear and Radiological			Ca State/District Agencies and their Reconscibilities	Capac heir Resnonsihilities	Capacity Development
Major Themes	-	State	Responsibility-State	District	Responsibility- District
		MHA, DAE, MOD, AERB - Center GSDMA	 Short Term (T1) Prepare a plan for nuclear and radiological Emergencies. State Authorities to comply with the same. 	District Collector, Municipal Commissioner	 Short Term (T1) To follow and comply with the state authorities.
Developing Capability for response		MHA, DAE, MOD – Center GSDMA	 Short Term (T1) Prepare nuclear/radiological emergency management plan for municipal corporations and other important cities. Surveillance at vulnerable locations and early detection capabilities. 	District Collector, Municipal Commissioner, Urban Local Bodies (ULB's)	Short Term (T1)To follow and comply.
		All State Departments	 Short Term (T1) Prepare own plans in line with the national plan. 	District Collector, Municipal Commissioner	 Short Term (T1) Prepare own plans in line with the state and national plan

Nuclea	Nuclear and Radiological			Capacity	Capacity Development
Sr.			State/District Agencies and their Responsibilities	heir Responsibilities	
No.	Major Themes	State	Responsibility-State	District	Responsibility- District
		H&FW Dept	 Recurring/Regular (RR) To follow and ensure compliance 	District Collector, Municipal Commissioner	Recurring/Regular (RR) • To follow and ensure compliance
<u>ن</u>	Prepare Comprehensive Plan on Medical Management	H&FW Dept, UDD, R&B	Recurring/Regular (RR) • To establish tertiary care hospitals for treatment of radiation injuries. Establish primary and secondary care hospitals of adequate capacity at selected cities.	District Collector, Municipal Commissioner, PHC's, UHC's and CHC's	Recurring/Regular (RR) • To follow and ensure compliance

Iclea	Nuclear and Radiological			Capac	Capacity Development
H			State/District Agencies and their Responsibilities	ieir Responsibilities	
	Major Themes	State	Responsibility-State	District	Responsibility- District
		SDRF	 Short Term (T1) Maintain adequate stock of radiation detection, monitoring instruments, safety kits, and first aid medicines. To equip the health and police department appropriately. 	District Collector/District Magistrate and Municipal Commissioner	Recurring/Regular (RR) • To follow and ensure compliance
	Preparedness	DAE, NDRF – Center UDD, SDRF	 Medium Term (T2) Adequate number of ERC's should be set up across the state for covering of any event in reasonable time. 	District Collector/District Magistrate and Municipal Commissioner	Recurring/Regular (RR) • To follow and ensure compliance
		UDD, RD, Education Dept and R&B	 Short Term (T1) To identify the places/buildings such as community buildings/schools/hospitals for use as emergency shelters. 	District Collector/District Magistrate and Municipal Commissioner	 Short Term (T1) To help identify the locations and ensure that evacuation plans are in place.

Nuclea	Nuclear and Radiological			Capac	Capacity Development
Sr.			State/District Agencies and their Responsibilities	ieir Responsibilities	
No.	Major Themes	State	Responsibility-State	District	Responsibility- District
		H&FW Dept, Food & Civil Supply, CoR/RD	 Short Term (T1) Provision of food, water, medicines and other relief materials should be made at the shelters for the affected public. 	District Collector/District Magistrate, Municipal Commissioner, Panchayats and ULB's	 Short Term (T1) To follow and ensure compliance with the state authorities.
		DAE – Center H&FW Dept	 Short Term (T1) To provide support for setting up of mobile radiological laboratories. 	District Collector/District Magistrate and Municipal Commissioner	ı
		MoH&FW, AERB, MHA & NDMA – Center UDD, H&FW Dept & GSDMA,	 Short Term (T1) Appoint and maintain area wise details of radiological safety officers, trained medical personnel, first responders, trained volunteers etc. 	District Collector/District Magistrate and Municipal Commissioner.	 Short Term (T1) To maintain the data district wise.

Chemic	Chemical (Industrial) Disaster	ter			Understanding Disaster Risk
S. No.	Sub – Thematic		State / District Agencies and their Responsibilities	Responsibilitie	S
	Area for DRR	State	Responsibility – state	District	Responsibility - District
1.	Information		Short Term (T1)		Recurring/ Regular (RR)
	Systems,	• DISH	Online information system on	• Pvt	 Support and coordination
	Monitoring,	• GPCB	HAZCHEM conforming to international	Industry	4 1
	Research	• GSDMA	standards	• DM &	
		• Chemical	Chemical Accident Information	Collector	
		Industrial	Reporting System		
		Association	Information on dealing with HAZCHEM		
		• PESO	Medium Term (T2)		
		(Petroleum and	Research on effective management of		
		Explosive Safety	HAZCHEM		
		Organization)	State Hazardous Waste Information		
			System Long Term (T3)		
			• Promote research and studies – both in-		
			house and extra-mural by providing research		
			grants to researchers and institutions		
			• Promote R&D for indigenous manufacture		
			of quality personal protection equipment		
			most of which are currently imported		
			• Studies on improving occupational safety&		
			health		

Chemical (Industrial) Disasters

Chemi	Chemical (Industrial) Disaster	er		Un	Understanding Disaster Risk
S. No.	Sub – Thematic		State / District Agencies and their Responsibilities	Responsibilities	
	Area for DRR	State	Responsibility – state	District	Responsibility - District
2.	Mapping/ Zoning,	Revenue Dept	Recurring/ Regular (RR)	• DM &	Medium Term (T2)
		• UDD	• Industrial zones on basis of hazard potential	Collector	• Data Management &
		 Industries & 	and effective disaster management for	 Municipal 	Guidance
		Mines Dept	worst case scenarios for MAH Units	Commiss	
		 Superintendent 	• Separate zoning for siting of MAH units	ioner	
		Land Records	• Carry out the mapping and related studies	• GIDC	
		cum	in collaboration with central agencies/		
		Consolidation Office	technical organizations		
з.	Monitoring	DISH	Recurring/ Regular (RR)	• DM &	Recurring/ Regular (RR)
		 INDUSTRY 	• Monitoring compliance with safety norms	Collector	 Support Coordination &
			for HAZCHEM and proper disposal of		implementation
			hazardous waste		
4	Hazard Risk	• GIDM	Recurring/ Regular (RR)	• DM &	Recurring/ Regular (RR)
	Vulnerability and	GSDMA	Promote studies, documentation and	Collector	• Undertake HR VCA as part
	Capacity	 Chemical 	research		of preparing and periodic
	Assessment	Industrial	Studies on vulnerabilities and capacities		revision of district DM plans
	(HRVCA)	Association	covering social, physical, economic,		Short Term (T1)
			ecological, gender, social inclusion and		•
			equity aspects		
			• Provide technical support and guidance		
			Tor comprehensive HKVCA		
			• Constitute/ strengthen the mechanisms f		
			or consultation with experts and		
1	۲ ب		stakeholders		
i.	Disaster Data	• DISH	Kecurring/ Kegular (KK)	• DM &	Kecurring/ Kegular (KK)
	Collection and	• GPCB	Systematic data management of data on	Collector	Systematic data management
	Management	• GSDMA	disaster damage and loss assessments		of data on disaster damage and
			Short Term (T1)		loss assessment at districtlevel
			• Disaster Damage and Losses 2005- 2015		
			baseline		

		ò
	oordination	
	╈)
	5	2
	=	
- j		1
		'
)
	C)
7	- ``	`
1	\smile	
`	-	
`		` `
`) 20	2
`	JCV (2
`	encv (
`	encv (
•	gencv (
	Agency (
	\triangleleft	
	nter Agency (

S. No.	Sub – Thematic		State / District Agencies and their Responsibilities	r Responsibilities	
	Area for DRR	State	Responsibility – state	District	Responsibility – District
1.	Overall disaster	• DISH	Recurring/ Regular (RR)	• DM &	Recurring/ Regular (RR)
	governance	• Labor &	Providing coordination, technical inputs,	Collector	• Ensuring coherence and
		Employment	and support	 POLICE 	mutual reinforcement ofDRR,
		Dept			CCA and development
		• GSDMA	plans and ensure the functioning of		• Preparation &
			agencies with DM tasks		Implementation of DM plan at
			• All aspects of disaster risk managementand mainstreaming DRR		district level
2.	Response	• DISH	Recurring/ Regular (RR)	• DM &	Recurring/ Regular (RR)
		• GSDMA	Organizing and coordinating state	Collector	• Organizing and coordinating
			assistance	• Police	immediate response
				 Respective 	• Coordinate with district
				Pvt Industry	agencies
3.	Warnings,	• DISH	Recurring/ Regular (RR)	• DM &	Recurring/ Regular (RR)
	Information,	• GSDMA	Effective coordination and seamless	Collector	Coordinating the
	Data	• GPCB	communication among state and district	• DD0	dissemination of warnings to
	Disseminaon		agencies to ensure quick, clear, effective	• Police	all, down to the last mile –
			dissemination of warnings, information and		remote, rural or urban;
			data		• Regular updates to people in
					areas at risk to be provided.
4	Non-structural	• DISH	Recurring/ Regular (RR)	• DM &	Recurring/ Regular (RR)
	measures	• GPCB	• Coordination among state agencies for a)	Collector	 Coordination,
			revised/ updated rules, norms b) adoption	• Police	Implementation,
			of new/updated standards, c) enact/amend		Enforcement and
			laws, regulations and d) adopt/ review		monitoring
			policies		

nvesting in DRR-Structural measures	

S. No.	Sub – Thematic		State / District Agencies and their Responsibilities	ir Responsibiliti	es
	Area for DRR	State	Responsibility – state	District	Responsibility – District
1	• Shelters,		Short Term (T1)		Short Term (T1)
	evacuation, and support facilitiesMultiple routes for reliable access and		 Identification of shelters with basic facilities like drinking water and first aid for chemical exposure Ensuring water storage facilities and sources f or water for accident containment 	 DM & Collector Police Pvt 	 Identify land for building shelters Technical support Implementation, Enforcement
	escape	R&B Dept	and firefighting operations	Industry	and monitoring
	• Decontamination facilities	• GSDMA	• Providing wide roads and multiple routes	• CSO	
			in the industrial area to all o w quick access	• Youth	
			by first responders and to ensure escape path ways	Volunteers	
			• Establish decontamination facilities for off-site emergencies of MAH units		

S. No.	Sub – Thematic		State / District Agencies and their	their	
	Area for DRR		Responsibilities		
		State	Responsibility – state	District	Responsibility – District
1			Medium Term (T2)		
			• Formulate/ strengthen rules, norms, and		
			laws such as factories rules consistent with		
			that of ensuring greater safety in hazardous		
		• Labor &	industries and to reduce likelihood of disasters		
	F	Employment	C17409017		
	• Laws	Dept	• Review land use norms for the siting of		
	Kegulations, Techno_I errel	• Industries &	hazardous industries	• DM &	
	regimes	Mines Dept	Empower factory inspectorates to take legal	Collector	Medium Term (T2)
	• Fuforrement	• UDD	actions for noncompliance of MSIHCRules	 Police 	Implements rules,
	Compliance	• F&ED	Review rules to grant compensation to	• Pvt	regulations, laws particularly
	and Monitoring	ſ	chemical accident victims to improve them	Industry	of land use and siting of
	- Institutions	 Revenue Dept 	in favour of victims	2	nazardous industries
	 Insulutional Arrangements 	• DISH	• Amend land use norms to ensure greater		
	0	• GPCB	safety and to ensure buffer zones without		
			human settlements in close proximity of		
			hazardous industries		
			• Strengthen the conduct of safety audits and		
			enforcement of disaster prevention onnorms		

Investing in DRR-Non Structural Measures

S. No.	Sub – Thematic		State / District Agencies and their Responsibilities	r Responsibiliti	es
	Area for DRR	State	Responsibility – state	District	Responsibility – District
7	Public Private Partnerships	 DISH Labor & Employmen tDept GSDMA GPCB Industries &Mine Dept 	 Medium Term (T2) Promote private participation in off- sitedisaster management facilities Provide legal support for Mutual Assistance Groups among industries within clusters Encourage private participation in enhancing off-site disaster response and Risk Management 	 DM & Collector GIDC Police Pvt Industry NGO Youth Volunteers Mitra CSO 	Recurring/ Regular (RR) Guidance
n	Risk Transfer	 Labor & Employmen tDept DISH Industries Mines Mines Dept Forest & Environmen GPCB 	Recurring/ Regular (RR) Implementation of Risk Transfer Arrangements including multi- hazard insurance for life and property Short Term (T1) Policy Frame work	• DM & Collector	Recurring/ Regular (RR) Implementation of Risk Transfer Arrangements including multi- hazard insurance for life and property

50
Ξ.
Ģ
i
P
m
Ŋ
cit
ac
Q
ğ

Ś	Sub –		State / District Agencies and their Responsibilities	and their Responsible	lities
N0.	Thematic				Basnonsihility - District
	Area for	State	Responsibility – state	District	vesboustanty – numeric
	DRR				
			Recurring/ Regular (RR)		Recurring/ Regular (RR)
			• Training and orientation programs		• Training and orientation programs
			on management and disposal of		for district govt. staff, SDRF,
			HAZCHEM		community, and volunteers
			• Training support for SDRF, CDEF,	DM & Collector	
		• GIDM	community and volunteers	• DDO	
1.	Training	GSDMA	Recurring/ Regular (RR)	• Police	Recurring/ Regular (RR)
		• SIRD	• Incorporating disaster response,	 Civil Defense 	• Incorporating disaster response,
			search and rescue in the training	• PRI	search and rescue in the training
			programs of youth such as NSS,		programs of youth such as village
			NYS, Scouts and Guide		volunteers, and for protection of
					disaster-affected animals
					• Training for SDRF, Community,
					Volunteers
			Recurring/ Regular (RR)	• DM &	Recurring/ Regular (RR)
Ċ	Curriculum	 Education Dept 	Promote inclusion of more	Collector	Sending inputs for Curriculum
i.	Developme		specializations and electives on		Development
	nt		HAZCHEM and chemical disaster		
			management		

No. Thematic Responsibility - District Area for State Responsibility - state District Area for State Responsibility - state District DRR - Forest and Short Term (T1) Short Term (T1) Environment - Review and address gaps in medical Implement the recommendations of education at different levels with Short Term (T1) Dept - Review and address gaps in medical - Review and address gaps in medical Implement the recommendations of education at different levels with Implement the recommendations of reviews in all educational intuitions OEDM - Review and takes gaps in medical - Implement the recommendations of reviews and take steps to improve the specialization needs in the area of dealing with victims of bept - Review and take steps to improve the facilities required to treat victims of chemical disasters Dept - Review and take steps to improve the facilities required to treat victims of chemical disasters - Review and take steps to improve the facilities required to treat victims of chemical disasters Boott Term (T1) Introducing basic DM concepts and precautions related to HAZCHEM - Implement the recommendations of precautions related to HAZCHEM	Ś	Sub –		State / District Agencies and their Responsibilities	ind their Responsib	ilities
forStateResponsibility - stateDistrict• Forest and EnvironmentForest and EnvironmentShort Term (T1)District• Forest and EnvironmentShort Term (T1)•• Forest and DeptShort Term (T1)••• Forest and DeptShort Term (T1)• Review and address gaps in medical education at different levels with respect to emergency medical response••• GPCB GIDM• Review the specialization needs in the area of dealing with victims of chemical disasters••• Labor & Dept• Review and take steps to improve the facilities required to treat victims of chemical disasters••• Introducing basic DM concepts and precautions related to HAZCHEM••	N0.	Thematic				Responsibility – District
 Forest and Environment Environment Environment Environment Environment CPCB GPCB GPCB GIDM Labor & Review the specialization needs in the area of dealing with victims of chemical disasters Labor with response Labor with response Review the specialization needs in the area of dealing with victims of chemical disasters Review and take steps to improve the facilities required to treat victims of chemical disasters Review and take steps to improve the facilities required to treat victims of chemical disasters Robot Term (T1) Introducing basic DM concepts and precautions related to HAZCHEM 		Area for	State	Responsibility – state	District	
 Review and address gaps in medical education at different levels with respect to emergency medical response Review the specialization needs in the area of dealing with victims of chemical disasters Review and take steps to improve the facilities required to treat victims of chemical disasters Short Term (T1) Introducing basic DM concepts and precautions related to HAZCHEM 		NNU	• Forest and	Short Term (T1)		Short Term (T1)
 education at different levels with respect to emergency medical response Review the specialization needs in the area of dealing with victims of chemical disasters Review and take steps to improve the facilities required to treat victims of chemical disasters Short Term (T1) Introducing basic DM concepts and precautions related to HAZCHEM 			Environment	• Review and address gaps in medical		• Implement the recommendations of
 Respect to emergency medical response Review the specialization needs in the area of dealing with victims of chemical disasters Review and take steps to improve the facilities required to treat victims of chemical disasters Rhort Term (T1) Introducing basic DM concepts and precautions related to HAZCHEM 			Dept			reviews in all educational intuitions
& • • • • • • • • • • • • • • • • • • •			• GPCB			in the district
lent •			• GIDM	response		
• Int			• Labor &	Review the specialization needs in		
• Int			Employment	the area of dealing with victims of		
Review and take steps t o improve the facilities required to treat victims of chemical disasters Short Term (T1) Introducing basic DM concepts and precautions related to HAZCHEM			Dept	chemical disasters		
the facilities required to treat victims of chemical disasters Short Term (T1) Introducing basic DM concepts and precautions related to HAZCHEM				Review and take steps t o improve		
victims of chemical disasters Short Term (T1) Introducing basic DM concepts and precautions related to HAZCHEM				the facilities required to treat		
Short Term (T1) Introducing basic DM concepts and precautions related to HAZCHEM				victims of chemical disasters		
Introducing basic DM concepts and precautions related to HAZCHEM				Short Term (T1)		
precautions related to HAZCHEM				Introducing basic DM concepts and		
				precautions related to HAZCHEM		

Ś	Sub –		State / District Agencies and their Responsibilities	and their Responsib	lities
No.	Thematic Area for DRR	State	Responsibility – state	District	Responsibility – District
ς.	Awareness Generation	• GSDMA • DISH • GPCB	 Short Term (T1) a. Carry out mass media campaigns b. Promote culture of disaster risk prevention, mitigation, and better risk management c. Promote attitude and behavior change in the awareness campaigns/ IEC Medium Term (T2) d. Promote use of insurance/ risk transfer e. Promote use of insurance/ risk transfer e. Promote community Radio f. Strengthening network of civil society organizations for awareness generation about DRR and D M e. Prous on safety and compliance with SOP at workplace for workers 	 DM & Collector DD0 CS0 NG0 Youth Volunteers PRIs 	 Short Term (T1) Carry out mass media campaigns h. Promote culture of disaster risk prevention, mitigation, and better risk management Medium Term (T2) i. Promote attitude and behavior change in the awareness campaigns/ IEC j. Promote use of insurance/ risk transfer k. Promote use of insurance/ risk transfer k. Promote use of insurance/ risk transfer m. Promote use of insurance/ risk transfer n. Strengthening network of civil society organizations for awareness generation about DRR and D M m. Focus on safety and compliance with SOP at workplace for workers n. Information on safety, care and protection of disaster- affected animals
4	Mock Drills/ Exercises	• GSDMA • GIDM	 Recurring/ Regular (RR) Promoting the planning and execution of emergency drills by all departments and in all districts 	 DM & Collector Police Industry NGO NGO CSO Youth Volunteers Aapda Mitra 	 Recurring/ Regular (RR) Joint planning by district administration and all the departments and execution of emergency drills

Ś	Sub –		State / District Agencies and their Responsibilities	and their Responsibi	lities
N0.	Thematic				Raenoneihility _ Nietriot
	Area for	State	Responsibility – state	District	nue pomoranut – comprenedent
	DRR				
5.	Empowerin	• WCD	Recurring/ Regular (RR)	DM & Collector	Recurring/ Regular (RR)
	g women,	 Social justice 	Incorporating gender sensitive DDO	• DDO	• Incorporating gender sensitive and
	marginalize	and	and equitable approaches in	• PRI	equitable approaches in capacity
	d, and	Empowerment	capacity development covering all	 Youth Volunteers 	development covering all aspects of
	persons	Dept	aspects of disaster management	• NGO	disaster management at the district
	with	 UNICEF 		• CSO	and local levels
	disabilities			 Aapda Mitra 	
6.	Community	• GSDMA	Recurring/ Regular (RR)	DM & Collector	Recurring/ Regular (RR)
	-Based	• GIDM	• Strengthen ability of communities	• NGO	• Training for PRI, SHG, NCC, NSS,
	Disaster		to manage and cope with disasters	 Youth Volunteers 	Youth, local community
	Manageme		based on a multi-hazard approach	 Aapda Mitra 	organizations
	nt				Promotion, Guidance, and Support

Fire Hazard

Note: The focus of the responsibility framework for fire risk mitigation is on Fire & Emergency Services and therefore it is in a different format.

FITE HAZATO State/District Agencies and their Responsibilities Responsibility-State District
 Recurring/Regular (RR) Systematic data management of data on disaster damage and loss assessments.
 Short Term (T1) Applying the classification system for hazardous industries in rural &
urban areas based on norms laid down by the Standing Fire Advisory Committee (SFAC) for Fire Services.
 Vulnerability analysis of densely population clusters prone to high risk of fire.
 Disaster Damage and Losses 2005- 2015 baseline.
Medium Term (T2)Mapping of Hazardous sites that
pose fire and explosion risks.Assess and fix the requirement of
equipment and manpower.
 Identifying areas prone to forest fires and take preventive measures.

			Fire Hazard		
Sr			State/District Agencies and their Responsibilities	Responsibilities	
No	Thematic Area for DRR	State	Responsibility-State	District	Responsibility-District
6	Inter-Agency Co-ordination	UDD, Director of F&ES, Revenue Dept, Home Dept and GSDMA	 Recurring/Regular (RR) Preparation and implementation of fire safety and prevention plans in all built environments. Ensure the functioning of agencies to ensure proper compliance of the fire safety norms. 	District Magistrate/ District Collector, DDO, DSP, DCF, Municipal Commissioner, Chief Fire Officer (CFO) and District Project Officer (DPO)	 Recurring/Regular (RR) To follow and comply with the State Authorities.
ri.	Investing in DRR-Structural Measures	UDD, Director of F&ES, GSDMA	 Medium Term (T2) Identify the gaps in existing capabilities – equipment & Infrastructure. Address gaps in infrastructure and equipment needs, upgrade equipment including personal protective equipment. Action Plan for modernization and meeting future needs. Strengthening & standardizing response mechanisms. Long Term (T3) Procurement of equipment for firefighting, urban search and rescue as per the requirement. Establish fire stations/posts up to the Sub-divisional level to the block level. 	District Magistrate/ District Collector, Municipal Commissioner, ULB's, Chief Fire Officer (CFO) and District Project Officer (DPO)	 Recurring/Regular (RR) To follow and comply with the State Authorities.

	es	t Responsibility-District	lector/ lector/ tt ite, Recurring/Regular (RR) al • To follow and oner, comply with the Officer State Authorities. P and oject i P and
	esponsibiliti	District	District Collector/ District Magistrate, Municipal Commissioner, Crhief Fire Officer (CFO), DSP and District Project Officer (DPO)
Fire Hazard	State/District Agencies and their Responsibilities	Responsibility-State	 Recurring/Regular (RR) Strict Implementation and strengthening of Fire Safety rules. Strict procedures for fire safety certification should be followed before issuing building use permissions. Ensure frequent inspection for fire safety system and equipment in public utilities. Implementation of Risk Transfer Arrangements including multi- hazard insurance for life and property. Short Term (T1) Enactment of Fire Act and other legal measures as per recommendations of SFAC and otherofficial bodies. Promotion of building codes as per NBC 2016, especially parts relatingto fire and life safety and other relevant sections. Institutional reform and major changes in organizational setup. Legal regime for mandatory fire clearance from F&ES for different types of buildings, colonies and other installations.
		State	UDD, Director of F&ES and GSDMA
		Thematic Area for DRR	Investing in DRR-Non Structural Measures
	Sr	No	4

t Agencies and their Responsibilities ty-State District cular (RR) minicular rg on disaster minicular ril Defense c (DEF), ro disaster bistrict ril Defense c (DEF), volunteers. e of awareness, paredness. paredness. ration programmes minicipal row volunteers. District Collector, of awareness, paredness. paredness. District Collector, nd ensure wider Municipal o general public District Collector, nm. DSP, DCF, PRI's aster affected Project Officer ng, managing project Officer nbility gaps-human holility gaps-human				Fire Hazard		
Thematic Area for DKK State Responsibility-State District Thematic Area for DKK State Recurring/Regular (RR) District Advanced training on disaster Advanced training on disaster District District Advanced training on disaster Advanced training on disaster District District Advanced training on disaster Energenet Civil Defense Energenet Civil Defense District Education Dept, Promoting culture of avareness, alettuess and preparedness. Promoting culture of avareness, District Collector, UDD, Education Dept, Education Dept, Etc. Materials and ensure wider Municipal UDD, Education Dept, Etc. Materials and ensure wider District Collector, Capacity Development Commissioner of Etc. Materials and ensure wider Municipal Commissioner of Ruel Development, Etc. Materials and ensure wider District Collector, Commissioner of Etc. Materials and ensure wider District Collector, District Collector, Ruel Development Commissioner of Etc. Materials and ensure wider District Collector, <th>\mathbf{Sr}</th> <th></th> <th></th> <th>State/District Agencies and their</th> <th>Responsibilities</th> <th></th>	\mathbf{Sr}			State/District Agencies and their	Responsibilities	
Recurring/Regular (RR) Recurring/Regular (RR) • Advanced training on disaster management Civil Defense Emergency Force (CDEF), community and Volunters. • Advanced training on disaster management Civil Defense Emergency Force (CDEF), community and Volunters. UDD, Education Dept, Forest & Euro Polit, minal Husbandry, Capacity Development CiDD, GSDMA, SIRD, SDRF and CDEF • Advanced training on disaster and industries. UDD, Education Dept, Forest & Euro Polit, minal Husbandry, Commissioner of Rural Development, CDEF • Advanced training on disaster and industries. Capacity Development, Commissioner of CIDM, GSDMA, SIRD, SDRF and CDEF • EC Materials and ensure wider dissemination to general public through all medium. Commissioner of CIDM, GSDMA, SIRD, SDRF and CDEF • Information on Safety Care and protection of Disaster affected animals. Information on Safety Care and protection of Disaster affected animals. • District Project Officer (DO) • ODF • OP • ODF • Op • ODF • Op • Odfrest free capability gap-fuman and minitutionel	No	Thematic Area for DRR	State	Responsibility-State	District	Responsibility-District
Strengthening & standardizing response mechanisms.	ý.	Capacity Development	UDD, Education Dept, Forest & Env Dept, Animal Husbandry, Commissioner of Rural Development, GIDM, GSDMA, SIRD, SDRF and CDEF	 Recurring/Regular (RR) Advanced training on disaster management Civil Defense Emergency Force (CDEF), community and Volunteers. Promoting culture of awareness, alertness and preparedness. Awareness generation programmes for public, utilities, ULB's, PRI's and industries. IEC Materials and ensure wider dissemination to general public through all medium. Information on Safety Care and protection of Disaster affected animals. ToT programmes on various aspects such as firefighting, managing collapsed structure and search & rescue. Medium Term (T2) Attendarian & standardizing transitional. 	District Collector, Municipal Commissioner, DSP, DCF, PRI's and District Project Officer (DPO)	Recurring/Regular (RR) • To follow and comply with the State Authorities

Note: Every Department or agency of the government not specifically mentioned will also have both direct and indirect supporting role depending on the disaster, location & context.

Biologi	Biological and Public Health Emergencies	alth Emergencies			Understanding Risk
S. No.	Sub –		State / District Agencies and their Responsibilities	Responsibiliti	SS
	Thematic Area for DRR	State	Responsibility – state	District	Responsibility - District
1.	Observation	Health dept.	Recurring/ Regular (RR)	DM &	Recurring/ Regular (RR)
	network,		Support for training	Collector	Maintaining preventive
	Information	Commissionera	 Extend technical support 		measures as per norms
	Systems,	te of Health		DDO	
	Monitoring,		Medium Term (T2)		Short Term (T1)
	Research,	Director of	Establishment of Early Warning System	CDHO	• Strengthening integrated health
	Forecasting,	AYUSH	Epidemiological disease mapping		surveillance systems
	Early Warning		Health facilities mapping		Medium Term (T2)
	and Mapping/		• Establishing and maintaining community-		
	Loning,		based network for sharing alerts		• Strengthening IDSP and early
			Strengthening IDSP		warning systems at district level
			Long Term (T3)		
			• State should, modify or adapt IMD's		
			warning system according to thresholds		
			applicable		
2.	Hazard Risk	Health dept.	Recurring/ Regular (RR)	DM &	Recurring/ Regular (RR)
	Vulnerabilityand		• Promote studies, documentation and	Collector	Updating HRVCA
	Capacity	Commissionera	research		• Identifying the vulnerable
	Assessment	te of Health	Studies on vulnerabilities and capacities	DDO	population/ communities/
	(HRVCA)		covering social, physical, economic,		settlements
		Director of AYUSH	ecological, gender, social inclusion and	CDHO	Identification of groups
			equity aspects		requiring special attention
			• Provide technical support and guidance for		Conduct audit of equipment
			comprehensive HRVCA		and human resource
			Develop guidelines		requirements

Biological and Public Health Emergencies

Biolog	Biological and Public Health Emergencies	alth Emergencies			Understanding Risk
S. No.	Sub –		State / District Agencies and their Responsibilities	Responsibilitie	
	Thematic Area for DRR	State	Responsibility – state	District	Responsibility - District
з.	Dissemination	Health dept.	Recurring/ Regular (RR)	DM &	Short Term (T1)
	of warnings,	Comm.of	Support for organizing training	Collector	Create awareness preventive
	data &	Health	 Extend technical support 	DDO	measures in the district level.
	information	Director of	• Awareness and proper messages for elderly,	CDHO	• Extensive IEC campaigns to
		AYUSH	young children, outdoor workers and slum	M.C	create awareness through print,
		• UDD	residents across the state.	UHC	electronic and social media in the
					district level.
					Medium Term (T2)
					Specific messages for highly
					vulnerable groups such as
					elderly, young children,
					outdoor workers and slum
					residents in the district level.
4.	Disaster Data	• Health dept.	Recurring/ Regular (RR)	DM &	Recurring/ Regular (RR)
	Collection and	Comm.of	• Systematic data management of data on	Collector	• Systematic data management of
	Management	Health	disaster damage and loss assessments	DDO	data on disaster damage andloss
		Director of	Short Term (T1)	CDHO	assessments in the district level.
		AYUSH	Disaster Damage and Losses 2005-2015	M.C	
		UDD	baseline	UHC	
	_				

Biolo	gical and Public F	Biological and Public Health Emergencies	Understand	Understanding Disaster Risk	Risk
Ś	Sub –		State / District Agencies and their Responsibilities	bilities	
N0.	Thematic Area for DRR	State	Responsibility – state	District	Responsibility - District
1	Overall	• Health dept.	Recurring/ Regular (RR)	DM &	Short Term (T1)
	disaster	• Comm.of Health	 Preparing guidelines 	Collector	• Implementation as per
	governance	• Director of AYUSH	• Promote the mainstreaming of DRR in	DDO	specific conditions in the
		UDD	healthcare	CDHO	state
			• Technical inputs for implementation based	M.C	• Team mobilization and
		UNICEF	on experience from different locations	UHC	coordination - officials
		IRCS	Collaboration with NGOs/CSOs		and agencies
		108 GVK EmergencyServices			Involving local
			Medium Term (T2)		administration
			• Develop a clearly defined interagency		
			emergency response plan with roles and		
			information flows clearly marked out.		
			• Coordinate with the IMD office regarding		
			forecasts, early warning and alert system.		
			Long Term (T3)		
			Partnering local institutions with national		
			institutions / experts		
			• Adapting HAPs developed in other		
			countries /cities, monitoring and evaluating		
			implementation and impact on mortality and		
			morbidity		

Inter Agency Coordination

Biolog	gical and Public F	Biological and Public Health Emergencies	Understan	Understanding Disaster Risk	r Risk
S.	Sub –		State / District Agencies and their Responsibilities	bilities	
No.	Thematic	State	Responsibility – state	District	Responsibility - District
	Area for DRR				
7	Preparedness	• Health dept.	Short Term (T1)	DM &	Short Term (T1)
	& Response	• Comm.of Health	Strengthening of integrated surveillance	Collector	Rapid health assessment
		• Director of AYUSH	systems based on epidemiological surveys;	DDO	and provision of
		UDD	detection and investigation of any disease	CDHO	laboratory support
		UNICEF /IRCS / 108services	outbreak.	M.C	
			• Development of SEOC & its integration	UHC	
			with centralized EOC		
			Developing specialized response		
			capabilities for biological emergencies		
3	Warnings,	• Health dept.	Short Term (T1)	DM &	Short Term (T1)
	Information, Data	Information,Data Comm.of Health	Public awareness and community outreach	Collector	• Follow the
		• CoR	• Documentation & Data collecting	DDO	alerts/warning
		• RD	Medium Term (T2)	CDHO	• "Do's-and-Don'ts" should
		• UDD	Collecting Data/ Information necessary for	M.C	be a available in
		• GSDMA	review/ update of the plan	UHC	vernacular languages
		• Line dept	Maintaining state level database		and widely disseminated
					• Dissemination of
					warnings to all, down to
					the last mile - remote,
					rural or urban
					Regular updates topeople
					in areas at risk
					Medium Term (T2)
					Collecting Data/
					Information necessary for
					review/ update of the
					plan

Measures
Structural
DRR -
Investing in

ct Agencies and th ct Agencies and th e and Emergency for formulating ds for water, food, and hygiene nination systems, Inits (ICUs) and cquipment for all ated with the the network the network the network ith all material	Biological and Public Health Emergencies	Health Emergen		Understanding Disaster Risk	er Risk
Thematic Area State Responsibility - state for DRR Short Term (T1) 1 Strengthening Health dept. Response CoH Short Term (T1) Response CoH Medical Care Network AYUSH Identifying infrastructure needs for formulating mitigation plans Iaying down minimum standards for water, food, shelter, medical care, sanitation, and hygiene Establishing adequate decontamination systems, critical care Intensive Care Units (ICUs) and isolation wards Adequate Personal Protective Equipment for all the health workers associated with the responding to biological emergencies Medium Term (T2) Strengthening/mainstreaming the network medical assistance facilities	Sub –		State / District Agencies and th	their Responsil	bilities
 ining Health dept. Strengthening Pre-hospital Care and Emergency Medical Care Network Director of Medical Care Network Director of Medical Care Network AYUSH - Identifying infrastructure needs for formulating mitigation plans Laying down minimum standards for water, food, shelter, medical care, sanitation, and hygiene Establishing adequate decontamination systems, critical care Intensive Care Units (ICUs) and isolation wards Adequate Personal Protective Equipment for all the health workers associated with the responding to biological emergencies Medium Term (T2) Strengthening/mainstreaming the network medical assistance facilities Equipping Medical First Responders /Quick Reaction Medical First Responders /Quick Reaction Medical First Responders /Quick 		State	Responsibility – state	District	Responsibility - District
 CoH • Strengthening Pre-hospital Care and Emergency Medical Care Network Director of Medical Care Network • Identifying infrastructure needs for formulating mitigation plans • Laying down minimum standards for water, food, shelter, medical care, sanitation, and hygiene • Establishing adequate decontamination systems, critical care Intensive Care Units (ICUs) and isolation wards • Adequate Personal Protective Equipment for all the health workers associated with the responding to biological emergencies • Strengthening/mainstreaming the network medical assistance facilities • Equipping Medical First Responders /Quick Reaction Medical Teams with all material logistics and backup support 	1 Strengthening	Health dept.	Short Term (T1)	DM &	• Strengthen pre hospital and medical
 Medical Care Network Identifying infrastructure needs for formulating mitigation plans Laying down minimum standards for water, food, shelter, medical care, sanitation, and hygiene Establishing adequate decontamination systems, critical care Intensive Care Units (ICUs) and isolation wards Adequate Personal Protective Equipment for all the health workers associated with the responding to biological emergencies Medium Term (T2) Strengthening/mainstreaming the network medical assistance facilities Equipping Medical First Responders /Quick Reaction Medical Teams with all material logistics and backup support 	Response	C ₀ H	Strengthening Pre-hospital Care and Emergency	Collector	state of isolation wards.
 Identifying infrastructure needs for formulating mitigation plans Laying down minimum standards for water, food, shelter, medical care, sanitation, and hygiene Establishing adequate decontamination systems, critical care Intensive Care Units (ICUs) and isolation wards Adequate Personal Protective Equipment for all the health workers associated with the responding to biological emergencies Medium Term (T2) Strengthening/mainstreaming the network medical assistance facilities Equipping Medical First Responders /Quick Reaction Medical Teams with all material logistics and backup support 		Director of	Medical Care Network	DDO	• Strengthening medical logistics at
mitigation plans Laying down minimum standards for water, food, shelter, medical care, sanitation, and hygiene Establishing adequate decontamination systems, critical care Intensive Care Units (ICUs) and isolation wards Adequate Personal Protective Equipment for all the health workers associated with the responding to biological emergencies Medium Term (T2) Strengthening/mainstreaming the network medical assistance facilities Equipping Medical First Responders /Quick Reaction Medical Teams with all material logistics and backup support		AYUSH	• Identifying infrastructure needs for formulating	CDHO	district level
Laying down minimum standards for water, food, shelter, medical care, sanitation, and hygiene Establishing adequate decontamination systems, critical care Intensive Care Units (ICUs) and isolation wards Adequate Personal Protective Equipment for all the health workers associated with the responding to biological emergencies Medium Term (T2) Strengthening/mainstreaming the network medical assistance facilities Equipping Medical First Responders /Quick Reaction Medical Teams with all material logistics and backup support			mitigation plans	M.C	• Strengthening of infrastructure of
			• Laying down minimum standards for water, food,	UHC	district hospital, taluka hospital,
			shelter, medical care, sanitation, and hygiene		CHC, PHC's
			critical care Intensive Care Units (ICUs) and		
			isolation wards		
			with		
			responding to biological emergencies		
			Medium Term (T2)		
 Equipping Medical First Responders /Quick Equipping Medical First Responders /Quick Reaction Medical Teams with all material logistics and backup support 			Strengthening/mainstreaming the		
Equipping Medical First Responders /Quick Reaction Medical Teams with all material logistics and backup support			medical assistance facilities		
Reaction Medical Teams with all material logistics and backup support			Equipping Medical First Responders /Quick		
logistics and backup support			Reaction Medical Teams with all material		
			logistics and backup support		
Long Lerm (13)			Long Term (T3)		
Up gradation of earmarked hospitals to cope with					
Biological emergency services			Biological emergency services		

tate / District Agencies and their Responsibilitim Term (T2)DistrictRem Term (T2)DM &•mical supportDM &•mical supportDDOCollector•nical supportDDOCOHOO•nical supportDDODDO•t care and laboratoryDDOM.C•of public health laboratoriesM.CUHC•of public health laboratoriesh laboratories•h laboratory in each districttital medical supplies such as•tics, etc.••blishing and strengthening•	Biolo	Biological and Public Health Emergencies	lealth Emergen		Understanding Disaster Risk	r Risk
Thematic Area State Responsibility - state District Ref for DRR Health dept. Medium Term (T2) DM & DM & 2 Upgrading Health dept. Guidelines and technical support DM & - Medical CoH • Guidelines and technical support DM & - - - Facilities Director of • Specialized health care and laboratory DDO - - - - AVUSH facilities MC - COHO -	Ś	Sub-		State / District Agencies and the state of t	their Responsib	ilities
Health dept. Medium Term (T2) DM & CoH • Guidelines and technical support DM & CoH • Specialized health care and laboratory DDO AYUSH facilities DO AYUSH • Collector DM & AYUSH • Specialized health care and laboratory DDO AYUSH • Collector DDO AYUSH • M.C DHO • Creating a chain of public health laboratories with at least one such laboratory in each district W.C • Stockpiling of essential medical supplies such as vaccines and antibiotics, etc. • Guidance for establishing and strengthening quarantine facilities • Guidance for establishing an	N0.	Thematic Area	State	Responsibility – state	District	Responsibility - District
Health dept. Medium Term (T2) DM & CoH • Guidelines and technical support Collector • Director of • Specialized health care and laboratory facilities Collector • AYUSH • Specialized health care and laboratory facilities DDO DDO AYUSH • Specialized health care and laboratory facilities DDO DDO AYUSH • Creating a chain of public health laboratories with at least one such laboratory in each district M.C • • Creating a chain of public health laboratories with at least one such laboratory in each district • • • • Stockpiling of essential medical supplies such as vaccines and antibiotics, etc. • • • • • Guidance for establishing and strengthening quarantine facilities • • • • •		for DRR				
CoH • Guidelines and technical support Collector Director of • Specialized health care and laboratory Collector AYUSH facilities DDO Fordare for extend antibiotics, etc. DDO Fordare for establishing and strengthening quarteristics DDO quarantine facilities DDO	77	Upgrading	Health dept.	Medium Term (T2)	DM &	Medium Term (T2)
Director of AYUSH Specialized health care and laboratory facilities DDO CDHO AYUSH facilities DDO AYUSH facilities M.C M.C UHC UHC Oreating a chain of public health laboratories M.C with at least one such laboratory in each district UHC Stockpiling of essential medical supplies such as vaccines and antibiotics, etc. Stockpiling of establishing and strengthening quarantine facilities		Medical	C ₀ H	Guidelines and technical support	Collector	Specialized health care and laboratory
 facilities facilities facilities CDHO M.C W.C UHC Creating a chain of public health laboratories with at least one such laboratory in each district Stockpiling of essential medical supplies such as vaccines and antibiotics, etc. Guidance for establishing and strengthening quarantine facilities 		Facilities	Director of	Specialized health care and laboratory	DDO	facilities to address biological
ong Term (T3) M.C ong Term (T3) UHC in of public health laboratories e such laboratories e such laboratory in each district e such laboratory in each district e such laboratory in each district e such laboratory in each district e such laboratory and strengthening itibiotics, etc. establishing and strengthening ities			AYUSH	facilities	CDHO	emergencies/ incidents
ong Term (T3)UHCin of public health laboratoriese such laboratory in each districtessential medical supplies such asitibiotics, etc.establishing and strengthening					M.C	Long Term (T3)
ong Term (T3) in of public health laboratories e such laboratory in each district essential medical supplies such as tibiotics, etc. establishing and strengthening ities					UHC	• Establishing and strengthening
 in of public health laboratories e such laboratory in each district essential medical supplies such as itibiotics, etc. establishing and strengthening ities 				Long Term (T3)		quarantine facilities
e such laboratory in each district essential medical supplies such as tribiotics, etc. establishing and strengthening ities				• Creating a chain of public health laboratories		• Creating at least one public health
 Stockpiling of essential medical supplies such as vaccines and antibiotics, etc. Guidance for establishing and strengthening quarantine facilities 				with at least one such laboratory in each district		laboratory in each district
 vaccines and antibiotics, etc. Guidance for establishing and strengthening quarantine facilities 				Stockpiling of essential medical supplies such as		
Guidance for establishing and strengthening quarantine facilities				vaccines and antibiotics, etc.		
quarantine facilities				Guidance for establishing and strengthening		
				quarantine facilities		

leasures
tural M
Non-Struc
n DRR –
Investing in

Biological	Biological and Public Health Emergencies	I Emergencies	Understanding Disaster Risk	ter Risk	
S. No.	Sub – Thematic		State / District Agencies and their Responsibilities	esponsibilitie	S
	Area for DRR	State	Responsibility – state	District	Responsibility - District
1.	Techno-Legal	Health dept.	Recurring/ Regular (RR)	DM &	Recurring/ Regular (RR)
	Regime	C ₀ H	 Guidance and Support 	Collector	Strengthen institutional
		Director of	Medium Term (T2)	DDO	arrangements
		AYUSH	• Dovetail norms and regulations relevant for BPHE	CDHO	
			with the DM Act 2005	M.C	
			• Enact/ amend any Act, Rule or Regulation, if		
			necessary, for better implementation of BPHE		
			riogramme		
2. 6.	Biosafety and	Health dept.	Recurring/ Regular (RR)	DM &	Recurring/ Regular (RR)
	Biosecurity	C ₀ H	Strict compliance with Biosafety and biosecurity	Collector	
	Measures and	Director of	provisions	DDO	Strict compliance with
	Environmental	AYUSH	• Environmental monitoring to prevent outbreaks	CDHO	Biosafety and biosecurity
	Management		• Integrated vector management for elimination of		provisions
)				 Environmental monitoring to
			• Biological and chemical interventions for vector		prevent outbreaks
			control		
			 Monitoring of water supply and se wage systems to 		
			prevent the dispersal of biological agents that can cause epidemics		
3. 7.	Risk	Health dept.	Recurring/ Regular (RR)	DM &	Recurring/ Regular (RR)
	Transfer	C ₀ H	• Implementation of Risk Transfer Arrangements	Collector	 Implementation of Risk
		Director of	including multi-hazard insurance for life and property	DDO	Transfer Arrangements
		AYUSH	Short Term (T1)	CDHO	including multi-hazard
			Policy Framework		insurance for life and
					property

Capacity Development

Biologi	Biological and Public Health Emergencies	alth Emergenci	es Understanding Disaster Risk	er Risk	
S.	Sub –		State / District Agencies and their Responsibilities	onsibilities	
No.	Thematic	State	Responsibility – state	District	Responsibility - District
	ALEA IOF DAN				
1.	Human	Health dept.	Medium Term (T2)	DM &	Medium Term (T2)
	Resource		• Strengthening of medical first responders, medical	Collector	• Training for surveillance
	Development	Commission	professionals, paramedics and other emergency		• Training for deployment of
	& Training	erate of	responders	DDO	Rapid Medical Response
		Health	Long Term (T3)	CDHO	Teams
			• Development of human resources for monitoring and		• Training for All Health and
		Director of	management of the delayed effects of BPHE in the areas		allied healthcare professions,
		AYUSH	of mental health and psychosocial care		AYUSH doctors and
			• Training programmes in the areas of emergency		practioners, community health
		HdII	medicine and biological emergency management for		workers, ASHA, MPWS,
			hospital administrators, specialists, medical officers,		ANM and aanganwadi
			nurses and other health care workers		workers.
			• Training support for SDRF, CDEF, community, and		Long Term (T3)
			volunteers		Organizing community
			• Training for youth through NCC, NYKS, Scouts and		awareness programmes for
			Guides and NSS		first aid and general triage
					• Training support for CDEF,
					community, and volunteers
2.	Knowledge	Health dept.	Recurring/ Regular (RR)	DM &	Recurring/ Regular (RR)
	management &		• Incorporating basic knowledge of BPHE management	Collector	Support for proper education
	Curriculum	Commission	through the educational curricula		and training health emergency
	Development	erate of	• Support for proper education and training health	DDO	personnel
		Health	emergency personnel	CDHO	• Promote continuing medical
			• Promote continuing medical education programmes and		education programmes and
			workshops at regular intervals		workshops at regular intervals
			• Defining the role of public, private, and corporate sectorfor their active participation and their sensitization		
			A A		

S. Sub – No. Them			Ctata / District A consist and th		
			State / District Agencies and their Responsibilities	neir kesponsibilities	
	Thematic Area	State	Responsibility – state	District	Responsibility - District
for DRR	RR				
3. Aw	Awareness	Health dept.	Recurring/ Regular (RR)	DM & Collector	Recurring/ Regular (RR)
Ge	Generation		 Support awareness campaigns/ IEC 	DDO CDHO M.C	• Promoting awareness,
		C ₀ H	• Support network of civil society organizations	UHC CHC UDA	alertness and preparedness
		CoR	for awareness generation about emergencies	PRI ULB	• Training programs for
		GIDM	caused bybiological agents		public, PRIs/ ULBs
		GSDMA			• Community awareness
		Information			programme for first aid
		Broadcasting			• Dos and Don'ts to mitigate the
		dept			effects of medical emergencies
		DD			caused bybiological agents
		WCD			• Awareness about the
					importance of personalhygiene
					• With due consideration to the
					social, ethnic and religious
					issues involved, utmost care
					will be exercised in the
					disposal of dead
					bodies.

Biologi	Biological and Public Health Emergencies	alth Emergencie	es Understanding Disaster Risk	r Risk	
Ś	Sub –		State / District Agencies and their Responsibilities	onsibilities	
No.	Thematic Area for DRR	State	Responsibility – state	District	Responsibility - District
4	Mock Drills/ Exercises	H&FW Dept GSDMA UDD CoR Home Dept.	Recurring/ Regular (RR) • Promoting the planning and execution of emergency drills by all line dept in all States/UTs • Technical support for identifying and resolve communication gaps between participating departments, partners and the public	DM & Collector DDO CDHO Civil Defense PRI Aapda Mitras ULB	Recurring/ Regular (RR)• Defining the role of the community as a part of the disaster management• Testing of various elements of the hospital emergency preparedness through table top exercises, and mock drills• Identify and resolve communication gaps between participating departments, partners and the public• Joint execution of emergency drills with localbodies
้ท่	Hospital Preparedne ss	H&FW Dept CoH GMCSL WCD UDD	 Identifying, stockpiling, supply chain and inventory management of drugs, equipment and consumables including vaccines and other agents for protection, detection, and medical management Medium Term (T3) Institutionalization of advanced Emergency Medical Response System (EMRS) Upgrading existing Biosafety lab oratories and establishing new ones 	DM & Collector DDO CDHO District Program me Officer M.C UHC	 Recurring/ Regular (RR) Preparation of DMP by all the hospitals including those in the private sector Medium Term (T2) Developing a mechanism to augment surge capacities to respond to any mass casualty event following a biological emergency Long Term (T3) Specialized health care and laboratory facilities

Biologi	Biological and Public Health Emergencies	salth Emergencie	es Understanding Disaster Risk	ter Risk	
S.	Sub –		State / District Agencies and their Responsibilities	ponsibilities	
No.	Thematic Area for DRR	State	Responsibility – state	District	Responsibility - District
6.	Applied	H&FW Dept	Recurring/ Regular (RR)	DM &	Long Term (T3)
	Research	C ₀ H	Post-disaster phase medical documentation procedures	Collector	Inculcating scientific temper
		HJII	and epidemiological surveys	DDO	for knowledge management
			Short Term (T1)	CDHO	and applied research and
			Regular updating by adopting activities in Research and	District	training in management of
			Development (R&D) mode, initially by pilot studies	Program	CBRN emergencies
			Medium Term (T 2)	me	
			Development of post-disaster medical documentation	Officer	
			procedures and epidemiological surveys	M.C	
			Long Term (T3)	UHC	
			Strengthening of scientific and technical institutions for		
			knowledge management and applied research and		
			training in management of CBRN emergencies		
7.	Empowering	H&FW Dept	Recurring/ Regular (RR)	DM &	Recurring/ Regular (RR)
	women,	WCD F&ED	• Guidance	Collector	• Incorporating gender
	marginalized	SJ&E Dept	• Promote gender sensitive and equitable approaches	DDO	sensitive and equitable
	, and persons	TDD		CDHO	approaches in capacity
	with	UDD		District	development for coping with
	disabilities			Program	BPHE
				me	
				Officer	
				M.C	
				UHC	

*TDD-Tribal Development Dept

Sup.	5
+000	
7	

Biolog	Biological and Public Health Emergencies	alth Emergenc	cies Understanding Disaster Risk	ster Risk	
S.	Sub – Thematic		State / District Agencies and their Responsibilities	Responsibiliti	es
No.	Area for DRR	State	Responsibility – state	District	Responsibility - District
1.	1. Research,	CCD	Recurring/ Regular (RR)	S MU	Recurring/ Regular (RR)
	Forecasting /	H&FWD	• Share information and updates	Collector	• Support and cooperate with State
	Early Warning,	F&ED	Short Term (T1)	DDO	agencies
	Data	GIDM	• Strengthening integrated health surveillance systems	DCF	• Sponsor and support state- specificand
	Management,	GSDMA	based on GACC scenarios		local efforts
	Zoning, Mapping		Medium Term (T2)		
			• Detailed assessment and monitoring of biological threats		
			under GACC impact scenarios		
			• Develop Database management system relating to		
			Biological Disasters & climate change		
			Long Term (T3)		
			• Improve forecasting and assessment capabilities		
			consistent with the anticipated changes		
2.	2. Hazard Risk	CCD	Medium & Long Term (T2, T3)	S MU	Recurring/ Regular (RR)
	Vulnerability and H&FWD	H&FWD	• Undertake detailed studies on vulnerability and risk	Collector	• Undertake HRVCA as part of
	Capacity	F&ED	under GACC scenarios	DDO	preparing and periodic revision of
	Assessment	UDD	• Assess GACC risks of vulnerable and marginalized	DCF	DM plans
	(HRVCA)	GSDMA	sections		Medium Term (T2)
			• Provide technical support and guidance for		• Assess GACC risks of vulnerableand
			comprehensive HRVCA considering GACC impacts		marginalized sections

*GACC-Global Anthropogenic Climate Change

*CCA-Climate Change Adaptation

Chapter 6: Mainstreaming Disaster Risk Reduction and Climate Change Adaptation

1. Disaster risk affects the health, safety and security of the people. Disasters risk drivers such as inadequate development panning, poverty, unchecked urban expansion; environmental degradation and weak risk governance have led to increased risk. The disaster risk continues to increase as the growing exposure of people and assets to hazards outpaces risk reduction capacities. Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) efforts share the immediate commonaim of building resilience of people, economiesand natural resources to the impacts of extremeweather and climate change.

Mainstreaming DRR is a process of integrating DRR and CCA at all levels of decisionmaking including state, district and village government & community levels and creating direct linkages with international and regional commitments like SFDRR, SDG, Paris Agreement, etc.

2. With escalating disaster risks, there is a growing consensus that the key to sustained risk reduction lies in 'mainstreaming' the reduction of risks into development. This could be done by incorporating the key principles of.

The mainstreaming needs to be integrated in all phases of planning, programming, budgeting, implementation, monitoring etc. into development goals, governance arrangements, policies and practice. Mainstreaming requires the analysis of how potential hazard events could affect the performance of policies, programs and projects, and on the other hand, it needs to look at the impact of the same policies, programs, and projects on vulnerability to hazards.

- **3.** As per the provisions of GSDM Act, 2003, all government departments local authorities, have to prepare their own DM Plans. The plans will be prepared after considering the types of disaster that may occurs and their possible effects, the property at risk, provision for prevention and mitigation strategies, promote capacity building and contingency plans etc
- 4. Disasters and development are closely linked. Disasters can both destroy development initiatives and create development opportunities. Development schemes can both increase and decrease vulnerability. It has four separate but interrelated dimensions:
 - i. Disasters set back development programming, destroying years of development initiatives.
 - **ii.** Rebuilding after a disaster provides significant opportunities to initiate development Programmes.
 - iii. Development programmes can increase an area's susceptibility to disasters.
 - **iv.** Development programmes can be designed to decrease the susceptibility to disasters and their negative consequences.

Thus, it is desirable that development initiatives and DRR are dealt with concurrently in a seamless manner, into all the relevant policies, planning and implementation. All development initiatives must factor in the likelihood of greater risk and increase in climate change inducedvulnerabilities

The second and third priorities of the Sendai Framework namely risk governance and investingin disaster risk reduction for resilience, recognize the importance of DRR within and across all sectors of development. Sectors of focus include Agriculture, Building and Construction, Education, Energy, Environment, Finance, Health, Planning, Telecommunications, Tourism, Transportation, Urban and rural development, Water and Sanitation. Mainstreaming into development planning has been a priority concern for the State Government. It should ensure that development plans and programs do not create new forms of vulnerabilits.

5. Planning based on Hazard, Exposure, Vulnerability and Coping Capacity of the State

GSDMA has for integrating disaster management into development planning. Each line department, Municipal Corporation, District Collector and District Development Office of the State is required to use it for initiating projects depending on the vulnerability of the project area.

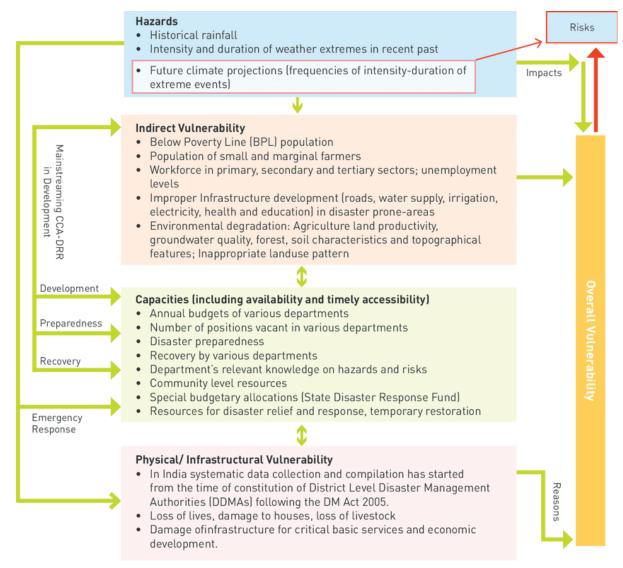
In addition, line departments and even some private industries do seek the advice of GSDMA on vulnerability of the region before finalizing projects that require major investment. Dholera Special Investment Region Project is one such example where GSDMA has provided guidance in carrying out vulnerability studies for flood and seismic activities before finalizing the development plan.

Based on the same, each line department and other relevant state agencies should carry out and ensure the following:

- 1. Ensure that the DRR policies and practices must be based on improved understanding of disaster and climate risk in all its dimensions and communities made aware of various aspects of disaster and climate risk so that they are able to proactively take preventive measures.
- 2. Ensure adequate and appropriate legislative arrangements for disaster risk management, including the mainstreaming of DRR and CCA into development.
- 3. Plan land use of the State in view of hazard, risk and vulnerability of the project.
- 4. Ensure all the development schemes of the state are undertaken in view of hazard, risk, vulnerability and micro-zonation and climate risk attached with it and facilitated with the provision for adequate funds.
- 5. Undertake revision of land-use regulations and building codes and introduction of judicial andother measures to ensure enforcement.
- 6. Integrate various risk financing instruments within an overall DRR strategy, enabling policies and supporting legal framework.
- 7. Provide engineering inputs to improve infrastructures including dams and reservoirs, buildingdesign, construction, etc.
- 8. Ensure financing and budgeting for investment in resilience.
- 9. Investing in capacity building, organization, and mobilization of community members (especially of women) at local level, in particular to access resources, to take leadership in the community and to engage with local authorities.
- 10. Strengthen inter agency coordination and integration involved in development initiatives at state and district level.
- 11. Ensuring social inclusiveness in disaster risk management.

Formats for Pre-approval of Projects

In continuation with the efforts to integrate disaster management into development planning especially for newprojects that are under preparation stage, the Central Government has revised the formats for pre-approval from EFC (Expenditure Finance Committee) and for preparing the DPR (Detailed Project Report) to address disaster management concerns.



Source:<u>https://www.researchgate.net/figure/key-elements-of-mainstreaming-cca-Drr-in-</u> <u>Development-</u>planning fig3 311608070

Expenditure Finance Committee (EFC) Format

To ensure the implementation of key areas, a check list for EFC format and the responsible departments are as shown in **table 6.1**:

	Activity	Responsibility
1.	To ascertain whether project involve any creation/ modification of structural/ engineering assets	 Line Depts. Irrigation Power Water supply Health Roads & Buildings Education Others
2.	To ascertain the possible risks, likelihood and impact from disasters and climate change due to the location of project sites	 Dept. approving the project Administratively Financially
3.	To ascertain whether probable risks both structural and non- structural measures have been prioritized and the prevention and mitigation measures being contemplated.	 Technically Urban Development Authorities

	Activity		Responsibility
4.	To ascertain whether the design and engineering of the structure has taken into consideration the National Building Code, the appropriate BIS Codes, other applicable sources as per the type of the project and the NDMA guidelines. List of codes/ guidelines for safety of building/structures is given in	•	C D
	Annexure 3 (Refer Page 216).		CODMA
5.	To ascertain whether the cost of disaster / mitigation measures	•	GSDMA
	been included in the overall project cost		Land Dation
6.	To ascertain whether the process of risk assessment has been done based on available information and secondary evidence		Local Bodies

Table 6.1: Checklist for EFC Format

Detailed Project Report (DPR) Format

To ensure the implementation of key areas, a checklist for DPR format and the responsible departments are as shown below:

Activity	Responsibility
1. Impact Assessment of project (damage that can be caused to the project by natural & Man-made hazards, design of the project that could accentuate the vulnerability of the area to hazards and / or lead to rise in damage / loss of lives, property, livelihood and surrounding environment) and ensure creation of new risk; Checklist for natural & man-made hazards impact assessment if given in Annexure 4 (Refer Page 220).	 Line Depts. preparing the project Irrigation Power Water supply Health Roads & Buildings Education Others
 Disaster & Climate Risk assessment of project Evaluation of site with regards to parameters such as probable maximum seismicity, probable maximum storm surge, probable maximum wind speed, probable maximum precipitation, probable maximum flood discharge and level, soil liquefaction proneness under probable earthquake intensities Compliance of Land Use Management Building Code Building Use Regulation Directives and Legislation Maintenance Requirement Details about the location of the project, proneness of the project area to various hazards and analysis of impact on safety 	 Dept. approving the project Administratively Financially Technically Urban Development Authorities R & B Dept
 6. Impact of the project on the environment and the surrounding population with respect to the type of the project and adoption of prevention and mitigation measures to prevent and mitigate the impact. 	GSDMALocal Bodies

Relevant Government Schemes and Projects

Many government schemes targeted at different vulnerable groups could be used in pre-disaster phase as a tool for minimizing their vulnerability and empowering them to better respond to any disaster. Some of the schemes/ subsidies could also be used in post-disaster phase to rebuild theirlost infrastructure, housing, to avail basic amenities/ facilities like education, health, to restore livelihood, etc. by availing the entitlement of these schemes.

These schemes include Agri-Implements Subsidiary, Animal Husbandry Aid Scheme, Rastriya Madhyamik Shiksha Abhiyan (RMSA), Targeted Public Distribution System, Annapurna Scheme, Janani Shishu Suraksha Karyakram (JSSK), Rashtriya Swasthya Bima Yojana (RSBY), Welfare Scheme for Salt Workers, Shramik Suraksha Accident Group Insurance Scheme, SardarPatel Awas Yojna, Pradhan Mantri Awas Yojna, Indira Gandhi National Disability Pension Scheme, Assistance to Disabled Widows for House Construction, Vanbandhu Kalyan Yojna, etc.

To ensure that the entitlement of these schemes reach the targeted population, it is necessary that population is well aware of such schemes/ projects and their entitlement.

Inter department coordination is very crucial for these entitlement to reach the affected population especially in a post-disaster scenario.

Budget Allocation

It should be ensured that the expenditure on risk reduction is sufficient and there are adequate financial arrangements to manage the residual risks. While there are certain budgeting allocations to partially address requirements of relief through NDRMF/SDRMF each department must make adequate provision for DRR.

Mainstreaming is the internalisation of risk awareness and incorporation of risk reductionmeasures into the main or the overall policies and programmes within and outside government. The SDMP provides broad perspective on mainstreaming DRR and CCA. Each department and agency must review current programmes to include DRR and CCA to the extent possible cost effectively within their main budget and ensure comprehensive appraisal of all new initiatives (policies, plans, programmes, projects, etc.) based on the perspectives provided in the SDMP.



Chapter 7: Disaster Preparedness & Capacity Building: Strengthening Institutional Capacity for Resilience

All institutions relevant to a state's resilience must have the capabilities they need to discharge their roles. It is critical to involve all stakeholders' right from the pre-disaster phase and to work together in a risk-informed and integrated approach. For this, all stakeholders should be aware and informed of the existing and imminent risks, incorporate disaster risk reduction as part of their policy and routine functioning and should allocate resources and develop capacities to increase the level of commitment to disaster risk reduction for resilience.

Preparedness Measures

Preparedness for any probable disaster is an essential and proactive step to deal with any emergency. It is a peacetime phase and provides opportunity to develop and build capacity of the system and society.

Each stakeholder needs to develop and enhance his/her skills and resources so as to be able to perform the respective role and responsibility at the onset of the disaster. The key stakeholders at state level and the respective preparedness measures to be undertaken are discussed below.

State Government

The State Government shall:

- 1. Ensure that appropriate policies and guidelines are developed
- 2. Ensure that the State Administration and local authorities take into consideration the guidelineslaid down by GSDMA while planning its activities
- 3. Ensure that State Government, GSDMA, Heads of Government Departments, COR, District Collectors and local authorities take necessary steps to be prepared for all probable disasters.
- 4. Facilitate timely procurement related to disaster management of materials, equipment and services in connection with the disaster management and ensure their quality
- 5. Ensure preparation, implementation and timely updation of disaster management plans by respective state departments, local authorities, communities and stakeholders.

Departments of the State Government

a. Revenue Department

- 1. Revenue Department is the nodal department for controlling, monitoring and directing measures for organizing rescue, relief and rehabilitation. All other concerned line departments shall extendfull cooperation in all matters pertaining to the management of the disaster whenever it occurs.
- 2. The department will develop socially inclusive relief norms and packages.
- 3. Arrange with service provider companies for multiple warning messages to community, officials, etc as per need.
- 4. Develop and promote insurance, disaster bonds, tax rebate, etc. against the disaster.
- 5. Arrange for relevant resources in coordination with districts officials for disaster management.

b. Agriculture & Cooperation Department

1. Identify areas prone to various hazards i.e. droughts, heavy rain, floods, cyclones / heavy wind, pest attack, etc. and monitor them during vulnerable seasons and promote risk sharing and risk transfer mechanisms

- 2. Strengthening institutional and technical capacities and Mainstreaming Disaster Risk Reduction (DRR), Climate Change Adaptation (CCA), and Sustainable Land Management (SLM) within agriculture related policies, strategies and plans.
- 3. Spread awareness amongst farmers regarding various crop diseases, water conservation and Management, prescribed use of fertilisers and pesticides, crop insurance, crop diversification, adaption of improved technology, alternate cropping pattern in disaster prone areas, proper seed and fodder management, etc. to build resilience of agriculture communities to disaster impacts.
- 4. Ensure a proper mechanism for communicating early warning to farmers regarding rainfall,flood, droughts, cyclone, etc.
- 5. Formulate a trained team for assessing damage to crops, soil and other agricultural damage
- 6. Enhance preparedness measures to improve effectiveness of emergency response and recovery actions in agriculture
- 7. Ensure that the relief is extended to the farmers and agriculture labourer in case of disaster.
- 8. Ensure integration and mainstreaming of gender priorities in all activities of the plan of action to enhance overall long term resilience.

c. Animal Husbandry Department

- 1. Ensure proper mechanism for disease surveillance among animals
- 2. Prepare a database of veterinary hospitals, clinics and agencies working for welfare ofanimals
- 3. Identify source for procurement of fodder for livestock in scarcity hit areas.
- 4. Identify safe locations for cattle camps
- 5. Ensure proper administration of de-worming and vaccinations for cattle, sheep, goats, pigsand other relevant measures for disease management
- 6. To spread awareness among rural population regarding management of sick or diseasedanimals
- 7. Ensure proper transportation facilities for sick or critically injured animals
- 8. Identify space for disposal of animal carcasses
- 9. Requirement of proper and clean shelter for milch animals like cows and buffalos
- 10. To take preventive measures to ensure animal to human disease transfer and vice versa.

d. Civil Aviation Department

- 1. Ensure that sites for helipads are identified across the state as per the laid guidelines
- 2. Ensure that the helicopters are available in ready condition during any emergency
- 3. Ensure that the human resources and technical team is available to deal with any emergency

e. Climate Change Department

- 1. Undertake studies and assist state government in understanding impacts of climate change on the riskof natural hazards
- 2. Establish linkages with national and international experts/ agencies on climate research to addressbetter hazard trends.

- 3. Establish environmental and economic benefits on use of renewable energy and promote the same
- 4. Promote use of green technology, CNG usage, use of solar energy, etc.
- 5. To make citizens aware regarding ways to preserve ground water, saving energy and reducing carbon footprint in day-to-day life
- 6. Increase and protect flora and fauna
- 7. Prepare a comprehensive policy on Climate Change for the state and guidelines to be followed for the same
- 8. Ensure that the Air and Water pollution is contained as per the existing norms.
- 9. Use of Science and technology for better understanding the climate and weather change.
- 10. Integrate climate change measures into national policies, strategies and planning.
- 11. Improve education, awareness-raising and human and institutional capacity on climate change mitigation and, adaptation.
- 12. Monitor climate change activities, help mitigate its consequences, and reduce the uncertainties that surround projections.
- 13. To study the Earth's climate system and support decision-making about climate change adaptation, prediction and mitigation.
- 14. Promote use of Space-based technologies as they play a key role in climate knowledge, science, monitoring and early warning.

f. Education Department

- 1. Advocate for inclusion of vulnerability and capacity assessment, disaster risk reduction measures and corresponding budget in disaster preparedness & response at school level
- 2. Develop a policy framework for school safety to be integrated into existing education policy and processes,
- 3. Organise camps in school and colleges for awareness of do's and don'ts of possible hazards in the state, hygiene and other issues of public health
- 4. To include aspects of disaster risk management in the school and college curriculum
- 5. Engage students, parents and communities in school management/maintenance to pre-vent future risks and in reinforce messages about disaster risk reduction.
- 6. Ensure preparation of disaster management plans and first aid kits in all schools and Colleges
- 7. Maintain all the equipment like fire extinguishers, fire-fighting systems, etc. and keep in Up-to-date condition
- 8. Identify safe sites near the schools/ in the villages to set up temporary learning spaces
- 9. Updating and refilling of equipments like fire extinguishers
- 10. To include and ensure implementation of school safety programme in each school at the primary level.
- 11. Identify safe schools and colleges which can be used as relief shelters for short duration of time, aftermath of any disaster

g. Fire & Emergency Services

1. Carry out a systematic, critical appraisal of all potential Fire hazards involving person-

nel, premises, services & operation method

- 2. Improve outreach of the fire services right up to the village level
- 3. Develop and implement fire hazards mitigation and response plan
- 4. Ensure proper operation, maintenance and functioning of all fire fighting vehicles, equipment and personal protection equipments
- 5. Ensure adequate training of human resource to deal with disaster situation
- 6. Prepare a database of private fire fighting agencies and their resources
- 7. Keep vigil regarding MAH units and other hazardous installations in the state and prepare for possible emergency situation
- 8. To take adequate steps for institutional reforms, modernisation and organisational restructuring of fire and emergency services.

h. Food & Civil Supplies Department

- 1. Prepare for safety of stored food grains in god owns against inundation and water logging, fireand other possible hazards
- 2. Ensure that food grains and cereals are available in stock for emergency purpose
- 3. Prepare for transportation of stored food grains to a pre-identified safer location
- 4. Enlist god owns and cold storage facilities, refrigerated transportation vehicles present in thestate along with their storage capacities and facilities available
- 5. Enlist private retailers and wholesale dealers of food items and packaged drinking water
- 6. Enlist available kerosene depots, petrol pumps, CNG pumps, diesel depots, LPG agencies, etc.
- 7. Availability of adequate/ready to eat meals and appropriate food supplies to the disaster affected areas.

i. Forest & Environment Department

- 1. Formulate a team to catch wild animals in case they enter inhabited areas
- 2. Gujarat Pollution Control Board should ensure that all industries are following proper guidelines for hazardous waste management.
- 3. Ensure implementation of policies and programmes for conservation of the ecosystem, natural resources, welfare of animals and prevention of air pollution etc.
- 4. To ensure preservation of biodiversity by spreading awareness
- 5. Ensure restoration of mangroves
- 6. Ensure effective wetland management, preservation, and restoration

j. Health & Family Welfare Department

- 1. Organize frequent awareness camps for hygiene and other public health issue
- 2. Develop a comprehensive and workable plan for hospital preparedness and mass casualty management
- 3. Establish paramedic cadre through training programmes and accredit / license them
- 4. Recognize and accredit trauma centers
- 5. Establish statewide medical emergency access number and make public awareness

- 6. Ensure authentic medical care database enlisting public and private facilities available in the state. This includes details of human resources, logistics, medical equipments, medicines, antidotes, personal protective equipments, disinfectant, vaccines, diagnostic labs, blood banks, etc.
- 7. Standardize and license ambulance services for smooth operation
- 8. Ensure availability of adequate supply of life saving equipment and drugs, portable supplies like portableoxygen cylinders, portable x-ray machines, triage tags, etc.
- 9. Formulate trained medical first responder, Quick Response Team, stationary and mobile decontamination facilities, identification of poison centers, mobile hospital, and antidotes plan.
- 10. An updated Disaster / emergency management plan at hospitals for chemical, biological, epidemiological, toxicological, nuclear and radiological for or any public health emergencies.
- 11. Prepare trained psychological and psychosocial care teams
- 12. Ensure proper and safe management of medical waste
- 13. Keep at disposal list of various hazardous chemicals present in the state and their antidotes
- 14. Promote studies on vulnerabilities and capacity development for inclusion
- 15. Disaster data collection and management
- 16. Risk transfer arrangements including multi hazard insurance for life and property.
- 17. Ensure facemasks, hand gloves, ventilators, oxygen concentrators, biomedical equipments, Personal Protective Equipments, diagnostic test kits and relevant accessories etc and other relevant kits for biological hazards are available
- 18. To ensure proper training of human resources viz doctors, nurses, paramedics and other relevant stakeholders
- 19. Use of high end technologies like data analytics should be used for better understanding of problems of diseases and its effects and to take relevant mitigation measures

k. Industrial Safety And Health

- 1. Create awareness for health & safety for workers and factory management
- 2. Conduct health & hygiene survey and inspection in various industrial sectors
- 3. Make a database of MAH, A, B and C types of units and hazardous installations in the stateand their safety officers
- 4. Ensure preparation of onsite emergency management plan by all industrial units and off-siteplan for MAH unites. Ensure updation of the same on **regular basis.**
- 5. Prepare a database of suppliers/ manufactures of antidotes for hazardous chemicals
- 6. Ensure availability of emergency human resources, vehicles, equipments and antidotes to address the emergency.
- 7. Enlist nearby hospitals and medical care facilities in case of any chemical emergency.

I. Information Department

1. Display verified Information Education and Communication (IEC) materials for mass dissemination and awareness among the public and all stakeholders for response and relief

- 2. Prepare a database of popular media channels and media persons (both print and electronic)
- 3. Ensure proper mechanism/ channels for addressing public so as to avoid and manage rumours with help of various media
- 4. Prepare a plan for providing / broadcasting warnings, dos and don'ts to media and ensure its Dissemination to public before, during and after the disaster
- 5. Ethical guidelines for coverage of disaster is prepared and shared with media
- 6. Develop a media management plan for media briefings (depending on the severity of the disaster) and designate nodal officer(s) for interacting with media.

m. Narmada, Water Resources, Water Supply & Kalpsar Department

- 1. Ensure proper early warning mechanism for flood by monitoring water level of surface waterbodies
- 2. Ensure proper and timely inspection of conditions of bunds, embankments, inlet and outlets oflakes, drains--, channels and pump houses
- 3. Ensure proper functioning of all equipments including vehicle mounted heavy duty dewateringpumps and its availability in terms of emergency
- 4. Prepare for arrangement of safe drinking water supply for community in the affected areas, relief camps and shelters
- 5. Prepare for prompt repair of pipelines supplying potable water in case of any disaster/scarcity.
- 6. Ensure availability of adequate number of water tankers, drums, jerry cans or identify their private suppliers to prepare for supply of water, in scarcity period and in emergency
- 7. Ensure availability of water supply/ filling points for fire tenders, water cannons, hospitals andother necessary life saving infrastructure

n. Home Department

- 1. Ensure proper functioning of all equipment and vehicles
- 2. Develop a communication protocols for effective response
- 3. Prepare for quick deployment of SDRF, Civil Defence, Home Guards and volunteers forproviding safety to affected population and evacuated structures/ houses
- 4. Prepare plan for management of terrorist attack, bomb blast, stampede, etc.
- 5. Train police personnel and staff of PCR van in first aid and basic life Support
- 6. Prepare communication plan for uninterrupted communication to all police posts and variouscontrol room and emergency centres across the state
- 7 Availability of police/SDRF personnel 24*7 for any untoward emergency Ensure law andorder in times of emergency.

o. Port & Transport Department

- 1. Ensure proper functioning of filling station, vehicles and equipment
- 2. Prepare for prompt deployment of vehicles at short notice for various purposes like mass evacuation, transportation of response teams, relief items, health team to deal with emergencyand victims, etc.
- 3. Prepare mechanical team for prompt repair of equipment and vehicles

4. Train drivers, conductors, crew members, port officials in first aid and basic life saving techniques

p. Roads & Buildings Department

- 1. Ensure availability and functioning of all equipments like cranes, earthmovers, etc. Prepare adata base of availability of the same with private agencies also
- 2. Prepare for prompt clearance of debris post disaster
- 3. Prepare the demolishing squad for prompt demolition of unsafe buildings post disaster
- 4. Prepare for prompt clearing and repairing of damaged roads, culverts, bridges and flyovers
- 5. Ensure prompt construction of new temporary roads for diverting traffic from the affected area
- 6. Prepare for construction of temporary facilities like that of medical post, temporary shelters, etcat short notice.
- 7. Prepare for prompt establishment of helipad near the affected site for responding teams
- 8. Prepare for restoration of government buildings damaged during disaster

q. Science & Technology Department

- 1. Ensure proper mechanism to issue alert/ warning through SMS through service providers
- 2. Prepare for providing safety and serviceability of critical communication towers through respective service providers
- 3. Prepare for prompt establishment of alternate communication links like HF, VHF, HAM, Satellite Phones, etc., in case of failure of primary communication channels during disaster
- 4. Ensure restoration of emergency communication in disaster affected areas.
- 5. Emergency response teams with detailed technical plan to restore communication in disasteraffected areas.
- 6. Contingency plan including pre disaster contacts with suppliers government and private foreasy availability of resources at the time of emergency.

r. Social Justice & Empowerment Department

- 1. Prepare and regularly update database of scheduled castes, developing castes, social and economically backward classes, minorities communities, physically and mentally challenged persons, orphans, destitute, beggars, old aged persons and ensure that they are able to avail benefits under respective welfare schemes so as to reduce their vulnerability to disasters
- 2. Address peoples' underlying vulnerabilities, increase their capacities to cope with the effects of natural hazards and facilitate empowerment processes.

s. Sports Youth & Cultural Activities Department

1. Organise training and awareness camps for youth for first aid, relief and camp management, psycho social care, search and rescue for small incidents, fire fighting

Creation of database of trained volunteers in case of emergencies

1. Build awareness of Youth and mobilise them to play key roles on practical Community based actions for Disaster Risk Reduction and climate change adaptation.

t. Tribal Development Department

- 1. Prepare a database of tribal groups in the state, their population and habitats Ensure they are well covered under all government schemes targeted to them with special focus on the five particularly Vulnerable Tribal Groups
- 2. Conduct a specific study on indigenous knowledge on various coping mechanisms and early warning systems and build upon the same.

u. Women & Child Development Department

- 1. Prepare for prompt action in aftermath of any disaster so as to prevent human trafficking particularly that of women, girls and young children
- 2. Ensure women and children in vulnerable circumstances are well covered under
- 3. various government schemes targeted to them. Prepare a database of authentic NGOs working for women and child empowerment/ rights
- 4. Update database of pregnant women/ women with disabilities.
- 5. Identification of separate shelter homes for the pregnant women / children and person withdisabilities with all necessary primary requirements

Gujarat State Disaster Management Authority (GSDMA)

- 1. Assist the State Government in formulation of policy for relief, rehabilitation, reconstruction and recovery.
- 2. Monitor preparation, updation and implementation of disaster management plans
- 3. Promote disaster management capacity building and training awareness and preparedness among all stakeholders regarding potential disasters
- 4. Assist in development of methodologies for reduction of vulnerability of disasters
- 5. Publish various guidelines to be followed for various phases of disaster management
- 6. Inspect existing development plans made by various authorities and recommend measures to be incorporated for disaster management
- 7. Develop database of key experts, consultants, organisations, agencies, etc working in the field of disaster management.
- 8. Policy related to mechanisms for risks transfer including insurance

State Relief Commissioner (CoR)

- 1. Prepare, review and update State level emergency plans and guidelines and ensure that the district level plans are prepared, revised and updated
- 2. Develop an appropriate relief implementation strategy for the State in consultation with the Authority, taking into account the unique circumstances of each district and deficiency in institutional capacity and resources of the State.
- 3. Strengthen relief distribution and accounting system at state and district level through identification of centralized system for receipt, storage and distribution of relief and by ensuring rate contract, procurement and stockpile of relief material
- 4. Ensure that Disaster Management mock exercises are carried out regularly.
- 5. Ensure that communication system is in order and contingency plans provide for maximum involvement of local agencies.

Collectors/ Municipal Commissioners

- 1. Ensure an updated database of critical resources (equipments, life saving facilities, trained personnel, etc.) and its availability in the District/ Municipal Corporation
- 2. Ensure that all critical life saving equipments are maintained and ready to use
- 3. Ensure that District/ Mahanagarpalika Disaster Management Plans are prepared and are timely updated
- 4. Ensure that local authorities in the District/ Municipal Corporation are involved in developing their own mitigation plans
- 5. Ensure that disaster management drills are carried out periodically
- 6. Ensure that District Emergency Operation Centre/ City Control Room is fully functional and communication systems is in order
- 7. Ensure that open and safe places for mass evacuation are identified
- 8. Ensure that safe buildings are identified for purpose of relief camps
- 9. Ensure that site for helipad is identified at key locations
- 10. Coordinate the activities of reconstruction and rehabilitation in the districts

Local Authority

- 1. Provide assistance to GSDMA, COR and Collector in disaster management activities
- 2. Ensure training of its officers and employees and maintenance of resources so as to be readily available for use in the event of a disaster
- 3. Ensure that all construction projects under it conform to the standards and laid down specifications
- 4. Each department of the Government in a district shall prepare a disaster management plan for the district. Carry out relief, rehabilitation and reconstruction activities in the affected area within its jurisdiction
- 5. Prepare database of vulnerable community and most vulnerable groups at risk
- 6. Advice and issue direction wherever necessary for community disaster prevention, mitigation and preparedness through local resources and participatory approach
- 7. Take appropriate actions to enhance community preparedness
- 8. Conduct Disaster Management drills periodically.

Indian Railways

- 1. Ensure proper security and safety measures at each railway station in the state
- 2. Ensure that Do's and Don'ts about relevant hazards are properly displayed at each railway Station
- 3. Ensure proper mechanism for crowd control at each major railway station particularly during festival seasons
- 4. Ensure that disaster management plan is in place for the railways
- 5. Ensure proper mechanism for transportation of mass community and proper handling and distribution of relief material

Private Sector

- 1. The private sector should ensure their active participation in the pre-disaster activities in alignment with the overall plan developed by the GSDMA / Collector.
- 2. They should also adhere to the relevant building codes and other safety guidelines prescribed by relevant authorities.
- 3. Participate in capacity building vulnerability reduction programme and training activities.

Community Groups and Voluntary agencies

- 1. Local community groups and voluntary agencies including NGOs should actively assist in prevention and mitigation activities under the overall direction and supervision of the GSDMA or the Collector.
- 2. They should actively participate in all training activities as may be organised and should familiarise themselves with their role in disaster management.

Citizen

It is a duty of every citizen to assist the Commissioner, the Collector or such other person entrusted with or engaged in disaster management whenever his aid is demanded generally for the purpose of disaster management.

All citizens should also ensure preparedness at family and individual level by being aware and proactive.

Capacity Building Measures

Various stakeholders should engage in building their respective coping capacities by conducting regular trainings to upgrade their skills, by developing techno- legal regime to better deal with different aspects of disaster management and by taking other proactive measures for the same. Some of the suggestive measures are discussed below.

Techno-legal Regime

- 1. Formulation of professional Civil Engineers Act
- 2. Formulation of Emergency Medical Service Act
- 3. Creation of an Emergency Medical Services Authority (EMSA)
- 4. Creation of guidelines for Emergency Care of special section of people like children, elders, BPL beneficiaries, citizens of remote and disaster
- 5. Review and revise building by-laws
- 6. Review and revise GDCR/CRZ etc.
- 7. Review and revise town planning Act & Rules
- 8. Fire Prevention and Life safety Measures Act
- 9. Ensure strict implementation of Code and Rules
- 10. Monitoring of quality construction
- 11. Construction/Strengthening of SEOC/ DEOC/ TEOC/ ERC

Training

Training is one of the essential processes to build and enhance capacity to deal with disasters. Training the community ensures skilled and trained first responders during any emergency without panic. Secondly, training the officials and responders ensures rapid and appropriate response from various stakeholders, thus minimising the loss.

Training	Responsibility
Training to civil defence personnel in various aspect of disaster	Home Dept. Commandant
management	General Home Guards
	Director Civil Defence
Training to Home Guards personnel in various aspect of disaster	GSDMA/GIDM
management including search and rescue	
Training of NCC and NSS personnel in various aspect of disaster	Education Department
management	Director, NCC
	GIDM
Training to educational and training institutions personnel in	Education Department
various	GSDMAGIDM
aspect of disaster management	
Training to civil society, CBOs and corporate entities in various	GSDMA
aspect of disaster management	GIDMNGOs
Training to fire and emergency service personal in various aspect	UDD
ofdisaster management	Municipal Corporation
	GSDMAGIDM
Training to police and traffic personal in various aspect of disaster	GSDMAGIDM
management	Home Dept.
	Police training Institute

Training	Responsibility
Training to State Disaster Response Force (SDRF) Teams in various	NIDM/NDRF
aspect of disaster management	Home Dept.
	Addl. DGP (Arms)
	Addl. DGP (Training)
	GSDMA/GIDM
Training to media in various aspect of disaster management	NIDM
	Information Dept.
	Information Training Centre
	GSDMA/GIDM
Training to govt. officials in various aspect of disaster management	NIDM GSDMA/GIDM
	Departmental Training
	Institutes
Training to engineers, architects, structural engineers, builders and	Departmental Training
masons in various aspect of disaster management	Institutes under R & B and
	Irrigation Dept.
	NIDM GSDMA/GIDM
Incorporation of DRM curriculum in all the government training	All Department
institute	GSDMA, GIDM
Training to all the newly appointed government officials on the	GAD, SPIPA, GSDMA,
various aspects of DRM	GIDM

(Table 7.1 Training of various stakeholders)

Awareness

Awareness in the masses regarding dos and don'ts, vulnerable areas and emergency numbers empower them to do the needful proactively as and when the situation arises. Awareness of community also reduces the chances of chaos and panic.

GSDMA regularly undertakes media campaigns through radio, television and newspapers. These include audio-visual campaigns through jingles, pamphlets, videos, etc. The campaigns cover probable hazards and other safety measures as per seasonality of hazards in the State like Uttarayan, heat wave, cyclone, Diwali safety, etc.

Similarly, following measures can be taken by respective department towards generating awareness:

- 1. Mass awareness through advertisement, hoarding, booklets, leaflets, banners through print media etc.
- 2. Organize awareness camps for children and make use of folk dance and music, plays, painting competition, debate competition, etc. and to disseminate the information
- 3. Organize disaster management exhibition and use scientific tools like shake-table demonstration, etc to disseminate awareness about various hazards and ways to deal with them
- 4. Arrange for TV Spot, radio spot, audio-visual and documentary, etc. to reach out to masses at large
- 5. Media can play a vital role in public awareness and preparedness through educating the public about disasters; warning of hazards; gathering and transmitting information about affected

areas; alerting government officials, helping relief organizations and the public towards specific needs; and even in facilitating discussions about disaster preparedness and response

Developing Technical and Computer Aided Databases

- 1. Update the disaster risk assessment based on new districts created and any change in riskprofile of population over the years
- 2. Develop GIS based information system for quick decision making at the time of disaster
- 3. Develop comprehensive decision support system with real-time data access and management
- 4. Create and disseminate database of contact details, resources, response agencies, NGOs, trained personnel, most vulnerable groups, evacuation routes, available shelters, reliefcenters, critical infrastructures, storage godowns, etc.

Knowledge Management

- 1. Document disasters, their impacts, lessons learnt and make it available in easily accessible format in the public domain.
- 2. Undertake research studies and apply the outcomes in disaster management practices
- 3. Document field data, experience and indigenous technological knowledge from local community
- 4. Share data/ information/ reports/ proceeding of consultation meeting/seminars etc.
- 5. Use information and communication technology at disaster management centres, state, district, taluka, village EOCs
- 6. Each department should have in place departmental disaster management plan and hazard wise SOPs
- 7. Each department should also conduct mock drill at regular interval and update the plan basedon gaps identified in the mock drill

Current Projects/ Programmes

Currently GSDMA is undertaking various preparedness and capacity building projects and programmes at different level. Some of the key projects and programmes are:

Gujarat School Safety Programme

School Safety Week

Gujarat State Disaster Management Authority has organized the School Safety Week in 400 selected schools of Kutch, Jamnagar and Devbhumi – Dwaraka districts covered under the NSSP program to aware, educate and build the culture of preparedness among the school children.

The key activities include orientation program, creating awareness about disaster through IEC materials, film screening, understanding non-structural risks, and basic life saving skills, slogan and drawing competition and project competition for school children. The initiative also includes shakeout drills and mock exercises.

- For 2019, the Gujarat School Safety Week was celebrated in 55,465 government and primary private schools of all districts of Gujarat.
- 1347Masters Trained and 71075 teachers were trained for the year 2019.
- 267 Engineers were trained *from Sarva Siksha Abhiyan*.

GSDMA celebrates Gujarat School Safety Programme for five days along with agencies like NDRF,SDRF, Fire and Emergency Services, 108 GVK Emergency, Aapda Mitra, Indian RedCross Society and Indian Coast Guard which conducts various mock drills and demonstrations in schools

during this week.

From the year 2015-2019, following developments have taken place:

- 1. Refilling and regular updating of Fire Extinguishers and First Aid Kits is also done during this week.
- 2. *Rapid Visual Survey and Structural-Non Structural Assessment by* Civil Engineers of *Sarva Siksha Abhiyan* is also carried out.
- *3. Over 3,335 mock drills conducted*
- 4. 2,09,395 teachers trained in last 3 years
- 5. 872 engineers from Sarva Siksha Abhiyan (Education Department) trained

Disaster Risk Management Programme

The Disaster Risk Management (DRM) Programme was initiated by Ministry of Home Affairs (MHA), Govt. of India in collaboration with United Nations Development Programme (UNDP) in the year 2002. Gujarat State Disaster Management Authority was the nodal agencyfor implementing programme activities in Gujarat state. The DRM Programme was formulated with a goal of sustainable reduction in disaster risk in most hazard prone districts in Gujarat state. The DRM Programme was aiming at strengthening of response, preparedness and mitigation measures over a period of time through a variety of activities at the state, district, taluka and village levels.

Considering the impact of DRM Programme activities, GSDMA included DRMP as a new scheme and made financial provision in state budget since 2008-09. With implementation of exit strategy of UNDP in the year 2008, GSDMA started utilising State Government resources and made necessary arrangements to maintain flow of DRM Programme activities all across the State. After UNDP's withdrawal in June-2009, GSDMA owned the DRM Programme and started implementing programme activities more rigorously.

The activities under DRM Programme includes preparation of Disaster Management Plans at all levels (Village, Taluka, City, Municipal Corporation & District), capacity building activities for stakeholders like orientation programmes, training, practical demonstrations and awareness generation activities. The plan and preparedness is also regularly assessed through periodic mock drills and mock exercises.

The following Disaster Management Plans are annually prepared and updated under the DRM Programme:

- 1. District Disaster Management Plan
- 2. Mahanagarpalika Disaster Management Plan
- 3. City Disaster Management Plan
- 4. Ward Disaster Management Plan
- 5. Taluka Disaster Management Plan
- 6. Village Disaster Management Plan

Currently, GSDMA focuses on all 33 Districts and 8 Municipal Corporations of the State for strengthening of Response, Preparedness and Mitigation measures. In order to ensure effective implementation of programme activities, GSDMA has also appointed District Project Officer/Project Officers at District / Corporation level who work under direct supervision of respective District Collector/ Municipal Commissioner.

The set of activities under DRM Programme includes:

i. Development of Disaster Management Plan at various administrative levels viz. District, Taluka, Municipality, Villages, etc.

- ii. Capacity building through training/ orientation programmes
- iii. Updating of National and State level online resource network for Disaster Preparedness and Management
- iv. Awareness generation programmes at various levels

v. Preparation of manuals for trainers and practitioner at all levels.

Aapda Mitra

Gujarat state disaster management authority undertakes various capacities building activities to mitigate the impact of disasters. As part of such capacity building measures, GSDMA had initiated aproject –"*Aapda Mitra*" on training of community volunteers in conducting basic search and rescue operations and to assist the district administration for effective disaster response.

The objectives of the program may be summarized as below:

- Reduce the response time during a disaster
- Mitigate the impact of disaster through effective response
- Build the capacity of local administration
- Mass Awareness generation

These objectives will be achieved through following three components of Aapda Mitra:

- 1. Deep diving and advanced swimming skills
- 2. Search & Rescue Trainings
- 3. First Aid Trainings

For successful implementation of this programme it is planned that 6 *Aapda Mitra* would be trained from each district and taluka. At the end of the training, they would be certified as "*Aapda Mitra*" byGSDMA and also provided with an identity card for the same. The "*Aapda Mitra*" shall remain present for assistance during any emergency.

GSDMA has empanelled 11 SDRF training centers for the purpose of providing training to the volunteers for Aapda Mitra.

SDRF training center has been empanelled to train the volunteers in search and rescue training first aid and deep diving.

As of now GSDMA has trained 3645 volunteers in the whole of Gujarat.200 community volunteers were trained in the year 2017-2018 in the Bharuch District under CSS scheme Aapda Mitra. In the year 2018-2019, GSDMA has trained 1762 volunteers in 37 training programs by SRPF. For the year, 2019-2020, GSDMA has till date trained 1683 volunteers in 33 training programs by SRPF.It is also under process to trained 5500 APDA MITRA under Up scalling APDA Mitra Scheme sponsored by NDMA for the year 2021-23

Hospital Safety

Hospitals and medical services are an integral part of response to any unforeseen event whether natural or man-made, biological or chemical. GSDMA, with a view to develop the resilience and to augment efficacy of response for such events, started Hospital Safety project. The project aims at bringing various stakeholders on same platforms through various mock exercises. Conducting

- 1. Mock-drills exercise involves the following key aspects
- 2. Preparation/ review of Hospital Disaster Management Plan with special focus on Hazard Vulnerability Risk and Capacity (HRVC) Analysis of the Hospital and its evacuation plan

3. Understanding and undertaking structural and non structural mitigation measures

- 3. Formulation of Disaster Management teams of Hospital
- 4. Training of Teams and staff including doctors, administrations, class IV employees, etc.
- 5. Safety audits of the Hospital Building (Fire / electrical safety audits etc.) through concerned agencies

GSDMA has conducted mock exercise in two of the most important Government Hospitals that isCivil Hospital Ahmedabad and Civil Hospital, Gandhinagar.

GSDMA also assists private hospitals in reviewing their Disaster Management Plan and in planning and conducting mock exercise with them.

Capacity Development Themes:

The capacity development is applicable to all aspects of disaster management. The State governmentand its institutions will take actions for capacity development of different stakeholders. The capacity development themes for DRR and related responsibilities are summarized in the below giventable. Table: Capacity Development for DRR Themes - State

S. No.	Thematic Area	Sub Thematic Area
1.	Deploying advanced technology and equipment	 Adopting the best global technologies Identifying technology needs based on hazard risk and vulnerability and experiences Procurements of best and most appropriate equipment
2.	Disaster Information System	 Maintaining the resource network Monitoring and maintaining the resource data Regular updating the resource data Developing fail-safe communications with advance technology National and state level disaster information system Improve data flows across Central Ministries/ Dept./ States and other authorised users Integration of HRVCA data with disaster information systems Ensuring reliable and credible database on disaster losses (direct and indirect) and post-disaster reconstruction
3.	Disaster Risk Governance	 Mainstream and integrate DRR and strengthen institutional mechanisms for DRR Promote participatory approaches, partnerships and networks Promote quality standards, certifications, and incentives

S. No.	Thematic Area	Sub Thematic Area
4.	Disaster Risk Management	 Promote, encourage and facilitate appropriate risk transfer instruments by collaborating with insurance companies and financial institutions. Design and implement social safety-net mechanisms, including community-based systems Disaster resilience of health care systems by integrating disaster risk management into primary, secondary and tertiary health care Business resilience, and protection of livelihoods and productive assets throughout the supply chains, ensure continuity of Services and integrate disaster risk management into business modelsand practices.
5.	DM and DRR capacities at local levels	 Trainings in DRR at different levels of local governance Improve awareness and preparedness of stakeholders at all levels Preparing DM plans, regular updating, and mock drills
6.	DRR– in education, research and professional disciplines	 Incorporate subjects of relevance to DRR in curriculum Introduced specialized programs, degrees, courses and diplomas Promote relevant research projects, programs within institutes and through research grants Technical and professional programs relevant to various specialized aspects of DRR Develop ToTs Research in diverse areas of DRR
7.	Early Warning	 Deploy the state of art methods and technologies Up-grade technical infrastructure and systems Improve EW dissemination and ensure the last mile connectivity to the most remote parts Improve the alerts system to make it more relevant to different regions and sections
8.	Emergency Operation Centres - Strengthening	 Enhance emergency response capabilities Strengthen EOCs, improve infrastructure, upgrade equipment, adopt best available technologies Improve capabilities based on experience after each disaster event Deploy best of ICT Conduct capacity audits of EOCs Set up State and District level EOCs with adequately trained manpower Regular reviews and improvement of SOPs, protocols, etc. Mobile control rooms
9.	Global Anthropogenic Climate Change Risks	 Recognise and address climate change risks in DRR Strengthen adaptations to GACC

S.	Thematic Area	Sub Thematic Area
No.		
10.	MainstreamingDRR	 Incorporating DRR into development plans and programs Incorporating PM's Ten Point Agenda for DRR into development plans Making DRR as an inherent part of all ministry, department, state development plans Extending convergence to the domain of DRR
11.	Non-Structural Measures for DRR	 Incorporating DRR into development plans and programs Incorporating PM's Ten Point Agenda for DRR into development plans Making DRR as an inherent part of all ministry, department, state development plans Extending convergence to the domain of DRR
12.	Post-2015 Global Frameworks – coherence and mutual reinforcementacross DRR themes	 Understanding post 2015 global frameworks and their implementation for DRR Understanding Sendai Framework and its integration into the implementation of DMP at different levels Understanding DRR aspects of SDG and its implementation for DRR Understanding COP21 (Paris Agreement on Climate Change) and the integration of climate-related concerns into various DMPs
13.	Preparedness and Response	 Institutional reforms, modernization, and changes in legal framework Strengthening of Fire and Emergency Services Strengthening of the Fire and Emergency Service through revamping, institutional reforms, and modernization Comprehensive revamping of Fire and Emergency Services with institutional reforms and modernization Adoption and adaptation of emerging global good practices Rigorous training and HRD of first responders Table-top exercises, simulations, and mock drills to improve operational readiness of the plans Rescue equipment at all levels Systems to provide basic services in emergencies Preparedness and response plans at all levels Community-based DRR and DM
14.	Recovery and BuildBack Better	 Post-Disaster Needs Assessment (PDNA) systems and expertise Credible damage assessment mechanisms and expertise Planning capabilities to ensuring coherence of BBB with overall development efforts and goals Studies and research for incorporating resilience into BBB models Studies on past disasters and recovery to draw useful lessons

S. No.	Thematic Area	Sub Thematic Area
15.	Skill Developmentfor Disaster Resilience	 Training and skill development for masons and other artisans Promoting community-based DM considering specific needs, regional diversities and multi-hazard vulnerabilities Training on CBDR and preparedness at local levels Address gender issues, and special needs of children, disabled, aged, etc. holistically in the DM context Promote private sector and civil society involvement Promote PPPs
16.	Social Inclusionin DRR	 Gender-based vulnerabilities Scheduled Castes and Scheduled Tribes Elderly Children Persons with Disabilities
17.	UnderstandingRisk	 Observation Networks, Information Systems, Research Forecasting Zoning/ Mapping Monitoring Hazard Risk Vulnerability and Capacity Assessment (HVCA)

The Gujarat Institute Disaster Management (GIDM), in partnership with GSDMA and other research institutions has capacity development as one of its major responsibilities, along with training, research, documentation and development of a State level information base. The GIDM will play an important role in developing and facilitating the implementation of a State training schedule for Disaster Management. NDRF can also support capacity development and training needs of SDRF, Civil Defense, community and volunteers in preparedness and response. Also, the training would beconducted in all other state level training institutions.

Chapter 8: Disaster Response & Relief

Level of Disasters

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

Level	Description	Activities
LO	Normal time	Prevention, preparation and capacity building
		activities like trainings, preparation and updation of
		plans, mock drills, procurements of equipments, etc
L1	Can be managed at district level	State and Centre remain ready to assist if need arises
L2	Beyond the capacity of district	Require active participation and mobilisation of
		resources from State Government
L3	Resources of District and State	Require Central Government for reinstating the
	Government have been	State and District machinery as well as for rescue,
	overwhelmed	relief, and other response and recovery measures

Emergency Operations Centres

EOC is an offsite facility which functions from the State / District/ Taluka headquarters. It includes the space, facilities and protection necessary for communication, collaboration, coordination and emergency information management. It is a combination of various line departments of Governmentand other agencies whose services are generally required during incident response.

There is a comprehensive network for effective disaster management which includes emergency communication, operation and response management. It includes the State Emergency Operation Centre (SEOC) at Gandhinagar with 33 DistrictEmergency Operation Centers (DEOCs), 252 Taluka Emergency Operation Centers (TEOCs) and 5 Emergency Response Centres (ERCs)

The existing State Emergency Control Centre (SEOC) is a State-of-the-art infrastructure comprising of main control room, conference room, exhibition area, media briefing room, offices/meeting rooms for senior officers, rest rooms, etc. The whole facility is equipped with all the latest amenities/ facilities as per Annexure 5 (Refer Page 223).

Security of SEOC

State Emergency Operation Centre (SEOC) being the nerve centre during occurrence of any disaster needs to be secured properly. Presence of important data, information, technical support and human resource makes security of SEOC of utmost importance. Along with this, frequent visits of Hon'ble Ministers and Senior Officials in SEOC makes it necessary to secure the centre.

In order to avoid any untoward incident at this point of juncture vigilance by Poice is must. Hence, when the SEOC is activated due to any imminent disaster services of police should be activated for the safety and security of SEOC. Hence, Police shall take over security operations of SEOC apart from services rendered by local security agencies for SEOC.

Communication:

SEOC comprises of State of art Conference Room with video conferencing facilities, along with facilities of internet and connection to all desktops so that easy communication can prevail. SEOC is a secure centralized location, with adequate communications for planning, decision support and coordination during a disaster or emergency. To ease the process of communication a permanent helpline number 079-23251900 is installed. For communication with other stakeholder's number like 104 as health helpline number, 100 for police are also provided.

A separate media room for on the spot information dissemination on the current natural disaster is also part of SEOC. Briefing to press and media on the imminent disaster is also carried out.

Activation of EOC

The EOC is a nodal point for the overall coordination and control of response and relief work. In case of an L1 Disaster the DEOC will be activated, in case of an L2 disaster SEOC will be activated along with the DEOC. Working of EOC can further be understood by following states:

- i. Normalcy (Steady State)- When full activation of the EOC is not warranted
- ii. **Emergency** / **Disaster Alerts-** When the EOC is brought into full or partial activation to preemptively reduce the impact of impending incidents and respond to the impact of the incident when it transpires
- iii. **Emergency**/**Disaster-** When an incident occurs with or without prior warning requiring full activation of the EOC in response to the incident

Command & Control of EOCs

The EOC, its system and procedures are designed in such a way that information can be promptly assessed and relayed to concerned parties. Immediate dissemination of information contributes to quick response and effective decision-making during emergency. Being the main coordination and control point for all disaster specific efforts, the EOC is the place of decision-making, under a unified command.

The EOC in normal circumstances works under the supervision of Relief Commissioner at the State level and under the District Collector at the district level. 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.

Functions of EOC

- 1. Receive, monitor, and assess disaster information
- 2. Monitor, assess, and track response units and resource requests
- 3. Manage resource deployment for optimal usage
- 4. Make policy decisions and proclaim local emergencies as needed
- 5. Provide direction and management for EOC operations through set priorities and establishstrategies
- 6. Coordinate operations of all responding units, including law enforcement, fire, medical, transport, shelter, food, water etc
- 7. Augment comprehensive emergency communication from EOC to any field operation whenneeded or appropriate
- 8. Maintain EOC security and access control
- 9. Keep Senior, subordinate and relevant officials informed
- 10. Keep local jurisdictions (Village/town/City, district and State) informed
- 11. Operate a message centre to log and post all key disaster information and keep mediainformed about the current situation of the disaster.
- 12. Develop and disseminate public information warnings and instructions through media.

Emergency Response Centres (ERCs)

In order to have speedy response in search, Rescue and relief, GSDMA has established ERCs at five strategic locations of the state viz. Gandhinagar, Vadodara, Rajkot, Surat and Gandhidham. The ERCs are equipped with trained manpower, State-of-art vehicle and equipments to provide support to the District EOCs to fight the local emergency, if any. ERC performs response related activities and increase the preparedness through capacity building.

Activation

ERC will get activated in case of:

- An event is or has the potential to becoming an L2 disaster or
- Specialist rescue operation is required or
- There are insufficient local emergency rescue resources

Command & Control

The ERCs work under the direct control of Commissioner of Relief (CoR) during response time and under representative, Municipal Corporation/ District Administration during peace time. The ERC is the instrument to provide multi-hazard emergency response to L2 events.

District Collectors/ Municipal Commissioners request the assistance from the ERC team as soon as it isestablished that district resources are insufficient to deal with the emergency situation at hand.

They issue instructions regarding exact quantum of resources (in terms of manpower, equipments and essential items from key departments/ stakeholders) that is required, type of assistance to be provided the time limit within which assistance is needed, details of other task/response forces through which coordination should take place.

Trigger Mechanism

The response mechanism shall be put into action considering the situation prevailing at a given point of time as per the provision made vide Section 2 (h) of the Gujarat State Disaster Management Act, 2003. Response process begins as soon as it becomes apparent that a disastrous event is imminent and lasts until the disaster is declared to be over. Response is triggered on receiving any early warning or at occurrence of disaster as the case may be. On receipt of alert/ early warning or information about onset of disaster, District Collector or Relief Commissioner assume the role of the Incident Commander (IC) for L1 or L2 level disaster respectively, as the case may be.

Immediate access to the disaster site through various means of communications such as mobiles, VSAT, wireless communication and hotline contact is also made. Depending on level of disaster, the required and relevant Incident Response Teams (IRTs) shall be activated. The State Government may publish a notification in the official gazette, declaring such area to be disaster-affected area under Section 32 (2) (a) GSDMA, Act, 2003.

The EOCs and ERCs will be put on full alert and will continue to operate as long as the need foremergency relief and operations continue and the longer term plans for rehabilitation are finalised.

Early warnings will be published/ issued by the respective agencies during different disaster which is as follows:

Disaster	Agencies
Earthquakes	ISR, IMD
Floods	IMD, Irrigation Dept., CWC
Cyclones	IMD
Tsunami	IMD, INCOIS, ISR
Heat Wave	IMD
Drought	Agriculture Dept.
Epidemics	Health & Family Welfare Dept.
Industrial & Chemical Accidents	DISH, Labour & Employment Dept.,
Fire	Fire & Emergency Services

Table 8.1: Agencies Competent for Issuing Disaster Specific Early Warning

In case of Early Warning

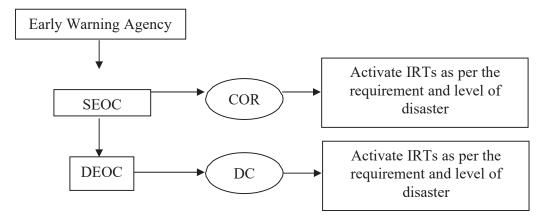


Figure 8.1: Trigger Mechanism in Case of Early Warning

Without Early Warning

PMO, Cabinet Secretary, Secretary-Home and Defence, NDMA, MHA, Maharashtra-Gujarat Area Command: HQ, Mumbai

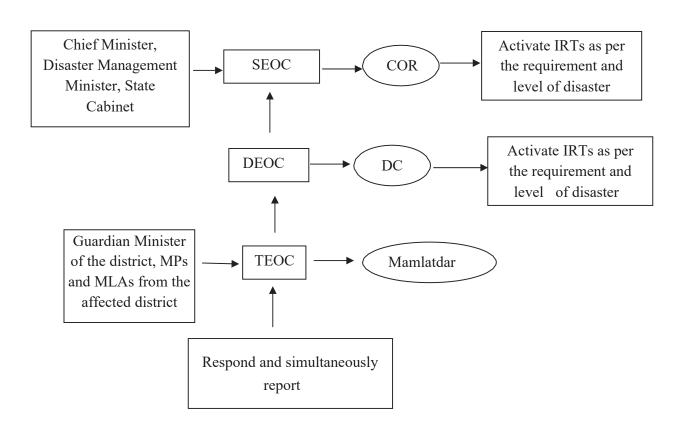


Figure 8.2: Trigger Mechanism without Early Warning

Incident Response System

Incident Response System (IRS) is one of the crucial tools for coordinated response. The system envisages that the roles and duties are laid down in advance, the personnel earmarked and trained in their respective roles and duties. It fixes accountability of the earmarked personnel and also avoids duplication of efforts by clearly demarcating the area specific task force teams.

It provides a participatory, well structured, fail safe, multi disciplinary, multi-departmental and systematic approach to guide administrative mechanisms at all levels of the government. It also provides scope for private sector, NGOs, CBOs, PRIs and communities to work seamlessly in the response activities.

Flowchart of IRS is depicted in Figure 8.3. The detailed roles and responsibilities of each section, branch and group are mentioned in Annexure 6 (Refer Page 224).

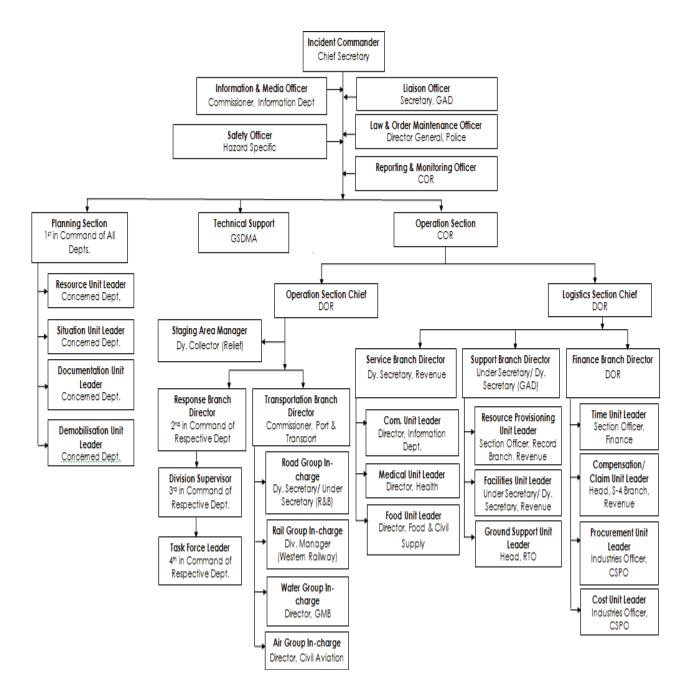


Figure 8.3: Incident Response System

Emergency Support Functions

Emergency Support Functions (ESF) are critical services which are performed in post disaster scenario to minimise life loss and address various issues in a post disaster situation. The key ESFs are listed in Table 8.3.

FCF	Aim	Resnansihilities	Primary Dept./	Secondary Dept./
		weapointice	Agency	Agency
Early Warning,	To activate warning	Failsafe communication plan is prepared with all	 Central Water 	 Collector and DM
Communication	systems and alert	early warning agencies	Commission-	• District
& Dissemination	responding agencies,	• Logistic section of the state level IRT coordinates	Flood	Emergency
	departments/ offices and	with all the agencies to provide effective		Operations centre
	public at large for	communication support to the field level IRTs for	 Indian 	 AapdaMitra and
	necessary actions in	response.	Meteorological	other Youth and
	safeguarding life,	Ensure all communication equipment, especially	Department –	Volunteer
	propertyand assets. To	the satellite phones are in good working condition	Flood, Heat wave&	Organisations
	provide safe	24x7 onall days through regular testing	Cyclones	•
	communication and last	Plans for communication including telephone and		• Communication
	mile connectivity	HAM is prepared for smooth coordination with	 Indian National 	Service Providers
		thefield level IRTs	Centre for Ocean	
	•	• To disseminate early warning signals to the	Information	• GIL
		district administration, local authorities, and the	Services	
		public at large in the areas likely to be affected by	- Tsunami	
		a disaster soas to reduce loss of life and property	• Health & Family	
	•	Dissemination of warnings and information up to	Welfare	
		thelast mile.	Department	
	•	• Establish protocols and responsibilities for	- Epidemic	
		~~~	<ul> <li>Department of</li> </ul>	
		providers	Science &	
	•	Prepare, update and maintain a District wise list	Technology	
		of HAM Operators who could be contacted and		
		deployed at the site of emergency.		
	•	Have binding agreements with telecom service		
		providers to restore damaged facilities and setup		
		temporary facilities on emergency basis		
	•	Ensure Inter-Operability among different telecom		
		service providers		

ESF	Aim	Responsibilities	Primary Dept./	Secondary Dept./
			Agency	Agency
Evacuation	To ensure urgent,	Quick assessment of evacuation needs information	• Revenue	• District
	organised and safe escapeof people from an	such as the number of people and animals to be evacuated and mode of evacuation	Department	Administration
	area of imminent or ongoing threat or risk to life and property	• Special attention to evacuation of persons with disability, Senior Citizen, Old age persons, Women,	• CoR	• Police
		<ul> <li>Mobilize transport and resources for evacuation</li> </ul>	• Home	
		Identify Shelter Homes, Schools, Hostels, Colleges,	Deparument	<ul> <li>Transport Dept</li> </ul>
		Dharmashala, Multi purpose halls and any other place as sites for temporary relocation for affected people and animals	• Transport Deaprtment	• Aapda Mitra
		Identify requirements of resources for evacuation such as helicopters, aircrafts, high speed boats and		andNCC, NSS
		ships, Trains and Buses to be provided		and
		Request for central resources, if needed		
		Coordination with central agencies to mobilise required resources		other Youth and Volunteer
		• Earmark resources/ units / battalions of NDRF /SDRFfor quick deployment		Organisations
		Prepare handbook/manuals and SOP for evacuation for people and animals		
Data Collection & Management	To ensure sound reporting mechanism to	GSDMA works with the planning section at state level for making of Incident Action Plan (IAP) and discomination of information	GSDMA     CoR	DM & Collector
	needs of both Central and State governments	Creation of a cell at the District level and place dedicated resources to collect/ update data on all	Kevenue Depu	
	about the disaster	essential services (as per the template given in the IRS guidelines) which will help during the response phase for effective reporting and compilation.		

ESF	Aim	Responsibilities	Primary Dept./ Agency	Secondary Dept./ Agency
Fire fighting	To provide prompt and organized services for controlling and managingof fire incidents to save life, property and environment	<ul> <li>Quick assessment of the situation and deploy the teamalong with necessary equipment</li> <li>Assess and make additional requirement of resourcesfrom nearby districts, states</li> </ul>	<ul> <li>State Fire &amp; Emergency Services</li> <li>ERC s</li> </ul>	DM & Collector • Police • Fire Stations
Oil and Hazardous Material Response	To provide expert and technical support in caseof release of any hazardous material	<ul> <li>Ensure strict compliance with guidelines</li> <li>Activation of the On-site &amp; Off- site evacuation of the persons to avoid any casualty</li> <li>To keep in readiness the Antidote for the relevant chemical / hazardous gases.</li> </ul>	<ul> <li>Director Industrial Safety and Health (DISH)</li> </ul>	<ul> <li>DM &amp; Collector</li> <li>Emergency Response Centres</li> <li>Fire &amp; Emergency Services</li> <li>Health/UHC</li> <li>Police</li> </ul>
Drinking Water and Sanitation	Supply of clean drinkingwater and to prevent the spread of water borne diseases in the disaster affected areas.	<ul> <li>Provide disaster-affected areas with clean drinking water and to prevent the spread of water</li> <li>Provide emergency water supplies when there is scarcity of potable water</li> <li>Respond to the public health needs to prevent and mitigate outbreak of epidemic, water and food contamination as well as other public health-related problems in the aftermath of a disaster</li> </ul>	• NWR&K Department	
Search & Rescue	To provide life saving assistance in aftermath ofdisaster	<ul> <li>Various positions of IRTs (State, District and Taluka)are trained and activated for response</li> <li>Ensure SDRF teams are trained, equipped and ready to move at a short notice to the affected areas</li> <li>Strategic stationing of state-of the-art equipment for search ,rescue and response with dedicated trained manpower</li> </ul>	<ul> <li>SDRF/ NDRF</li> <li>Police</li> <li>Fire &amp; Emergency</li> <li>Services</li> </ul>	<ul> <li>Health</li> <li>Aapda Mitra and other Youth and Volunteer</li> <li>Organisations</li> </ul>

ESF	Aim	Responsibilities	Primary Dept./ Agency	Secondary Dept./ Agency
		Activation of the MoU for emergency supply like	)	• Fire & Emergency
		blankets, tarpaulins, tents, boats, etc.		Services
		<ul> <li>Nodal officer selected for coordination is in regular touch with MHA /NDMA for additional</li> </ul>		<ul> <li>Home Guards</li> </ul>
		ements (including help from oth		
		<ul> <li>Deploy Quick Response Teams (QRT) and Quick Medical Response Teams (OMRT)</li> </ul>		
<b>Medical Care</b>	To provide emergency	works with the	Health& Family	Civil Hospital
	medical and mental	logistic section of the state level IRT to provide	Welfare Dept	• UHC/PHC/CHC
	healthassistance during a	effective services (Medical Unit) to the field level		Red Cross Society
	disaster event or health	IRTs for response.		• EMRI 108
	and medical emergency	District wise repository of hospitals (both		AapdaMitra and
		Doctors, paramedics and other trained staff		Volner Youun and Volnuteer
		available along with other infrastructure details and		Organisations
		update it ona regular basis		0
		• Include the hospital wise information in the DM		
		Plansat local levels		
		• Tie-up with the companies for easy availability of		
		common medicines during the emergency		
		situations		
		• Hygienic conditions are prevalent at all times in		
		various facilities established as well as hospitals to		
		curb the spread of diseases		
		Establishment of sound protocols for coordination		
		between state's health Dept. and the central agencies		
		• Ensure strict compliance with minimum standards		
		ofrelief as decided by the state		

Dignified	To ensure proper	Adopt SOP in SDMP and DDMP as per GoG      Police	<ul> <li>Revenue</li> </ul>
Management of	<b>Aanagement of</b> identification and record-	guidelines and implement it properly	Health
the Dead	keeping of the dead	• Establishing Dead BodyManagement Group in the	<ul> <li>Local Authorities</li> </ul>
		IRS at state and district levels	• GFSU
		• Deploy trained squads for detection and recovery	
		of the survivors and the dead as early as possible	

t./ Secondary Dept./ Agency		<ul> <li>Food, e Revenue</li> <li>Police</li> <li>Police</li> <li>Panchayat, Rural</li> <li>Housing and Rural</li> <li>Development</li> </ul>
Primary Dept./ Agency		<ul> <li>Revenue Dept. Food, Civil Supplies&amp; Consumer Affairs Department</li> </ul>
Responsibilities	<ul> <li>The recovery team will use basic personal protectivekit and follow adequate precautions. Follow the protocols for the identification of the dead,recording evidence, transport and burial (i.e., disposalas per norms)</li> <li>If required, establish temporary mortuaries with adequate facilities where it is possible. In special cases, appropriate arrangements and relevant protocol must be followed for victims in certain types of disaster keeping in view the safety ofsurvivors and emergency workers</li> <li>Inform the affected community by giving wide publicity to the procedure for the management of the dead, along with respect for religious and culturalsensitivities</li> <li>Deal with the psychological impacts and psychosocial support</li> <li>Ensure due documentation such as inventory recordof the dead, dead body identification and all other</li> </ul>	<ul> <li>Establish a mobilisation centre at the airport/railway station for the movement of relief supplies within the state.</li> <li>Deploy special transportation for the movement of relief supplies within the state</li> <li>Make arrangements to receive and distribute relief and emergency supplies received from different partsof the state and country</li> </ul>
	rej	• • •
Aim	To facilitate in appropriate cremation or burial Timely claim of compensation and belongings of the dead to minimise the physical, pyscho-social, ethical, religious and cultural issues faced by aggrieved families	To provide water, food, clothing, medicines and other basic supplies to the people at affected areas and relief centres
ESF		Relief Logistics and Supply Chain Management

ESF	Aim	Responsibilities	Primary Dept./ Agency	Secondary Dept./ Agency
		<ul> <li>Coordinate transportation (air, rail, road, water) with state and Central ministries/ departments/ agencies</li> <li>Arrange alternative means of transportation to reachrelief supplies to the affected locations</li> </ul>		• All line Dept.
Transportation	To provide transportation services and support for	• Transport Department works with the logistic section of the state level	Port & Transport Department	<ul><li> RTA-GSRTC</li><li> Local</li></ul>
	efficient and timely response and recovery to a disaster	• IRT to provide effective services (Ground Support Unit) to the field level IRTs for response		Transport Agencies/RTs • Railwavs
		• Requirement of transport for the transportation of relief material, responders are arranged		<ul> <li>Civil Aviation</li> <li>Municipal</li> </ul>
		• Need of the transport of various activated section of the IRT as per Incident Action Plan is fulfilled		Corporations/ ULBs
		• Indian Railway works with the logistic section of the state level IRT to provide effective services (Ground Support Unit)		
		• Coordinate with central govt. for transportation of relief materials		
		• Within and near Airports: AAI works with the logistic section of the state level IRT to provide effective services (Ground Support Unit) and also provide Nodal Officer for coordination of the relief operations		
		Restoration of Airport at the earliest involving specialised response force of the central government		
		• Coordination with state and district administration toprovide air support		
		• Cater to the needs of transport to affected people, ifrequired.		

ESF	Aim	Responsibilities	Primary Dept./ Agencv	Secondary Dept./ Agency
Temporary Shelter/ Camp	To address all basic needs of the affected population	• Ensure strict compliance with minimum standards ofrelief of state government	RevenueDepartment	<ul> <li>DM &amp; Collector</li> <li>Panchayat, Rural</li> </ul>
Management	and ensure safe, accessible, and secure shelter environmentfor evacuees.	• Logistic section of the state level IRT must coordinate with Railways to provide effective services to the field level IRTs for response		Housing and Rural Development Department
		• Alternate places for establishment of facilities as mentioned in the IRS guidelines such as relief camp, base, camp etc. are identified in advance and includedin the local DM Plan		<ul> <li>Food &amp; Civil</li> <li>Supplies</li> <li>Health</li> <li>Police</li> </ul>
		<ul> <li>Stockpile tents, tarpaulins and temporary shelter material in regional warehouses/ stores/ EOCs/ ERCs</li> </ul>		<ul> <li>Water Supply</li> <li>Energy &amp; Petrochemical</li> </ul>
		• Depending upon the requirement, coordinate with the relevant Central Ministry to make sure that the tents/ shelters reach the site on time.		Dept
		• Deploy a dedicated team at the local level to receive the tents/ shelters		
		Maintain logs (manual or computerized) of all material movements and details of distribution to required locations		
Energy	To ensure rapid restoration of power to affected areas particularly	• Electricity Board and Power Distribution Companies work with the logistic section of the state level IRT to provide effective services to the	Energy & Petrochemicals Dept.	Gujarat Electricity     Companies
	to critical facilities on the priority	<ul> <li>field level IRTs for response</li> <li>Pre-disaster arrangements for quick restoration of power supply with alternate mechanisms to critical</li> </ul>		
		facilities usually within 6 to 12 hours of placement of order		
		<ul> <li>Mobile power supply units or other arrangements with power generation companies for quick deployment at the site during emergency</li> </ul>		

ESF	Aim	Responsibilities	Primary Dept./ Agency	Secondary Dept./ Agency
Public Safety & Security	To ensure safety and security of affected	Maintain law and order during emergency situations;	Home Department	<ul> <li>DM &amp; Collector</li> <li>Police</li> </ul>
	population first responders	• Ensure safety of Women & Children		<ul> <li>Home Guards</li> </ul>
	and meir property	<ul> <li>Protect property in evacuated areas;</li> <li>Controlled areas: to damaged areas;</li> </ul>		Panchayat, Rural     Housing and Rural
		Establish and coordinate traffic control points		Development
		asneeded;		Department
		<ul> <li>To carry out the crowd control as needed;</li> <li>Participate in the local warning system:</li> </ul>		<ul> <li>WCD</li> <li>Social Justice &amp;</li> </ul>
		Assist in the evacuation of prisoners from the jail byproviding perimeter security		Empowerment Dept.
Media Management	To ensure precise and accurate incident briefing	Information and Broadcasting Department works with staff as Information and media	Information Department	DM & Collector
	to public and ensure	officer of the state level IRT to provide		<ul> <li>Police</li> </ul>
	proper rumour and panic	effective services		
	management	• Ethical guidelines for coverage of disaster is		• District
		<ul> <li>prepared and shared with all media agencies</li> <li>Plan is prepared for providing/broadcasting</li> </ul>		Information Officer
		warnings, do's and don'ts etc. to media and ensure its dissemination		
Disposal of	Ensure safe disposal of	Activate the Animal Carcass Management Carrier in the IDS		
Carcasses	allIIIIa1 Va1Va33V3	Equip and train the staff in carcass removal/	U D Department	Local Municipality
		disposalat pre-identified sites to ensure that	4	ULBs / Local Sanitary
		no other health hazard is created both for the staff as well as the muhlic		Inspector
		Use of recommended safety kits and personal	Panchayat & RDD	Gram Panchayat
		protection by the staff deployed in carcass disposal sothat they are not infected		
		Take measures for dispersal of financial relief		
		as perinorins		

Table 8.2 Emergency Support Functions

# **Disaster Reporting and Assessments**

There are three kinds of assessment reports made at different timeframe. Each assessment report has different format for collection of data and reporting of information. These reports are designed to assess:

- a) Life threatening situation
- b) Need for emergency food, water, shelter and medical assistance
- c) Need for restoration of critical facilities and services

The format for Damage and Need Assessment is mentioned in Annexure 9.

## **Rapid Report**

It is aimed at obtaining a broad picture of extent of damage. It should ideally be undertaken within 4-8 hours of all clear. It helps in identifying the immediate actions necessary to be made.

## **Preliminary Report**

Preliminary report is made within first 7 days of all clear. Within these 7 days, interim SITREP should be prepared and submitted at the end of 48 hours followed by SITREPS at the end of each24 hours period. The objective of this report is to obtain more detailed and specific data regarding damage and needs. The 48 hours report should include wherever possible preliminary cost estimates of damage.

### **Detailed Report**

Detailed report is made within 21 days of all clear. This assessment is conducted sector-wise and is aimed at finding the detailed damage and post disaster needs of each sector so as to plan recovery and rehabilitation of the sector. The direct costs associated with recovery and rehabilitation of each sector should be mentioned in details wherever possible.

#### **Deactivation of the Process**

After the process of damage and need assessment is over, the designated authority shall issue the appropriate directives to deactivate the damage and need assessment process.

#### Minimum Standard of Relief

National Disaster Management Act, 2005 mandates the State government to lay down detailed guidelines for providing standards of relief to persons affected by disaster in the State.

State government has laid down detailed guidelines for providing relief at the time of disaster. The copy of the same is given as **Annexure 7 (Refer Page 237).** 

### Finalizing relief payouts and packages

Relief packages would include details relating to collection, allocation and disbursal of funds to the affected people. Relief would be provided allthe affected families without any discrimination of caste, creed, religion, community or sex whatsoever.

If in the opinion of GSDMA the relief provided by the Commissioner or the Collector is not adequate, GSDMA shall recommend the Government to modify the norms followed and whenever necessary would recommend other relief measures.

GoG should also ensure that all Government Departments, responding agencies and forces are striving to achieve the Minimum Standards for Disaster Relief by GoI/ GoG. These standards deals with various domain like water supply, sanitation, hygiene promotion, food security and nutrition, shelter and medical cover.

# **Relief Kits**

Indicative details of immediate relief kit, household kits and family ration kits are mentioned in Annexure 8 (Refer Page 238).



Chapter 9: Reconstruction and Rehabilitation for Resilient Recovery

# **Introduction:**

Rehabilitation and Reconstruction plays an important role in the disaster recovery phase. The reconstruction and rehabilitation activities, which follow the disaster response stage, aim at achieving long term recovery. On the expiry of a disaster declaration, the GSDMA shall, where necessary, act as an agency for facilitating and coordinating rehabilitation and reconstruction activities by departments of the Government.

Globally, the approach towards post-disaster reconstruction and rehabilitation has shifted to building back stronger, faster and inclusive to achieve resilience. While disasters result in considerable disruption of normal life, enormous suffering, loss of lives and property, global efforts consider the recovery, rehabilitation and reconstruction phase as an opportunity to **"Build Back Better"** (BBB) integrating disaster risk reductioninto development measures and making communities resilient to disasters

The proposed reconstruction and rehabilitation actions/measures in this plan are keeping in view the worst -case scenarios in which the capacity of the State and District administration would be overwhelmed and require assistance from the Central Government for re-establishing normalcy in the disaster affected areas. This chapter provides a general framework for the role of Government and its development partners in restoring after a disaster, various essential and basic services. Much of this support will involve the coordinated working of multiple agencies – government and non-government. All the agencies are required to closely monitor response activities and to obtain valuable data regarding the severity and intensity of the event, the affected geographical area and the potential unmet critical needs of the affected population while evolving a comprehensive recovery plan. The key activities in the phase are discussed as below.

# **Recovery Process**

Effective post -disaster recovery usually has the following three broad aspects:

- Physical aspects of recovery, i.e. restoration and reconstruction of damaged community infrastructure, critical infrastructure, private houses and cultural heritage buildings
- Economic aspects of recovery, i.e. livelihoods, productive activities and market services
- Social recovery, i.e. social and psychological aspects of personal, family and community functioning and wellbeing.

Recovery is most successful when the wide-ranging needs of communities, organizations, different vulnerable groups and individuals are addressed in the coordinated manner that recovery frameworks enable. Disaster recovery process is rarely a set of orderly actions. It will consist of several related activities such as the following:

# Relief Memorandum [for seeking assistance from National DisasterResponse Fund (NDRF)]

While a preliminary rapid damage assessment is carried out during disaster phase, a damage and loss assessment is conducted following the provisions and norms in the manual of National Disaster Response Fund/ State Disaster Response Fund. The CoR / Revenue Department of each is mandated to collect information on damage and losses after any disaster and to provide the required disaster response thereafter.

The relevant government departments and local authorities shall initiate a detailed assessment at their respective level for the damages occurred in their respective jurisdiction in the affected regions.

For assessing the damage and need of the affected community, the damage and need assessment team should take into account the composite representation of all the different communities and vulnerable groups in the affected area. An ideal team would include expert in the related field, government official and representatives from majority and minority communities, Women, Scheduled Caste, Schedule Tribes, Panchayat member or nagarpalika member, etc.

The format for development of Relief Memorandum is as per Annexure 9 (Refer Page 240).

# **Post Disaster Needs Assessment**

The primary objective of any Post Disaster Needs Assessment (PDNA) is to assess the full extent of a disaster's impact, define the needs for recovery and design a recovery strategy. A PDNA looks ahead to restoring damaged infrastructure, houses, livelihoods, services, governance and social systems, and includes an emphasis on reducing future disaster risks and building resilience.

National Disaster Management Authority (NDMA) with the assistance of National Institute of Disaster Management (NIDM) has developed PDNA Tools for India with the objective to establish a standardized mechanism based on scientific approach for conducting post disaster needs assessment for recovery and reconstruction.

The PDNA is an assessment covering 23 thematic areas as follows

- Social Sectors:
  - 1. Housing
  - 2. Health & Population
  - 3. Nutrition
  - 4. Education
  - 5. Cultural Heritage
- Productive Sectors:
  - 1. Agriculture
  - 2. Irrigation
  - 3. Commerce & Industry
  - 4. Tourism
  - 5. Financial Sector
- Infrastructure Sectors:
  - 1. Electricity
  - 2. Communications
  - 3. Community Infrastructure
  - 4. Transport
  - 5. Water, Sanitation & Hygiene
- Cross-cutting Sectors:
  - 1. Governance
  - 2. Disaster Risk Reduction
  - 3. Environment & Forestry
  - 4. Employment & Livelihoods
  - 5. Social Protection
  - 6. Gender Equity & Social Inclusion
  - 7. Poverty and Human Development
  - 8. Macroeconomic Impact Assessment

# **Operational Activities and Protocols for PDNA**

# Planning for PDNA

- 1. The GSDMA / R & R branch of Revenue department, based on the initial assessment and in consultation with NDMA will recommend for PDNA exercise after a week of the disaster event.
- 2. As per the approval by the Hon. Chief Minister (Chairman, Governing Board of GSDMA) on requirement of PDNA, the State shall inform the national nodal ministries and invite the other government departments and technical agencies such as CWC, IMD, ISRO etc. to participate in the PDNA activities. The GSDMA/ R & R branch of Revenue department shall lead the PDNA in cooperation and coordination.
- 3. The PDNA should be a well-coordinated inter-agency mechanism. Agreement on the management structure of the PDNA is important: The management structure shall comprise of the following:
  - i. **PDNA management team**: The assessment team is normally led by the CEO, GSDMA/ Secretary (R & R). The management team shall meet regularly to oversee the process of assessment, provide strategic guidance, take decisions and shall ensure that the necessary resources are available for undertaking the assessment.
  - ii. *Coordination team*: The members can be from national ministries or state departments. The team shall be responsible for managing day-to-day planning, coordinating with the sector team members as well as state government and donors in conducting the assessment, analyzing the data, preparing the reports, and the development of the recovery and reconstruction framework under the guidance on the PDNA management team. The Coordination team shall have the principal responsibility in organizing the conduct of the assessment and in ensuring that all logistic arrangements are in place.
  - iii. *Sector teams*: the sector teams shall be composed of designated technical representatives from line departments at national, state and district offices, as well as with representatives from development partner agencies. The sector team will be responsible for collecting sector specific baseline data, damage and loss data, undertaking field visits to validate the data collected, analyzing the data and writing the sectoral assessment report on damage and loss and propose sector priorities for recovery and reconstruction.
  - iv. *Report Preparation Secretariat*: the coordination team, with technical support from development partners (if required), shall be responsible for coordinating with the sectoral team members for the sector report based on data analysis for their sector. The coordination team will then compile and summarize the individual sectoral report into consolidated report.
- 4. The CEO, GSDMA/ Secretary (R & R) as the leader of the PDNA management team will brief the Chairman, GSDMA and State Crisis Group on the conduct of the PDNA and recommend appropriate actions to be taken, including timeframe for completing the assessment and delivering the report. The CEO, GSDMA / Secretary (R & R) will also decide if assistance from development partners, in the conduct of the PDNA, is needed. If required, the nodal ministry at national level will coordinate with the Ministry of External Affairs (MEA), to issue a formal letter requesting for assistance from development partners in the conduct of PDNA.
- 5. Once the formal request is made by the MEA to development partners, the MHA will call for an internal meeting called "**Stakeholder Consultation**" between the international agencies and development partners. The cost of the assessment shall be borne by the GSDMA / Revenue Department.

- 6. Prior to starting the assessment, an "**Orientation Training**" will be organised to refresh the designated PDNA team members on the broad concept of the damage, loss and needs as well as methodology for undertaking the assessments for each sector/sub-sector and issues to be aware when the team is in the field for individual sector members.
- 7. Finally, Sector teams will initiate **collection of baseline data** as per the templates prescribed in the sector specific Guidance Notes (GOI) on undertaking damage, loss and needs assessment. The Central Statistical Organization (CSO) as well as the line departments will maintain and update key baseline date of sectors.

# Developing Reconstruction and Rehabilitation Strategy for ResilientRecovery

In parallel to the PDNA planning process, the formulation of Reconstruction and Rehabilitation will be initiated by GSDMA / Revenue Dept. (R &R) with the objectives to -

- Provide indicative steps to facilitate a sequenced, prioritised and flexible multisectoral planningguide for recovery programmes.
- Provide guidance to state for organising post-disaster recovery in accordance with the damages, losses and needs following a disaster event.
- Plan and implement a post-disaster recovery programme in an inclusive and transparent manner(including financial planning and institutional arrangements).
- Recommend policies, strategies, areas of technical assistance and monitoring support needed forrecovery programming.
- Optimise the use of national and state flagship programmes, other schemes and resources for implementing recovery.

Provide guidance to reduce future disaster risks and allow for further opportunities for long-termsustainable development.

# Short-term, Mid-term and Long-term Recovery

The disaster recovery programmes usually proceed in three distinct stages to facilitate a sequenced, prioritized, and flexible multi-sectoral approach. Three recovery stages, in which appropriate policies and programmes tend to be planned and implemented are: a) Short term, b) Mid -Term, and c) Long-term.

# **Repair and Restoration**

The state governments as per the existing policy provide assistance to the affected citizeto repair and restore damaged houses and dwellings. Respective departments should carry out repair and restoration of the related infrastructure, facilities, services, etc. at the earliest so that the essential services can be resumed to bring the life back to normalcy.

The government shall also coordinate with national and international NGOs, donor agencies and othergovernment bodies to prioritise restoration of critical infrastructure like health, temporary housing, lifesaving facilities, critical government infrastructure, etc.

# Reconstruction

Gujarat State Disaster Management Authority (GSDMA) shall oversee reconstruction and rehabilitation work and ensure that it takes into account the overall development plans for the state. These reconstruction efforts include:

- Reconstruction of public infrastructures and social services damaged by the disaster, which can be completed over long-term
- Re-establishment of adequate housing to replace that which has been destroyed
- Restoration of jobs / livelihood that was lost Restoration of the economic base of the disaster areas

# a. Owner Driven Reconstruction

- Reconstruction should be done on the principle of Owner Driven Reconstruction. Here the district administration aids in provision of funds and technical expertise for construction activity. In principle allow active participation of the affected family/ owner in rebuilding their houses and ensures that their houses suit their cultural, occupational and other personal needs and context. It also gives them a sense of ownership and change their mindset from 'being a beneficiary' to 'being am owner' which also aids in psychological rehabilitation.
- The active participation of the owner also ensures regular monitoring of the process, quality of material used, etc. which helps in speeding up the reconstruction process.
- b. Build Back Better
  - Reconstruction post disaster also gives an opportunity to build back better. The new construction post disaster should comply with all safety norms, guidelines and building codes. The design of these buildings should be disaster resilient as per the hazard profile of the state.
  - Government of Gujarat shall monitor the reconstruction process and ensure that the principle of build back better is followed through disaster resilient reconstruction.

# Rehabilitation

Holistic rehabilitation post disaster includes many inter linked aspects. It is critical to address the need of affected population in order to achieve early recovery and to bring back life to its normalcy.

# Socio-economic Rehabilitation

Socio-economic rehabilitation is aimed at revamping the social and economic fabric to the predisaster or a better situation. It also addresses issues like that of restoration and generation of livelihoods. This is done by providing required training, skill, tools and equipment to restart the previous or new livelihood options.

Care should also be taken to address the needs of various socially and economically vulnerable groups like that of women, adolescent girls, old age persons, person with disabilities, children, destitute, below poverty line population, scheduled castes, scheduled tribes, particularly vulnerable tribal groups, etc.

# **Psychological Rehabilitation**

Disasters often lead to long time stress and trauma due to loss of near and dear ones, injuries, loss of limbs, loss of housing and related property, trauma generated by facing the disaster and fearful sites, fear of repetition of the disaster, etc. If not addressed appropriately, it may lead to lifelong psychological fear and disorders, thus it is necessary to provide psycho-social first aid and psychological care to the affected population.

# **Environmental Rehabilitation**

Environmental impacts of disasters can result in serious risk to life and livelihoods if not addressed. Environmental emergencies like uncontrolled, unplanned or accidental release of a substance into the environment not only impact human life in many ways but also damage environment to great extentwhich may be impossible or may take years to restore to its original.

Thus without proper consideration of the environment, pre-existing vulnerabilities may be recreated or exacerbated. Thus GoG along with other concerned department should ensure measures to decontaminate the affected elements like air, river, water bodies, forests, etc.

# Relocation

The state government believes that need-based considerations and not extraneous factors drives the relocation of people. The local authorities, in consultation with the affected persons and under the guidance of GSDMA, shall determine relocation needs taking into account criteria relevant to the nature of the calamity and the extent of damage. Relocation efforts will include activities like:

- 1. Gaining consent of the affected population
- 2. Land acquisition
- 3. Urban/ rural land use planning
- 4. Customizing relocation packages
- 5. Obtaining due legal clearances for relocation
- 6. Getting the necessary authorization for rehabilitation
- 7. Livelihood rehabilitation measures for relocated communities, wherever necessary

While planning on site reconstruction or relocation, care should be taken to provide the community with all basic amenities in close vicinity of the reconstruction site. This leads to inclusive and holisticreconstruction process. Some of the basic amenities are as follows:

- 1. Health
- 2. Education
- 3. Provision of adequate drainage system
- 4. Provision to drinking water
- 5. Provision for proper sanitation
- 6. Provision for Electricity
- 7. Provision for waste collection and management
- 8. Market place
- 9. Connectivity to road and railway

## Restoration of Damaged Cultural Heritage Sites, their Precincts andMuseums

Post disaster repairs and reconstruction of damaged sites / precincts to be undertaken based on sound documentation and assessment practices. Poor reconstruction practices cause further physical damage to heritage structures, may worsen its structural vulnerability and carries the risk of erasing the heritage features. Restoration or reconstruction of heritage after disasters should go beyond buildings and it should look at heritage livelihood, traditional trades/ crafts etc.

### **Project Management**

Since rehabilitation and reconstruction effort typically involves the co-ordinated efforts of several entities / institutions, the GoG shall encourage the respective entities to strengthen program management capabilities to ensure that synergies across and within entities are managed efficiently. In addition, it is also necessary to constantly monitor the activity to ensure that the project is executed on time, in accordance with the technical specifications and to the satisfaction of the beneficiaries. GSDMA, in coordination with relevant government departments, will monitor the reconstruction activity that is carried out by various implementation agencies.

Typical implementation activities would include:

- Disaster proofing and retrofitting of houses
- Creation/ retrofitting of structures including roads, bridges, dams, canals etc that may have been destroyed/ damaged due to the disaster
- Restoration of basic infrastructure facilities, for example, ports, airports, power stations etc.
- Creation of health centres, first aid centres, hospitals, groups of doctors and surgeons etc.
- Restoration of the industrial viability of the affected area.
- Restoration of livelihood.

For managing long-term rehabilitation programmes, such as reconstruction of houses, infrastructure and other social amenities, the responsibilities will be that of respective line departments through a well-structured R & R Programme.

#### Information, Education and Communication

Communication activities are necessary to convey to the larger community the scope and nature of the proposed reconstruction and rehabilitation effort so as to increase the stakeholder's awareness and buy-in for the ongoing activities. Hence, GSDMA and relevant government departments, district administration and local authorities shall undertake:

- **Ongoing media management/ Public Relations:** To ensure that accurate communication of the reconstruction and rehabilitation measures are being informed to the various stakeholders;
- **Community management:** This includes communicating to the affected communities with a view to appraising them of efforts being made for their relocation/ rehabilitation/ reconstruction;
- **Feedback mechanisms:** Using the communication network to get feedback on reconstruction and rehabilitation measures.

# **Dispute Resolution Mechanisms**

GSDMA, in coordination with relevant agencies, shall institutionalize mechanisms to address beneficiary grievances at various levels, as well as explore innovative ways of dispute minimisation like involving the community in reconstruction initiatives. Appropriate mechanism with penalties for dealing with false claims will be evolved to prevent misuse of assistance.

# **Implementing Initiatives for Recovery of Reconstruction Costs**

The GoG shall finalise and implement selected recovery measures such as:

- Imposing tax surcharge levies (central)
- Imposing local taxes
- Facilitation of funding responsibility sharing by beneficiaries etc.

**Chapter 10: Financial Arrangements** 

The DM Act, 2005 recommended central government and state government to have a Disaster Mitigation and Response Funds. The 15th Finance Commission recommended setting up National and State Disaster Risk Management Funds (NDRMF and SDRMF) for the promotion of local-level mitigation activities. The Commission has recommended retaining the existing cost-sharing patterns between the centre and states to fund the SDRMF and the SDRF (existing). The cost-sharing pattern between centre and Gujarat is 75:25.

The DM Act, 2005 has clearly mandated upon the Government to ensure that the funds are provided by the Ministries and Departments within their budgetary allocations for the purpose of disaster management. The Act has stressed upon the need for mainstreaming of the Disaster Risk Managementby way of making definite budgetary arrangements for the purpose by the respective Ministries and Departments within their overall agenda.

#### **Funds at National Level**

#### National Disaster Risk Management Funds (NDRMF)

National Disaster Risk Management Funds (NDRMF) has been set up as per the recommendation of 15th Finance Commission (FC). NDRMF comprises of the National Disaster Mitigation Funds (NDMF) and National Disaster Response Funds (NDMF). Out of the total NDRMF, the share of NDRF shall be 80 per cent and the share of NDMF 20 per cent. Within the NDRF allocation of 80 per cent, there would be three sub-allocations. They are Response and Relief (40 per cent), Recovery and Reconstruction (30 per cent) and Preparedness and Capacity-building (10 per cent). While the funding windows of NDRF and NDMF are not inter-changeable, there could be flexibility for re- allocation within the three sub-windows of the respective Funds and such re-allocation shall not exceed 10 percent of the allotted amount of that sub-window.

#### Prime Minister's National Relief Fund (PMNRF)

Prime Minister's National Relief Fund (PMNRF) was established entirely with public contributions and does not get any budgetary support. PMNRF accepts voluntary contributions from Individuals, Organizations, Trusts, Companies and Institutions etc. All contributions towards PMNRF are exemptfrom Income Tax under section 80(G) of the Income Tax Act, 1961.

The resources of the PMNRF are utilized to render immediate relief to families of those killed in calamities like floods, cyclones and earthquakes, etc. Assists partially to defray the expenses for medical treatment like heart surgery, kidney transplantation, cancer treatment of needy people and acid attack etc. The corpus of the fund is invested in various forms with scheduled commercial banks and other agencies. Disbursements are made with the approval of the Prime Minister.

#### **State Level**

#### State Disaster Risk Management Funds (SDRMF)

State Disaster Risk Management Funds (SDRMF) has been set up as per the recommendation of 15th Finance Commission (FC). SDRMF comprises of the State Disaster Mitigation Funds (SDMF) and State Disaster Response Funds (SDRF). Out of the total SDRMF, the share of SDRF shall be 80 percent and the share of SDMF 20 per cent. Within the SDRF allocation of 80 per cent, there would be three sub-allocations. They are Response and Relief (40 per cent), Recovery and Reconstruction (30 per cent) and Preparedness and Capacity-building (10 per cent). While the funding windows of SDRF and SDMF are not inter-changeable, there could be flexibility for reallocation within the three sub- windows of the respective Funds and such re-allocation shall not exceed 10 percent of the allotted amount of that sub-window.

SDMF shall be used for those local level and community-based interventions which reduce the risks and promote environment-friendly settlements and livelihood practices. However, largescale mitigation interventions such as construction of coastal walls, flood embankments, support for drought resilience etc. should be pursued through regular development schemes and not from the mitigation fund. The detailed guidelines for the constitution and utilisation of these funds shall be issued by the Ministry of Home Affairs,

# **Chief Minister's Relief Fund**

This provides immediate support to the distressed people affected by the disasters, or road, air or railway accidents, Communal riots, Crop failure, Floods etc. The funds can be used for those peoplewho have been affected by cancer, Heart surgery and other ailments, too.

## **Other Sources of Funds**

# a. Public Private Partnership

There are projects/schemes in which funding can be done by a public sector authority and a private party in partnership. In this State Govt. along with Private organizations and with Central Govt. sharetheir part.

## b. Grant in Aid

State government may receive a grant in aid from Central Govt, or a local authority, bilateral or multilateral funding agencies, etc. to carry out specific projects/schemes related to disasterrisk reduction and management.

## c. Corporate Social Responsibility (CSR) Funds

Corporate social responsibility is a broad concept that can take many forms depending on the company and industry. Through CSR programs, philanthropy, and volunteer efforts, businesses can benefit society while boosting their brands.

Section 135 of the Act, Schedule VII and Companies (CSR) Policy Rules, 2014, provide a robust framework for companies to partner in contributing to the country's development challenges through its managerial skills, technology and innovation. Besides providing an overall guidance framework for the corporates to carry out their CSR initiatives, it also provides them with ample autonomy and flexibility to design and implement programmes. The monitoring is based on disclosures made by the company in the prescribed form and annual report. The company has to disclose its details on CSR implementation, including allocation of funds, destination state and development sector where the CSR expenditure is done, etc. annually to this Ministry through filing of annual report on CSR. The mandatory CSR reporting has its advantages as it allows the corporates to demonstrate their commitment towards CSR and communicate with different stakeholders, including shareholders, regulators, customers and society at large.⁷

⁷http://www.mca.gov.in/Ministry/pdf/CSRHLC_13092019.pdf

# d. Loan

GSDMA may borrow money from the open market with the previous approval of State government to carry out disaster management functions as described in DM Act, 2003.

# e. Disaster Bonds

State government can also raise funds for major disasters by exploring the options of long term disaster bonds.

# f. Donations

As per the provisions of clause 33 of The Gujarat State Disaster Management Act, 2003 the Authority may accept grants, subventions, donations and gifts from the Central or State Government or a local authority or any individual or body, whether incorporated or not.

# g. Recovery Measures -Introduction of Special Tax

The GoG shall finalise and implement select recovery measures such as imposing tax surcharge levies (central), imposing local taxes, facilitation of funding responsibility sharing by beneficiaries etc.

# H. Funds Disbursement and Audit

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. GSDMA, in conjunction with relevant agencies, shall monitor disbursal of funds by:

- Prioritizing resource allocation across approved projects
- Establishing mechanisms (like a chain of banks, collection centres, nature of accounts, spread etc) for collection of funds
- Ongoing monitoring and control of fund usage throughout actual project implementation



**Chapter 11: Plan Maintenance** 

Plan maintenance is a dynamic process of updating the plan on a periodic basis. The plan must be periodically updated to make it harmonious with the changes in Government policies, initiatives, priorities and to incorporate various technological changes and national experiences. The back-bone of maintaining the plan is carrying out mock exercises and updating the plan based on the lessons learnt as an outcome of the mock exercise which consists of identifying the gaps, rectifying them andimproving the efficiency of the plan. Further, the priorities for anorganisationmay change as the communities are included, as resources expand or contract and as capabilities evolve over a period of time.

#### **Trainings and drills**

Mock drills and trainings must be organized to test the readiness of system to deploy within the shortest possible time following the activation of a disaster response. The stakeholder's agencies/departments are required to train their personnel, so that they have the knowledge, skills and abilities needed to perform the task identified in the plan.

The objective of all these trainings and drills would be to both familiarize the teams with the DMP and to increase their operational efficiencies

The workshops and drills also provide an opportunity to practice SOPs. These workshops would also give the teams an opportunity to develop all the stakeholders into a cohesive response unit.

#### **Plan Testing**

As per the clause 22 of GSDM Act, 2003, The Commissioner of Relief, shall prepare, review and update State level Emergency Plans. He shall also ensure that disaster management drills and rehearsals are carried out periodically.

The process of evaluation and testing of plan will identify, illuminate, and correct problems with the DMP.

While updating the plan the following aspects need to be considered by the CoR every year:

- a. Critical analysis of the outcome of exercises & mock drills as part of plan testing.
- b. Incorporation of lessons learnt in the updated plan as an outcome of mock exercises through identification of gaps and measures to fill them.

The plan must be thoroughly tested and evaluated once in a year. The plan testing should preferablybe organized on the first Monday in the months of March every year.

#### The main objective of Plan testing is to:

- a. To determine whether the goals, objectives, decisions, actions and timings outlined in the plan led to a successful response.
- b. Determine the feasibility and compatibility of back up facilities and procedures
- c. Identify areas in the plan that needs modification.
- d. Identify training needs of key stakeholders.
- e. Assess the ability of the organization/department to respond to disasters.

After plan testing and incorporation of lesson learnt, the CoR should send a final copy of the revised and updated plan to the following officials:

- a. Chief Secretary, Government of Gujarat
- b. Chief Executive Officer, Gujarat State Disaster Management Authority
- c. Principal Secretary, Revenue Dept
- d. Head of all line Depts.

- e. State EOC
- f. District EOCs
- g. ERCs
- h. IMD
- i. CWC/ACWC

All the stakeholders' viz., departments, which have specific roles and responsibilities in State DisasterManagement Plan, must have a system to ensure that all officers of their departments who have a specific role to play are fully up to date with their responsibilities/tasks.

## **Mock Exercise**

- a. Mock exercise debriefing and evaluation is of critical importance so that insights are collected from participants (who participated in the exercise) and that is further used to modify the plan.
- b. Hot debriefing is very effective as it is carried out immediately after the exercise. It also includes documentation in terms of recommendations and improvements of the plan.

## Review, Revise& Updation of Plan

The State Disaster Management Plan should be reviewed and updated annually. All the relevant stakeholders should establish a process for reviewing and revising the plan. It focuses on adding the information gained by exercising the plan to the lessons learnt while executing and start the planningcycle all over again

The plan updation process should begin in January in each year and should be completed by month of April, based on inputs from the following:

- a. Drills and rehearsals
- b. Recommendations from all depts. in their Annual DM Report
- c. After any significant change in operational resources (e.g., policy, personnel, organizational structures, management processes, facilities, and equipment)
- d. After enactment of a new law or amended law or ordinance
- e. Directions from Ministry of Home Affairs, National Disaster Management Authority, Government of India, etc.
- f. Lessons learnt from any disaster event in other states and countries

GSDMA and all other concerned Depts. should encourage formal and informal interaction with various stakeholders at different levels to learn and document their experiences, so that such experiences can contribute constructively towards updation of State Disaster Management Plan for further improving the capability to deal with future disasters.



# Annexure -1 (Ref page 22)

# List of major disaster which affected the State

Date	Disaster	Damage/ Loss
1945	Tsunami	Kandla coast was hit by a Tsunami of 12 meters height, due to an earthquake in the Makran fault line.
21/07/1956	Earthquake	Anjar, Kutch - 115 people killed and hundreds injured. 1350
	Mw 6.1	buildings destroyed at Anjar alone. (Source: GSI)
23/03/1970	Earthquake	Bharuch - 26 people killed and 200 people injured in Bharuch and
	Mw 5.4	neighbouring villages. Heavy damage in Bharuch city. (Source :ANSS/ ASC)
1972-1973	Drought	[Source: Revenue Dept – DoR]
22/10/1975	Cyclone 160 -180 km/h	15 km NW of Porbandar - 85 people died; damage to property estimated at Rs. 750 million [Source: IMD (1999)]
03/06/1976	Cyclone 167km/h	Saurashtra coast - 70 people died. 51 villages badly affected;25,000 houses damaged: 4,500 cattle died; damage to property estimated at Rs. 30 million. [Source: IMD (1999)]
11/08/1979	Flood	Morbi – Heavy rainfall followed by breakdown of one dam-About 12000 people died in this flood (Source: Morbi City Web Site)
01/11/1981	Cyclone 125 km/h	West of Veraval & Porbandar - 13,942 animals dead; 1,128 huts and 677 houses collapsed; 8,686 huts and 6,034 houses damaged; 1.18 m Ha crops damaged with a loss of Rs. 836 million. One ship sinks off Veraval [Source: Gujarat State Gazetteer (1989)]
08/11/1982	Cyclone 200 km/h	<ul> <li>5 km west of Veraval - Surge of 6 to 8 m; 544 dead; 0.2 million animals dead – loss Rs. 125 million; 60,000 huts collapsed; 0.22 million huts damaged; 45,000 houses collapsed; 0.11 million damaged; 2,800 km of roads damaged</li> <li>– Rs. 356 million loss; 70 dams affected – Rs. 175 million loss; 2,530 settlements deprived of power – loss Rs. 103 million; 1,036 SSI and 27 large industrial units affected; 1,359 fishing vessels damaged; Port loss Rs. 19.1 million; agriculture and orchards loss Rs. 1,050 million [Source: Gujarat Planning Atlas (1987); Gujarat State Gazetteer (1989)]</li> </ul>
June 1983	Cyclone	Heavy rain (70 cm in two days) in Saurashtra [Source: Gujarat Planning Atlas (1987)]
1984-1987	Drought	Faced continuous rainfall deficiency, with 1987 being the worst drought year (rainfall deficits of -42% for Gujarat and -74% for Saurashtra/ Kutch). In 1985, a dry spell of 12–14 weeks affected more than 75% of the crops. During 1986 and 1987, India as a whole suffered from drought, but it was a chronic drought for Gujarat and the Saurashtra/Kutch regions. [Source: Revenue Dept. DoR]

Date	Disaster	Damage/ Loss
1994	Epidemic	Plague- 49 deaths in Surat
18/06/1996	Cyclone	Diu - 14 people died, 1611 houses damaged [Source: IMD(1999)]
1993, 1994,	Flood	Different regions of the Gujarat State (Revenue Dept. DoR)
1996, 1997,		
1998		
09/06/1998	Cyclone	North of Porbandar - 1,173 people died, 1,774 missing. Losses
	2	estimated at Rs. 18.65 billion [Source: IMD (1999)]
20/05/1999	Cyclone	International border with Pakistan - 453 died; 5,153 buildings
	2	damaged and estimated loss to property Rs 800 million
		[Source: IMD (1999)]
1999-2000	Drought	9449 villages in 155 taluks of 17 out of 25 districts with a
	C	population of 250 lakhs were affected. The failure of fodder crop
		affected livestock population of 71.33 lakhs.
		Banaskantha, Jamnagar, Kutch and Patan districts were severely
		affected. Food-grain production is estimated to be lower by 29.45%
		compared to that of last year. Oilseeds production is estimated to
		be lower by 49.23% as compared tothat of last year. The crop area
		under food-grains, oilseeds and cotton has gone down by 4.27 lakh
		ha during the last kharif and Rabi seasons. (Source: MoA-GoI)
26/01/2001	Earthquake	Kutch - Over 13000 people killed. A total of about 1.3 million
	Mw 7.9	houses, lifeline infrastructures were damaged to variable extent.
		(Source: IRIS/NEIC/TARU/GSI)
2001-2002	Drought	40% damage of crops sown after the first rains due to delayed and
		scanty rains. (Source: Relief Web)
July 2005	Flood	About 125 people died (Source: Indian Red Cross Gujarat state
		branch)
July- August	Flood	Surat city and south and central Gujarat - Nearly 150 people had
2006		died in the floods while over 100 others had died in post-flood
		epidemic of leptospirosis.
		Direct and indirect monetary losses has been estimated at Rs16,000
		crore, of which Rs 9,500-cr was in form of direct damages and Rs
		6,500 crore in form of lost production.
		(Source: WSEAS-Issue 2 – Vol. 3)
2009	Hepatitis B	Sabarkantha district- 456 cases and 89 deaths
	Outbreak	
2012-2013	Drought	Severe deficiency of rainfall in Gujarat during the Monsoon- 2012.
		As on 02.08.2012, Saurashtra & Kutch Regions of Gujarat had -
		79% departure from Long Period Averages (LPAs) while Gujarat
		region had -55% departure from LPA. All the districts of the State
		were deficient in rainfall, ranging from -24% to -91%. Drought was
		declared in 132 Talukas of 17 Districts of the State. (Drought
		Memorandum - Revenue
		Department)

Date	Disaster	Damage/ Loss
5th January, 2013	Fire	A major fire broke out with an explosion at IOC – Hazira on 05/01/2013 at about 12:41 hours in the tank having 5004 KL petrol; 5 workers lost their lives. 71 Nos. of fire tenders from different Municipal Corporations, Municipalities and Industries were applied for fire fighting and transportation of water. The fire completely doused at 11.30 am on 07/02/1013 and all-clear message has been given to concerned authorities (CFO-Surat report).
2013-14	Flood	In the month of August, due to heavy rainfall in the catchmentarea of Narmada river and release of water from Narmada Dam, Bharuch, Narmada and some part of Vadodara districts got affetced. During rescue operation in Bharuch, Narmada and Vadodara districts about 8159 persons and 3588 cattles were evacuated. The State experienced extremely heavy rainfall from 21st to 28th September 2013, almost in all the districts. 14 districts that received unprecedented rainfall during this period and were worst affected include Surat, Vadodara, Bharuch, Navsari, Narmada, Rajkot, Junagadh, Porbandar, Jamnagar, Kutch, Patan, Banaskantha, Sabarkantha and Mehsana. The rains impacted more than 50% of the geographical area of the state. More than 1500 villages were severely affected. 27 persons lost their lives. Infrastructure including power, water supply and roads were badly hit. Agriculture and cultivation were also severely affected. Over 2.23 lakh persons were evacuated by administrative efforts and were shifted to safer locations.
Oct 2014	Cyclone	Nilofar- Rapidly weakened into cyclonic storm before thelandfall
2015	Swine Flu	6593 cases and 439 deaths (till March 2015)
June 2015	Flood	70 human deaths; 443563 persons affected; loss of thousands of cattle & wild animals; destruction in 390 villages. Affecteddistricts include Amreli, Bharuch, Bhavnagar, Gir Somnath, Jamnagar, Junagadh, Porbandar, Rajkot, Surat, Valsad.
July 2015	Flood	86 human deaths and 89373 animal's deaths. Worst affected districts include Banaskantha, Patan, Kutch and Mehsana
2016	Drought	1115 villages of 6 Districts (Banaskantha, Dwarka, Kutch, Jamnagar, Porbandar and Rajkot) declared drought affected
2017	Flood	Devastating floods in parts of Gujarat during July 2017 damaged agricultural crops affecting 6.44 lakh farmers from 17 districts. The worst affected districts were Banaskantha and Patan districts receiving 163 percent and 143 percent of the seasons rainfall.

D	ate	Disaster	Damage/ Loss
24th	May,	Fire	On 24 May 2019, a fire occurred at a commercial complex in
20	)19		Sarthana jagatnaka area of Surat. Twenty-two students diedand
			others were injured in an academic coaching centre located on
			the building's terrace.
June,	, 2019	Cyclone	Cyclone VAYU considered as a Very Severe Cyclonic Stormwas
			a strong tropical cyclone that caused moderate damage in the
			state during June 2019. Approximately 3,00,000 residents of
			coastal Gujarat region were evacuated on June 12th in the
			preparation for the cyclone's arrival and thousands of
			personnel's were deployed in the region to assist with the
			preparations and rescue operations.
Nove	ember	Cyclone	Cyclone Maha caused widespread rainfall in areas of Junagarh,
20	)19		Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch,
			Anand, Ahmedabad, Botad, Porbandar, Rajkot and Vadodara.
July,	,2019	UrbanFlood	Torrential Rains swept Vadodara City and created loss of life
			and infrastructure and low lying areas were totally inundated
			which disrupted the day today activities for almost a week.
Marc	h2020	Pandemic	The first two cases of COVID-19 pandemic were confirmed in
onw	vards		Gujarat on 19th March, 2020 from Rajkot and Surat. Thereare a
			total of 8541 confirmed cases in the state which include 2780
			recovered cases and 513 deaths. (as of Date:)
3rd	June,	Cyclone	Cyclone Nisarga, a severe cyclonic storm made an impact in the
2020			form of gusty winds coupled with heavy rainfall in the state's coastal
			belt. People living near the coastline in Gujarat's Valsad and
			Navsari Districts were shifted to safer places.
3rd	June,	Fire	Fire incident took place due to storage tank blast consisting of Ortho
2020			Di Chloro Benzene in Yashashvi Rasayan. Pvt. Ltd a chemical
			company in Luvara Village of Bharuch District.
11 th	June,	Fire	Fire incident took place due to high pressure and high temperature
2020			in one of the reactors in Hemani Industries Pvt. Ltd Ankleshwar-
			Bharuch District. The blast occurred due to the exothermic process
			in the reactor resulting in high pressure.
20 th	June,	Fire	Fire incident took place at Jay Agro Industries Waghodia, GIDC of
2020			Vadodara due to fire in the solvent storage house which was
			considered as the prime factor where many solvents were stored ina
			single storage house.

Ref Page 25)
nexure 2 (]
Anne

List of Search & Rescue Equipments Provided to Emergency Response Centre (ERC's) by GSDMA

Sr. No.	Equipments/Vehicles	Gandhidham	Gandhinagar/ Ahmedabad	Surat	Rajkot	Vadodara	Total Equipments
-	2	3	4	5	9	7	8
Vehicle	63						
-	Multifunctional Rescue Vehicle with Crane	1	2	1	1	2	L
2	High capacity pumps	2	4	5	2	4	17
3	Water tanker	2	4	4	2	4	16
4	Foam tanker	1	2	2	1	2	8
5	Emergency Rescue vehicle	3	4	3	2	2	14
9	Water transport unit	1	0	0	1	0	2
L	Water Bouser	0	1	0	0	0	1
8	Mist Fire Tender with Robot	0	1	0	0	0	1
	Vehicle Sub-Total A	10	18	15	6	14	99
Container	ner						
1	USAR Container	2	2	1	2	1	8
2	Medical Mass CasualtyContainer	1	1	1	1	1	5
	Container Sub-Total B	3	3	2	3	2	13
Equipments	nents						
1	Self contained clean airbreathing apparatus	4	5	5	4	6	24
2	Personal protection suites	12	15	12	12	12	63
3	Spare cylinders	0	1	1	1	1	4

Sr. No.	Equipments/Vehicles	Gandhidham	Gandhinagar/ Ahmedabad	Surat	Rajkot	Vadodara	Total Equipments
4	AirLine Equipment	0	1	1	1	1	4
5	Positive pressure ventilator	0	1	1	1	1	4
9	Gas Tight Suits	5	L	L	5	6	33
L	Inflatable decontamination system	0	1	1	1	1	4
8	Leak sealing equipment	2	2	2	2	2	10
6	Non sparking tools	1	1	1	1	1	5
10	Multi gas detector	1	2	1	1	2	7
11	Emergency lighting System	2	4	3	3	2	14
12	Under Water Search Camera	1	1	1	0	1	4
13	Blower (Petrol Operated)	0	1	0	0	0	1
14	Fireman Kit	0	0	0	12	0	12
	Equipment Sub-Total C	28	42	36	44	39	189
TOTAL EQ	TOTAL EQUIPMENTS AT EACH ERC	41	60	53	56	55	265

Sr.	Tunos of Boot	Handad avar to Donartmont/Aconoice	No. of Roots
No.	Types of Dual	Hanucu-over to Department/Agencies	INU. UI DUAUS
-	Inflatable RescueBoat	SDRF 11 groups	55
		ERCs	~
		SDRF 11 groups	11 (each one)
2.	HDPE life boat 8-seater	Collectors	33 (each one)
		Municipal Corporations	08 (each one)
		Emergency Response Centers (ERCs)	20
		Gujarat State Fire Prevention Services	1
۲	HDPE life boat14-	SDRF 11 groups	11 (each one)
5	seater	Emergency Response Centers (ERCs)	4
4.	Air Boat	Under supervision of Director, State Fire Prevention Services/ERCs	5
		Total	156

**Boats Provided by Gujarat State Disaster Management Authority** 

GSDMA
by
Municipalities
t0
s provided
Vehicles/Equipments

	FRP Boat	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	Mini Fire Tender	1	2	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	0	1	0	1
	Water Bowser	0	1	1	2	2	2	2	2	0	1	0	0	1	1	1	1	0	1	0	1	1	1
	Trolley Mounted Water Mist	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
	Motor-cycled Mounted Water Mist	0	0	1	1	1	1	1	1	0	1	0	0	1	0	1	1	0	3	0	1	1	1
Portable	Inflatable Emergency Lighting Systems	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	District			Ahmadahad	AIIIICUAUAU							Amreli									MIRINA		
	Municipality	Bareja	Barvala	Bavla	Dhandhuka	Dholka	Sanand	Viramgam	Amreli	Babra	Bagsara	Chalala	Damnagar	Jafrabad	Lathi	Rajula	Savarkunda	Aaklav	Anand	Boriyavi	Borsad	Karamsad	Khambhat
	S. No.	1	2	3	4	5	9	7	8	6	10	11	12	13	14	15	16	17	18	19	20	21	22

(			Portable Inflatable	Motor-cvcled	E			
No.	Municipality	District	Emergency Lighting Systems	Mounted Water Mist	I rolley Mounted Water Mist	Water Bowser	Mini Fire Tender	Boat
23	Oad		2	0	0	0	0	0
24	Petlad		2	1	0	1	1	0
25	Sojitra		2	0	0	1	1	0
26	Umreth		2	1	0	1	1	0
27	Vallabh-vidhyanagar		2	1	0	1	1	0
28	Bhadhar		1	0	0	0	1	0
29	Deesa		1	1	0	1	1	0
30	Dhanera		1	0	0	1	1	0
31	Palanpur	Banaskantha	1	3	2	1	1	0
32	Thara		1	0	0	0	0	0
33	Tharad		1	0	0	1	1	0
34	Amod		2	0	0	0	1	0
35	Ankhleshwar	Dhomich	2	1	0	1	1	0
36	Bharuch	DIIalucii	2	3	2	2	2	2
37	Jambusar		2	1	0	1	1	0
38	Botad		2	3	2	2	2	0
39	Gadhda		2	1	0	1	1	0
40	Gariyadhar		2	1	0	1	1	0
41	Mahuva	Dharmorea	2	1	0	1	1	0
42	Palitana	DIIavilagai	2	1	0	1	1	0
43	Sihor		2	1	0	1	1	0
44	Talaja		2	1	0	1	1	0
45	Vallabhipur		2	0	0	1	0	0

No.Dahod46Dahod47Devgarh Baria	District	Inflatable Emergency	Motor-cycled Mounted Water	Trolley Mounted	Water	Mini Fire	FRP
Dahod Devgarh Baria		Lighting Systems	Mist	Water Mist	Bowser	Tender	Boat
Devgarh Baria		1	1	0	1	1	0
	po	1	0	0	1	0	0
48 Jhalod		1	1	0	1	1	0
49 Dehgam		1	1	0	1	1	0
	\$ 0 0 0 0	1	3	2	2	1	0
51 Mansa Vallullillagai	Ilagal	1	1	0	1	1	0
52 Pethapur		1	0	0	0	0	0
53 Bhanvad		2	0	0	1	1	0
54 Dhrola		2	0	0	1	1	0
55 Dwarka		2	1	0	1	1	0
56 Jamjodhpur		2	0	0	1	1	0
57 Jam-rawal	100	2	0	0	1	0	0
58 Kalavad Jammagar	ıgaı	2	0	0	1	1	0
59 Khambadia		2	1	0	1	1	0
60 Okha		2	1	0	1	1	0
61 Salaya		2	1	0	1	1	0
62 Sikka		2	0	0	0	1	0
63 Batava		2	0	0	0	1	0
64 Chorwad		2	0	0	0	1	0
65 Keshod Innaradh		2	1	0	1	1	0
66 Kodinar		2	1	0	1	1	0
67 Manavadar		2	1	0	1	1	0
68 Mangrol		2	1	0	1	1	0

S. No.	Municipality	District	Portable Inflatable Emergency Lighting Systems	Motor-cycled Mounted Water Mist	Trolley Mounted Water Mist	Water Bowser	Mini Fire Tender	FRP Boat
69	Sutrapada		2	0	0	0	1	0
70	Talala		2	0	0	0	0	0
71	Una		2	1	0	1	0	0
72	Vanthali		2	0	0	0	0	0
73	Veraval		2	3	2	2	1	0
74	Visavadar		2	0	0	0	0	0
75	Balasinor		1	1	0	1	1	0
92	Chaklasi		1	1	0	0	0	0
LL	Dakor		1	0	0	1	1	0
78	Kanjari		1	0	0	0	0	0
79	Kapadvanj		1	1	0	1	1	0
80	Kathlal	Kheda	1	0	0	0	0	0
81	Kheda		1	0	0	1	1	0
82	Mahudha		1	0	0	0	0	0
83	Mehmdabad		1	1	0	0	2	0
84	Nadiad		1	3	2	8	2	2
85	Thasra		1	0	0	0	0	0
86	Anjar		2	1	0	1	1	0
87	Bhachau		2	0	0	1	1	0
88	Bhuj	Kutch	2	1	0	2	2	0
89	Gandhidham	IVII	2	3	2	1	2	0
90	Mandvi		2	1	0	1	1	0
91	Rapar		2	0	0	1	1	0

Emergency Lighting Systems         Mounted Water Mist         Mounted Water Mist         Water Mist         Water Mist $1$ $1$ $1$ $0$ $0$ $3$ $1$ $1$ $0$ $0$ $3$ $3$ $1$ $1$ $0$ $0$ $0$ $0$ $1$ $1$ $0$ $0$ $0$ $1$ $1$ $1$ $0$ $0$ $1$ $1$ $1$ $1$ $0$ $0$ $0$ $0$ $1$ $1$ $0$ $0$ $0$ $0$ $0$ $1$ $1$ $0$ $0$ $0$ $0$ $0$ $2$ $1$ $0$ $0$ $0$ $2$ $2$ $2$ $2$ $3$ $2$ $2$ $2$ $2$ $1$ $1$ $0$ $0$ $0$ $0$ $0$ $0$ $2$ $2$ $3$ $2$ $2$ $2$ </th
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
3       3         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
1     1       1     1       3     0       3     2       3     2       1     0
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
0         0           3         3           1         2           3         0
3 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
1         0           3         2
2
1 $1$ $0$ $1$
1 0 0 1
2 1 0 1
2 0 0 0
2 1 0 1
1 0 0 1
1 0 0 1
1 3 2 2
1 1 0 1

			Portable Inflatable	Matar-eveled				
No.	Municipality	District	Emergency Lighting Systems	Mounted Water Mist	Trolley Mounted Water Mist	Water Bowser	Mini Fire Tender	FRP Boat
115	Chhaya		2	1	0	0	1	0
116	Kotiyana	Doubondou	2	0	0	1	0	0
117	Porbandar	r ui ualiuai	2	3	2	2	1	1
118	Ranavav		2	0	0	1	1	0
119	Bhayavadar		2	0	0	0	0	0
120	Dhoraji		1	1	0	1	1	0
121	Gondal		1	1	0	1	1	0
122	Jasdan		1	1	0	1	1	0
123	Jetpur	Raikot	1	3	2	2	1	0
124	Madiya Miyana	, ,	2	0	0	0	1	0
125	Morbi		2	3	2	2	2	0
126	Upleta		2	1	0	2	1	0
127	Wankaner		1	1	0	2	1	0
128	Bayad		1	0	0	0	1	0
129	Himmatnagar		1	1	0	2	1	1
130	Idar		1	1	0	2	1	0
131	Khedbrahma	Sohark on the	1	1	0	1	1	0
132	Modasa	Javal Maliula	1	1	0	1	1	0
133	Prantij		1	0	0	1	1	0
134	Talod		1	0	0	0	1	0
135	Vadali		1	0	0	0	1	0
136	Bardoli	Surat	2	1	0	1	1	0
137	Kansad	DULAL	2	0	0	0	0	0

S. S.	Municipality	District	Portable Inflatable Emergency Lighting Systems	Motor-cycled Mounted WaterMist	Trolley Mounted Water Mist	Water Bowser	Mini Fire Tender	FRP Boat
138	Mandvi		2	0	0	1	1	0
139	Tarsadi		2	0	0	0	1	0
140	Chotila		2	0	0	0	1	0
141	Dhangadra		2	1	0	1	1	0
142	Hadvad		2	0	0	0	1	0
143	Limbdi	Current concerned	2	1	0	1	1	0
144	Patdi	ourchul allagal	2	0	0	0	1	0
145	Surendranagar		2	3	2	2	1	0
146	Thangadh		2	1	0	1	1	0
147	Vadhwan		2	1	0	1	0	0
148	Songarh	T	2	0	0	1	1	0
149	Vyara	ı apı	2	1	0	2	1	0
150	Chota Udaipur		2	0	0	1	1	0
151	Dabhoi		2	1	0	1	1	0
152	Karjan	Vadodara	2	1	0	1	1	0
153	Padra		2	1	0	1	1	0
154	Savli		2	0	0	1	0	0
155	Dharampur		2	0	0	1	1	0
156	Pardi		2	1	0	1	1	0
157	Umargam	Valsad	2	0	0	1	0	0
158	Valsad		2	3	2	1	1	2
159	Vapi		2	З	2	2	2	0

GSDMA
by
Collectorate
District
to
Provided
Equipments

		Portable Inflotoble			PP Rope	P Ropes		Boats			anon ou mor		Doutchlo
Sr.	Dist.		Life	Life	1107						i emporary	LDPE	r ortable
No.	Collector	Emergency Lighting Systems	Jacket	Buoy	100 ft.	200 ft.	FRP	Inflatable	HDPE (8 Seater)	MFT	Instant Shelter	Tent	Generator Set (Honda)
1	Ahmedabad	2	1800	1500	300	450	0	0	1	0	2500	2500	0
2	Anand	3	1750	1250	250	425	0	1	1	0	0	0	0
3	Kheda	3	2000	1500	300	450	0	1	1	0	0	0	0
4	Vadodara	2	3250	2750	550	875	0	0	1	0	1500	1500	0
5	Bharuch	3	2750	2250	450	675	0	9	6+1	0	0	0	0
9	Surat	2	3250	2850	400	800	0	0	1	0	1850	1850	0
7	Navsari	3	1500	1100	200	250	0	0	1	-	0	0	0
8	Narmada	3	450	250	50	25	0	0	1	0	0	0	5
6	Valsad	3	2000	1600	300	450	0	0	1	0	0	0	0
10	Dang	3	50	50	10	S	0	0	1	2	0	0	2
11	Gandhinagar	3	250	250	50	25	0	0	1	0	0	0	5
12	Surendrenagar	3	250	250	50	25	0	0	1	0	0	0	0
13	Kutch	3	120	120	24	12	0	0	1	0	1500	1500	0
14	Junagadh	2	250	250	50	25	0	0	1	0	0	0	0
15	Jamnagar	2	250	250	50	25	0	0	1	0	0	0	0
16	Bhavnagar	2	750	250	50	25	0	0	1	0	0	0	0
17	Amreli	3	250	250	50	25	0	0	1	0	0	0	0
18	Porbandar	3	250	250	50	25	0	4	1	0	0	0	0
19	Mehsana	3	120	120	24	12	0	0	1	0	1500	1500	11
20	Sabarkantha	3	120	120	24	12	0	0	1	0	0	0	16
21	Banaskantha	3	250	250	50	25	0	0	1	0	0	0	0
22	Panchmahal	3	250	250	50	25	0	0	1	0	0	0	13
23	Dahod	3	250	250	50	25	0	0	1	0	0	0	6
24	Rajkot	2	750	250	50	25	0	0	1	0	1150	1150	0
25	Patan	3	120	120	24	12	0	0	1	0	0	0	0
26	Tapi	3	0	0	0	0	0	0	1	0	0	0	0

	Diet	Portable Inflatable	₹ <b>3</b> ; 1	J: 1	PP Ropes 26mm	opes 1m		Boats			Temporary	Add 1	Portable
	Collector	Emergency Lighting Systems	Jacket	Buoy	100 ft.	200 ft.	FRP	Inflatable	HDPE (8 Seater)	MFT	Instant Shelter	Tent	Generator Set (Honda)
27	Morbi	3	0	0	0	0	0	0	1	0	0	0	0
28	Dev Bhoomi Dwarka	3	0	0	0	0	0	2	1	0	0	0	0
29	Gir Somnath	3	0	0	0	0	0	0	1	0	0	0	0
30	Aravali	3	0	0	0	0	0	0	1	0	0	0	0
31	Chota Udaipur	3	0	0	0	0	0	0	1	0	0	0	0
32	Botad	3	0	0	0	0	0	0	1	0	0	0	0
33	Mahisagar	3	0	0	0	0	0	0	2+1	0	0	0	0

<b>IA</b>
GSI
by
porations
Corp
pal
nici
Mu
to
ded
0Vi
Pr
nents
quipn
S/E
cle
ehi
$\mathbf{\hat{z}}$

Sr. No.	Equipments	Ahmedabad	Vadodara	Surat	Rajkot	Jamnagar	Bhavnagar	Junagadh	Gandhinagar
	Portable Inflatable Emergency								
1	LightingSystems	5	5	7	5	7	7	5	2
2	Motorcycle MountedWater Mist	4	2	2	3	3	1	3	3
3	Trolley Mounted WaterMist	5	5	2	5	5	5	2	3
4	Water Bowser	1	1	1	1	1	1	1	1
5	Mini Fire Tender	0	0	0	1	1	1	1	0
9	Life Jacket	250	250	250	250	120	120	50	0
L	Life Buoy	250	250	250	250	120	120	50	0
8	PP Rope (100 ft)	50	50	150	50	24	24	10	0
6	PP Rope (200 ft)	25	25	75	25	12	12	5	0
10	FRP Boat	6	L	L	2	2	1	1	0
11	Inflatable/Rubber Boat	6	10	11	6	1	2	1	1
12	HDPE Boats (8 seater)	1	1	1	1	1 + 1	1	1	1
13	Trolley for HDPE Boats	0	0	0	0	1	0	0	0
14	Under Water SearchCamera	1	1	1	1	1	0	1	0
15	Under Water Breathing Apparatus	12	0	0	0	0	0	0	6
16	Rapid Response Vehicle	1	0	0	0	0	0	0	0
17	Resent skid/ trailer	2	0	0	0	0	0	0	0

## Annexure 3 (Ref Page 143)

### List of Codes/Guidelines for Safety of Building/Structures

As these codes and guidelines are being updated from time to time by different Institutions/ organizations therefore the latest updated version shall be referred at the time of conceiving a project. List has been attempted which may not be complete.

# I. General Structural Safety

- 1. BIS National Building Code 2005
- 2. IS: 456:2000 "Code of Practice for Plain and Reinforced Concrete
- 3. IS: 800-1984 "Code of Practice for General construction in Steel
- 4. IS: 801-1975 "Code of Practice for Use of Cold Formal Light Gauge Steel Structural Members in GeneralBuilding Construction
- 5. IS 875 (Part 2) : 1987 Design Loads (other than earthquake) for buildings and structures part 2Imposed Loads
- 6. IS 875 (Part 4) : 1987 Design Loads (other than earthquake) for buildings and structures part 4 SnowLoads
- 7. IS 875 (Part 5) : 1987 Design Loads (other than earthquake) for buildings and structures part 5special load and load combination
- 8. IS: 883:1966 "Code of Practice for Design of Structural Timber in Buildings
- 9. IS: 1904:1987 "Code of Practice for Structural Safety of Buildings: Foundation's
- 10. IS:1905:1987 "Code of Practice for Structural Safety of Buildings: Masonry Walls
- 11. IS 2911 (Part 1): Section 1: 1979 "Code of Practice for Design and Construction of Pile FoundationSection 1

Part 1: Section 2 Based Cast-in-situ Piles

Part 1: Section 3 Driven Precast Concrete PilesPart 1: Section 4 Based precast Concrete Piles Part 2: Timber Piles

Part 3: Under Reamed PilesPart 4: Load Test on Piles

# II. Protection from Cyclones / Wind Storms

- 1. IS 875 (3) -1987 "Code of Practice for Design Loads (Other than Earthquake) for Buildings and Structures, Part 3, Wind Loads"
- 2. IS: 15498 2004 "Guidelines for construction of cyclone shelters."
- 3. IS: 15498 2004 "Guidelines for improving the cyclonic resistance of low rise houses & otherbuilding/structures.
- 4. Guidelines (Based on IS 875 (3)-1987) for improving the Cyclone Resistance of Low rise houses andother building.

# III. Earthquake Protection

- 1. IS: 1893-2002 "Criteria for Earthquake Resistant Design of Structures (Fifth Revision)"
- 2. IS: 13920-1993 "Ductile Detailing of Reinforced Concrete Structures subjected to Seismic Forces CodePractice"
- 3. IS:4326-1993 "Earthquake Resistant Design and Construction of Buildings Code of Practice (SecondRevision)"

- 4. IS:13828-1993 "Improving Earthquake Resistance of Low Strength Masonry Buildings -Guidelines"
- 5. IS:13827-1993 "Improving Earthquake Resistance of Earthen Buildings -Guidelines"
- 6. IS:13935-1993 "Repair and Seismic Strengthening of Buildings Guidelines"

# IV. Flood Management / River Valley Projects

- 1. IS: 4189-1985 "Guide for preparation of project report for river valley projects."
- 2. IS: 4410 (Part 3): 1988 "Glossary of terms relating to river valley project part 3 River and river training."
- 3. IS: 4410 (Part 11): Sec 5-1977 "Glossary of terms relation to river valley projects: Part 11 HydrologySection 5 Floods."
- 4. IS: 4410 (Part 21): 1987 "Glossary of terms relating to river valley projects: Part 21 Flood control."
- 5. IS:11532-1995 "Construction and maintenance of river embankments (levees) Guidelines"
- 6. IS: 12094 2000 "Guidelines for planning and Design of River Embankments (Levees)"
- 7. IS: 14262 1995 "Planning and design of revetments Guidelines".
- 8. IS: 5477 (Part 4) : 1971 "Methods for Fixing the capacities or reservoirs: part 4 Flood storage"
- 9. IS: 7323 1994 " Operation of Reservoirs Guidelines".
- 10. IS: 8408 1994 "Planning and design of groynes in alluvial river Guidelines".
- 11. IS: 14815 2000 "Design Flood for River Diversion Works Guidelines".

# V. Landslide Hazard

- 1. IS: 14458 (Part 1): 1998 Guidelines for retaining wall for hill area: Part 1 Selection of type of wall.
- 2. IS: 14458 (Part 2): 1997 Guidelines for retaining wall for hill area: Part 2 Design of retaining? Breastwalls.
- 3. IS: 14458 (Part 3): 1998 Guidelines for retaining wall for hill area: Part 3 Construction of dry stone walls.
- 4. IS: 14496 (Part 2): 1998 Guidelines for preparation of landslide Hazard Zonation maps in mountainousterrains: Part 2 Macro-Zonation.
- 5. IS: 14680: 1999 Guidelines for land slide control.
- 6. IS: 14948: Code of practice for Reinforcement of Rock Slopes with plain edge of failure
- 7. BIS 12023: Code of practice for Field Monitoring and Movement of Structures using Tape Extensioneter.
- 8. BIS: 14804: Guidelines for Sitting, Designing and selection of materials for Residential Building in Hilly Areas.

### VI. For Protection of Saline Embankments and Coastal Canals

- 1. IS: 8835 1978 "Feasibility study and preparation of preliminary project report".
- 2. IS: 10635 1993 (reaffirmed 2003) "Freeboard requirements in embankments and dams".
- 3. IS: 12169 1987 "Criteria for design of small embankment dams."

- 4. IS: 8835-1978: Feasibility study, preparation of
- 5. IS: 12094 1978: Preliminary Project Report
- 6. IS: 10635 1993 (reaffirmed 2003): Freeboard requirements in embankments in embankments anddams.
- 7. IS: 11532 1995 (reaffirmed 2005): Construction and maintenance of river embankments
- 8. IS: 12094 2000 (reaffirmed 2005): Planning and design of river embankment
- 9. IS: 12169 1987: Criteria for design of small embankments dams.

#### VII. Railway Codes & Manuals - RDSO Publications

- 1. RBF 20: "Estimation of design discharge based on regional flood frequency approach for sub-zones3(a), 3(b), 3(c), 3(e)".
- 2. RBF 22: "50 year 24 hour set of is pluvial maps of India maps of short duration ratios".
- 3. RBF 23: "Validation of flood estimation report No.UTN-7-1983 for sub-zone-3 (f)".
- 4. RBF 24: "Validation of flood estimation report No.3/1980 for sub-zone-3 (f)".
- 5. RBF 25: "Estimation of design discharge based on regional flood frequency approach for sub-zone-3(f)".
- 6. RBF 26: "Validation of flood estimation report No.UGP-9-1984 for sub-zone-1 (e)".
- 7. RBF 27: "Validation of design discharge based on regional flood frequency approach for sub-zone-3(e)".
- 8. RBF 28: "Estimation of design discharge based on regional flood frequency approach for sub-zone-3(i)".
- 9. RBF 29: "Estimation of design discharge based on regional flood frequency approach of sub-zone-3(b)".
- RBF 32: "Validation of flood estimation report no.c/16/1988 subzone 1 (b) (chambal basin)".
- 11. RBF 33: "Estimation of design discharge based on regional flood frequency approach for sub-zone-1 (d) (sone basin)".
- 12. RBF 34: "Validation of flood estimation report no.S/15/1987 sub-zone-1 (d) (sone basin)".13.GE 1: "Guidelines Erosion control on slopes of banks and cuttings".

GE - 6: "Guidelines for earthwork in conversion projects".

### VIII. Indian Road Congress (IRC) Codes/Manuals

- 1. IRC: 5 -1998 (Seventh Revision) "Standard specifications and codes of practice for Road, BridgesSection 1 General features of Design".
- 2. IRC: 10-1961 "Recommended Practice for Borrow pits for Road Embankments constructed by ManualOperation".
- 3. IRC: 34-1970 "Recommendations for Road Construction in Waterlogged Area".
- 4. IRC: 36-1970 "Recommendations Practice for the construction of Earth Embankments for Road Works".
- 5. IRC: 45-1972 "Recommendations for Estimating the Resistance of Soil Below the Maximum ScourLevel in the Design of well foundations of Bridges".

- 6. IRC: 52-2001 (Second Revision) "Recommendations about the Alignment Survey and Geometric Design of Hill Roads."
- 7. IRC: 56-1974 "Recommendations Practice for treatment of Embankment Slopes for Erosion Control."
- 8. IRC: 75-1979 "Guidelines for the Design of High Embankments."
- 9. IRC: 78-2000 (Second Revision) "Standard specifications and Code of practice for road, bridges, sectionVII Foundations and substructure.
- 10. IRC: 89-1997 (First Revision) "Guidelines for Design and Construction of River Training and ControlWorks for Road Bridges".
- 11. IRC: 104-1988 "Guidelines for Environmental Impact Assessment of Highway Projects".
- 12. IRC: SP: 13-2004 (First Revision) "Guidelines for the Design of Small Bridges and Culverts."
- 13. IRC: SP: 35-1990 "Guidelines for Inspection and Maintenance of Bridges".
- 14. IRC: SP: 42-1994 "Guidelines on Road Drainage".
- 15. IRC: SP: 50-1999 "Guidelines of Urban Drainage".
- 16. IRC: SP: 54 -2000 " Project preparation Manual for Bridges".
- 17. IRC: 6 2000 "Standard specifications and code of practice for road bridges section II Loads &Stresses".
- 18. IRC: SP: 57 -2001 "Guidelines for quality systems for road construction."
- 19. IRC: 28 1967 "Recommendation of road construction in water logged areas".
- 20. IRC: SP: 26 1984 "Project preparation manual for bridges".
- 21. IRC: 87 1984 "Guidelines for design and erection."
- 22. IRC: 21 2000 "Standard specification and codes for roads and bridges."
- 23. IRC: SP: 20 2002 "Rural Roads."
- MORT & H Pocket Book for Highway Engineers, 2002 (Second Revision) IRC: SP33: 1989 Guidelines on supplemental Measures for Design, Detailing & Durability of ImportantBridge Structures.

# Annexure 4 (Ref Page 143)

## **Check List for Disaster Impact Assessment**

Name of the Project:

State:

District:

Project Estimate Rs. (In Lakhs)

# 1. Sitting of the Project

Location of Project site

- Latitude
- Longitude
- Height above mean sea level

Earthquake Zone (Any known geological fault nearby may be listed)

Flood proneness & Vulnerability:

- Past history of floods the area
- Observed Highest flood level
- Frequency of flooding
- Depth of flooding
- Duration of flooding
- Damage/loss (maximum, average, potential)

Cyclone Proneness (If close to sea coast) & Vulnerability:

- Frequency and Intensity
- Wind speed zone information on highest wind speed
- Distance of site from sea coast
- Record of past storm surge

Landslide Proneness & Vulnerability:

- Location of Hill slope vis-a-vis the project's location
- Past history of landslides,
- Possibility of mud flows/rock falls/snow avalanches etc.

Tsunami proneness (If close to sea coast) & Vulnerability:

• Past history

Existence of Dams or Barrages upstream

- Distance from the project. Was dam breach effect considered on the project?
- If so, have the dam break analyses been carried out? Has their impact on safety of the project been evaluated?

# 2. Natural / Type of Project

All the projects of the natural/type mentioned below are liable to damage by natural disasters and inadequacies of design or any of their components is likely to accentuate the vulnerability of the area to the disasters and / or lead to rise in damage/loss to lives, property, livelihood systems environment,

- Communications: towers, lines, building
- Transportation: Roads, Railways, Bridges, Tunnels
- Power: Power houses, sub stations, power lines
- Water Resources: Dams, barrages, appurtenant structures, river training structures, Canals
- Habitations: townships- planning from the point of view of safety against hazards
- Water supply and sanitation projects including water supply and sewer lines
- Ports & Harbors
- Building projects
- Any other

# 3. Hazards Risk to the Project

Have the following been evaluated:

- Probable maximum seismicity at site and site dependant seismic design parameters
- Probable Maximum storm surge
- Probable Maximum wind speed
- Probable Maximum precipitation
- Probable maximum flood discharge and level
- Probability of occurrence of floods, earthquakes, landslides, mud flows, avalanches, cyclones, tsunamis
- Soil liquefaction proneness under probable earthquake intensities

### 4. Mitigation / Reduction of Risk:

There are specific codes, manuals, guidelines etc. developed by Bureau of Indian Standards, NDMA and concerned organizations for sitting, design, construction and maintenance of various types of infrastructures, Indicative and not exhaustive list of some of them is at Annex-2.

Have the relevant BIS codes and guidelines been complied with?

Have adequate safeguards to meet the risks of natural hazards as evaluated at Para 3 above, been adopted?

# 5. Impact of the project on People and Environment

Has the impact of the environment and the people been studied with the respect to the following andwhat mitigation measures have been adopted? An illustrative but not exhaustive list of scenarios is given below:

The earthquakes and landslides may damage the pipelines to transport and storages to store harmful and inflammable materials and gases in the project area. Has any study been made toassess the danger to the environment and the people posed by those occurrences? And if so what measures have been proposed?

The railway lines and roads run across the drainage lines and if adequate waterways at appropriate locations are not provided, it may result in rise in water level and drainage congestion in up-stream areas. Has this aspect been studied and if so, what mitigation measures have been proposed?

Land-slides triggered by earthquakes as well as due to inherent instability of slopes accentuated by rains, may lead to blockage of drainage channels and accumulation of water upstream. These blockages may collapse due to their inherent instability or aided by rains. Men, machines and explosives can also be used to remove blockage and reduce flooding upstream. These lead to sudden release of water and flooding and erosion in down-stream areas. It may be stated whether any study has been carried out in this regard and what mitigation measures have been proposed?

As all the projects involve acquisition of land and influx of large number of people in the area to take up construction activities, it may result in deforestation and soil erosion. Measures for prevention of deforestation and arresting soil erosion are required to be taken. It may be stated whether any study has been carried out in this regard and what mitigation measures have been proposed?

If the project involves storage of water, failure of any component may cause flooding and large scale damage to lives, property and infrastructure etc. Please state whether nay study has been made and if there is a possibility thereof, what measures have been proposed to meet the eventuality?

# Annexure – 5 (Ref Page 165)

### Facilities at SEOC, Gandhinagar

- 1. State Control Room
- 2. Reception Room
- 3. Waiting Room
- 4. Exhibition Room
- 5. Media Room
- 6. Room for Hon'ble Ministers and Senior Officers
- 7. Small Control Room
- 8. Facility Management Room
- 9. State Alert & Warning Facility
- 10. State of art Conference Room with video conferences facilities
- 11. Department Room 6
- 12. Designing and Consulting room for GSDMA
- 13. Rest Room -2
- 14. Ladies and Gents wash Rooms General
- 15. Pantry Room
- 16. Electric Room
- 17. Incident Commander Chamber
- 18. CEO GSDMA Chamber
- 19. Chamber for Relief Commissioner
- 20. Lounge Room
- The SEOC compound also has the following utilities:
- 1. Garden
- 2. Fire Fighting System
- 3. Parking
- 4. Generator Room 160 KVA
- 5. Security Cabin and main gates
- 6. Water Harvesting System
- 7. Electric and Transformer Room 315 KVA

Each room has been provided with air conditioning system and CCTV cameras. SEOC is also equipped with fire extinguishers, announcing systems and smoke detectors. SEOC also has adigital display board to display early warning, rainfall data, relevant information etc. to public.

### Annexure 6 (Ref Page 170)

### Incident Response System- Roles & Responsibilities

#### **Incident Commander (IC)- Chief Secretary**

- Obtain information on:
  - Situation status like number of people and the area affected etc.
  - availability and procurement of resources
  - Requirement of facilities like Incident Command Post (ICP), Staging Area, IncidentBase, Camp, Relief Camp, etc.
  - availability and requirements of Communication system
  - future weather behavior from IMD; and other relevant agencies
  - any other information required for response from all available sources and analyze the situation
- Determine incident objectives and strategies based on the available information and resources. Establish priorities of the same.
- Assess requirements for maintenance of law and order, traffic etc. and make arrangements withhelp of the local police
- Establish Incident Command Post (ICP) at a suitable place. There will be one ICP even if the incident is multijurisdictional.
- Ensure that the Incident Action Plan (IAP) is prepared and team members are briefed about it.
- Approve and authorize the implementation of an IAP and ensure that IAP is regularly developed and updated as per debriefing of Incident Response Team (IRT) members. It will be reviewed every 24 hours and circulated to all concerned
- Ensure proper coordination between all Sections of the IRT, agencies working in the response activities and make sure that all conflicts are resolved
- Consider requirement of resources, equipment which are not available in the functional jurisdiction, discuss with Planning Section Chief (PSC) and Logistic Section Chief(LSC) and inform Responsible Officer (RO) regarding their procurement
- If required, establish contact with Panchayati Raj Institutions (PRIs), Urban Local Bodies (ULBs), Community Based Organizations (CBOs), NGOs etc. and enlist their support to act as local guides in assisting the external rescue, relief teams and for any other relevant task.
- Approve the deployment of volunteers and such other personnel and ensure that they follow the chain of command
- Authorize release of information to the media
- Review public complaints and recommend suitable grievance redressal measures.

#### Information & Media Officer (IMO)- Commissioner of Information

- Prepare and release information about the incident to the media agencies and others with the approval of Incident Commander (IC).
- Minutise decisions taken and directions issued in case of sudden disasters when the Incident Response Team has not been fully activated and hand it over to the Planning Section (PS) on its activation for incorporation in the Incident Action Plan
- Monitor and review various media reports regarding the incident that may be useful for incident planning
- Organize meetings as directed by the Incident Commander as & when required;
- Coordinate with IMD to collect weather information and disseminate it to all concerned
- Maintain record of various activities performed

#### Safety Officer (SO) – Hazard Specific Department Secretary

- Recommend measures for assuring safety of responders.
- Assess or anticipate hazardous and unsafe situations and review it regularly
- Obtain details of accidents that have occurred within the incident area if required or as directed by Incident Commander and inform the appropriate authorities
- Review and approve the Site Safety Plan, as and when required
- Maintain record of various activities performed

### Liaison Officer (LO)-Secretary, GAD

- Maintain a list of concerned line departments, agencies (CBOs, NGOs, etc.) and theirrepresentatives at various locations
- Carry out liaison with all concerned agencies including NDRF and Armed Forces and line departments of Government
- Monitor Operations to identify current or potential inter-agency problems
- Participate in planning meetings and provide information on response by participating agencies
- Keep the Incident Commander informed about arrivals of all the Government and Non-Government agencies and their resources
- Help in organizing briefing sessions of all Governmental and Non-Governmental agencies with the Chief Secretary
- Maintain record of various activities performed

#### Law & Order Maintenance Officer (LOM)-Director General of Police

- Ensure proper mechanism for crowd management & public address so as to prevent any rumorsor stampede like situation
- Provide security/ cordon off to evacuated structures so as to prevent cases of thefts
- Provide security to affected population with an aim to prevent human trafficking

#### **Operation Section Chief (OSC) – Director of Relief**

- Coordinate with the relevant Section Chief (Planning, Operation and Logistics)
- Manage all field operations for the accomplishment of the incident objectives
- Deploy, activate, expand and supervise organizational elements (Branch, Division, Group, etc.) in his Section in consultation with Incident Commander/Chief Secretary and in accordance with the Incident Action Plan.
- Assign appropriate personnel, keeping their capabilities for the task in mind and maintain On Duty Officers list (IRS Form-007) for the day as enclosed in **Annexure-VII**
- Prepare Section Operational Plan in accordance with the Incident Action Plan; if required
- Determine the need for additional resources and place demands accordingly and ensure their arrival
- Ensure record of various activities performed by members of Branches, Divisions, Units/Groups are collected and maintained

### Staging Area Manager (SAM)-Dy.Collector, Relief

- Establish the Staging Area with proper layout and ensure that there is no obstruction to the incoming and outgoing vehicles, resources etc.
- Organize storage and dispatch of resources received and dispatched it as per Incident ActionPlan.
- Report all receipts and dispatches to Operation Section Chief (OSC)/Director of Relief and maintain their records
- Utilize all perishable supplies expeditiously
- Ensure that communications are established with the Incident Commandant Post and other required locations e.g. different Staging Areas, Incident Base, Camp, Relief Camp etc
- Maintain and provide resource status to Planning Section (PS) and Logistics Section (LS)
- Demobilize Staging Area in accordance with the Demobilization Plan
- Maintain record of various activities performed and send to Sections concerned

#### **Response Branch Director (RBD) – Mamlatdar**

- Work under the supervision of the Operation Section Chief (OSC)/ Director of Relief and is responsible for the implementation of Incident Action Plan as per the assigned role
- Attend planning meetings & Review Assignment Lists for Divisions/Groups under his Branch
- Assign specific tasks to Division and Groups-in-Charge
- Report to the Operation Section Chief (OSC)/ Director of Relief regarding modifications required if any in the Incident Action Plan, need for additional resources, availability of surplus resources and when hazardous situations or significant events occur, etc.
- Provide Single Resource, Strike Team and Task Force support to various operational areas
- Ensure that all team leaders maintain record of various activities performed relating to their field Operations and send to Operation Section Chief (OSC)/ Director of Relief

#### **Division Supervisor (DS) - Dy. Mamlatdar**

- Implement Division or Group assignment list
- Report on the progress of Operations, and the status of resources within the Division or Group
- Circulate Organizational Assignment List (Divisional / Group) to the leaders of the Group, StrikeTeam and Task Force
- Review assignments and incident activities with subordinates and assign tasks as per the situation
- Coordinate activities with adjacent Divisions or Groups, if required
- Submit situation and resource status to the Response Branch Director (RBD)/Mamlatdar & the Operation Section Chief (OSC)/ Director of Relief
- Report all hazardous situations, special occurrences or significant events (e.g., accidents, sickness, deteriorating weather conditions, etc.) to the Response Branch Director (RBD)/Mamlatdar & the Operation Section Chief (OSC)/ Director of Relief
- Ensure that record of various activities performed are collected and sent to the Response Branch Director (RBD)/Mamlatdar & the Operation Section Chief (OSC)/ Director of Relief

### Single Resource Leader/ Task Force Leader- Dy. Mamlatdar

- Take charge of necessary equipment and supplies
- Assess local weather and environmental conditions, law and order situation etc. in the assigned area and report to the in-charge

#### Transportation Branch Director (TBD)-Commissioner of Ports & Transport

- Activate and manage different Operations Groups like Road, Rail, Water and Air
- Coordinate with the Logistics Section for required resources, and activate Groups of this Branch
- Coordinate with railways, road transport, waterways and airport authorities for support as required
- Ensure that Organizational Assignment List (Divisional / Group) is circulated among the Group-incharge(s) and other responders of his Branch
- Provide ground support to the air operations and ensure appropriate security arrangements
- Provide Road transport support to the Rail and Water Operations Group as required
- Ensure safety of all personnel of his Branch involved in the Incident Response activities
- Ensure that all units moving in the area are familiarized with route with the help of road maps orlocal guides
- Report to the Operation Section Chief (OSC)/ Director of Relief and Incident Commander about progress of the Transportation Branch
- Determine the need for additional resources, their proper and full use and place demand accordingly in advance
- Ensure the maintenance of the status of hired resources, their full utilization and timely release
- Ensure that the record of various activities performed by different operational groups (Road,Rail, Water and Air) are collected and sent to the Section concerned

#### Group In-charge (Road Operations)-Dy. Secretary (R&B)

- Ensure transportation of resources by Road to the affected sites
- Determine coordination procedures with various destinations as per Incident Action Plan
- Ensure proper parking locations
- Update Road Operations plan as required and share them with higher authorities
- In case of accidents, inform the Transportation Branch Director/ Commissioner of Ports & Transport, the local police and provide assistance in investigation, if required
- Ensure that mechanics are available for repair of vehicles and also ensure adequate availability of Petrol, Oil and Lubricants (POL)
- Maintain the records of all important activities relating to the number of vehicles deployed, source of vehicles (i.e. Government or private), locations where vehicles are deployed along with resource details they are carrying, etc.
- Support and coordinate the Road Operations part of the Rail, Water and Air Operations as required
- Collect record of various activities performed from coordinator and other members and send to Transportation Branch Director/ Commissioner of Ports & Transport or Operation Section Chief(OSC)/ Director of Relief

### Group In-charge (Rail Operations)- Divisional Manager Western Railway

- Ensure safe storage and warehousing of the materials
- Evaluate storage locations, ensure safety and obtain guidance from the Transportation Branch Director/ Commissioner of Ports & Transport, if required
- Coordinate with Road Operations Group for movement of resources
- Prepare and provide Rail Operations Summary including time of departure and arrival, destinations, resource details, etc as and when required by the senior officers
- Request for additional personnel support, if required
- Update Rail Operations Plan & the TBD from time to time and seek support, if required
- Establish and maintain communications with various storage and warehousing areas, destination points and railway officers
- Collect record of various activities performed IRS from Coordinator and other in-charges and send to Transportation Branch Director/ Commissioner of Ports & Transport or Operation Section Chief (OSC)/ Director of Relief

#### Group In-charge (Water Operations) – MD GMB

- Ensure transportation of rescue teams and relief materials by motor boats / country boats or by any other water transport to the affected sites with communication facilities and a local guide for guidance with each team.
- Determine coordination procedures with various destinations as per Incident Action Plan
- Supervise all Water Operations and related activities associated with the incident
- Evaluate and ensure docking or harboring locations
- Update Water Operations plan and share it with the higher authorities, including the Logistic Section Chief.
- Arrange for an accident investigation team as and when required and cooperate with the appropriate investigating authorities
- Ensure availability of Petrol, Oil and Lubricants (POL) and other logistic support for boat operations
- Collect record of various activities performed from Coordinator and other in-charges and send to Transportation Branch Director/ Commissioner of Ports & Transport or Operation Section Chief (OSC)/ Director of Relief.

#### Nodal Officer (Air Operations) - Director Civil Aviation

- Coordinate with concerned authorities for air operations
- Project the type of Air support required to the appropriate authorities based on the Incident Action Plan and place the demand at least 24 hours in advance or as early as possible
- Inform the Incident Commander/Chief Secretary and Operation Section Chief (OSC)/ Director of Relief about the Air movements and landing schedules in their respective areas.
- Ensure that relevant maps of the incident locations are available with all agencies involved in the Air Operations to give the correct coordinates etc. of the locations where Air support is required
- Determine the suitability of Helipads or Helibases in coordination with the Air Force authorities and the State authorities
- Maintain communication with Air Traffic Control and the ground support staff regarding the Air movements and other related activities
- Assist the Incident Commander/Chief Secretary and the Logistic Section Chief in the procurement of required Aviation Turbine Fuel etc.
- Report on Air Operations activities to the Responsible Officer

#### **Group In-charge (Air Operations)**

- Provide ground support to Air Operations as per the Incident Action Plan
- Report to Transportation Branch Director/ Commissioner of Ports & Transport the progress of Air Operations and work in close coordination with the Nodal Officer, Incident Commander, Operation Section Chief and Transportation Branch Director/ Commissioner of Ports & Transport.
- Ensure resources and supplies required for the Air Operations are available at the concerned locations
- Keep appropriate maps in order to provide correct coordinates to the pilots and others involved in the Air Operations
- Ensure refueling facilities are available at the landing and takeoff locations
- Ensure that helibase and Helipad locations are identified, marked and approved by the appropriate authorities
- Determine the need for assignment of personnel and equipment at each helibase and helipad
- Ensure that the communication systems are in place
- Update landing and takeoff schedule of aircrafts and helicopters as informed by Nodal Officer.
- Ensure preparation of the load manifest for proper loading or unloading of relief supplies
- Arrange for unloading and dispatch or storage of relief materials that arrive at the airports, helipads and helibase. In order to keep airports operational, special attention needs to be paid to unsolicited relief supplies that may arrive. They should be immediately cleared from the operational area
- Ensure that proper packaging and weighing facilities are in place and used for loading of relief materials
- Liaise with the road operations group for the road transportation needs
- Ensure the functionality of Aircraft rescue and firefighting service at helibases, helipads, security, proper lights, smoke candles/devices, weighing facilities, wind direction socks, etc. arein place
- Collect record of various activities performed from helibase and helipad-in-charge and send to Commissioner of Ports & Transport/Incident Commander

#### Planning Section Chief (PSC)-Secretary of Line Department

- Coordinate with the activated section chiefs for planning and preparation of Incident Action Plan in consultation with Incident Commander.
- Ensure that decisions taken and directions issued in case of sudden disasters when the PlanningSection had not been activated are obtained from the Information & Media Officer and incorporated in the Incident Action Plan.
- Ensure collection, evaluation, and dissemination of information about the incidents including weather, environment toxicity, availability of resources etc. from concerned departments and other sources. The Planning Section must have a databank of available resources with their locations from where it can be mobilized
- Coordinate by assessing the current situation, predicting probable course of the incident and preparing alternative strategies for the operations by preparing the Incident Action Plan. It includes:
  - $\circ~$  Initial information and assessment of the damage and threat
  - Assessment of resources required Operations briefing
  - o Implementation & Review of IAP
  - Formulation of incident objectives for the next operational period, if required
- Ensure that Incident Status Summary is filled and incorporated in the IAP
- Ensure that Organizational Assignment List (Divisional / Group) is circulated among the Unitleaders and other responders of his Section
- Plan to activate and deactivate Incident Response System organizational positions asappropriate, in consultation with the Chief Secretary and Director of Relief
- Determine the need for any specialized resources for the incident management
- Utilize IT solutions for pro-active planning, GIS for decision support and modeling capabilities for assessing and estimating casualties and for comprehensive response management plan
- Provide periodic projections on incident potential
- Report to the Chief Secretary/Incident Commander of any significant changes that take place in he incident status
- Compile and display incident status summary at the Incident Commandant Post
- Oversee preparation and implementation of Incident Demobilization Plan
- Assign appropriate personnel, keeping their capabilities for the tasks in mind and maintain onDuty Officers List for the day
- Ensure that record of various activities performed by members of Units are collected and maintained

### Resource Unit Leader (RUL)-Respective Line Department Officer

- Maintain and display the status of all assigned resources (Primary and Support) at the incident site by overseeing the check-in of all resources, and maintaining a resource status-keeping system. Primary resources are meant for responders and support resources are meant for affected communities
- Compile a complete inventory of all resources available. He will also access information about availability of all required resources at other locations and prepare a plan for their mobilization, if required. IDRN, CDRN and IDKN facilities will also be used for this purpose
- Ensure and establish Check-in function at various incident locations
- Update the Secretary of the department and Incident Commander about the status of resources received and dispatched from time to time
- Coordinate with the various activated Branches, Divisions and Groups of OS for checking statusand utilization of allotted resources
- Ensure quick and proper utilization of perishable resources
- Maintain record of various activities performed and send to Section concerned

#### Situation Unit Leader (SUL)-Respective Line Department Officer

- Collect process and organize all incident information as soon as possible for analysis. For such purposes, he can take the help of members of the Single Resource, Task Forces, Strike Teams, field level Government officers and members of PRIs, CBOs, NGOs etc;
- Prepare periodic future projections of the development of the incident (along with maps if required) and keep the Secretary of the department and Chief Secretary informed
- Prepare situation and resource status reports and disseminate as required
- Provide authorized maps, photographic services to responders, if required
- Attend Incident Action Plan Meeting with required information, data, documents and Survey ofIndia maps etc
- Maintain record of various activities performed and send to Section concerned

### Documentation Unit Leader (DUL)-Respective Line Department Officer

- Ensure that all the required forms and stationery are procured and issued to all the activated Sections, Branches, Divisions, Groups and Units
- Compile all information and reports related to the incident
- Review and scrutinize the records and various Incident Response System forms for accuracy and completeness.
- Inform appropriate Units of errors or omissions in their documentation, if any, and ensure thaterrors and omissions are rectified
- Maintain record of various activities performed and send to sections concerned

### Demobilization Unit Leader (Demob. UL)-Respective Line Department Officer

- Prepare Incident Demobilization Plan (IDP)
- Identify surplus resources and prepare a tentative IDP in consultation with the PSC and givepriority to demobilization of surplus resources
- Develop incident check-out functions for Sections, Branches, Divisions and units in consultation with all Sections and send to the Planning Section
- Plan for logistics and transportation support for Incident Demobilization in consultation withLogistic Section
- Disseminate Incident Demobilization Plan at an appropriate time to various stakeholdersinvolved
- Ensure that all Sections, Units, Teams and Resources understand their specific Incident Demobilization responsibilities and avail Demobilization facilities
- Arrange for proper supervision and execution of the Incident Demobilization Plan
- Request the PSC for additional human resources, if required
- Maintain record of various activities performed and send to Sections concerned

### Technical Support(TS)

- Provide technical support to the response management
- Function in close coordination with the Secretary of line department and Chief Secretary

### Logistic Section Chief (LSC)-Director of Relief

- Coordinate with the activated Section Chiefs
- Provide logistic support to all incident response effort including the establishment of StagingArea, Incident Base, Camp, Relief Camp, Helipad etc.
- Participate in the development and implementation of the Incident Action Plan
- Keep c informed on related financial issues
- Ensure that Organizational Assignment List (Divisional / Group) is circulated among the Branch Directors and other responders of his Section
- Request for sanction of Imprest Fund, if required
- Supervise the activated Units of his Section
- Ensure the safety of the personnel of his Section
- Assign work locations and preliminary work tasks to Section personnel
- Ensure that a plan is developed to meet the logistic requirements of the IAP with the help of Comprehensive Resource Management System
- Brief Branch Directors and Unit Leaders
- Anticipate over all logistic requirements for relief Operations and prepare accordingly
- Constantly review the Communication Plan, Medical Plan and Traffic Plan to meet the changing requirements of the situation
- Assess the requirement of additional resources and take steps for their procurement inconsultation with the Director of Relief
- Provide logistic support for the Incident Demobilization Plan as approved by the Chief Secretary
- Ensure release of resources in conformity with the Incident Demobilization Plan
- Ensure that the hiring of the requisitioned resources is properly documented and paid by the Finance Branch
- Assign appropriate personnel, keeping their capabilities for the tasks to be carried out and maintain On Duty Officers List
- Ensure that cost analysis of the total response activities is prepared;
- Ensure that record of various activities performed by members of Branches and Units are collected and maintained

#### Service Branch Director (SBD)-Dy Secretary, Revenue

- Work under the supervision of Logistic Section Chief and manage all required service support for the incident management
- Manage and supervise various activated Units of the Branch
- Discuss with activated Unit leaders for the materials and resources required and procure the samethrough Logistic Section;
- Ensure proper dispatch of personnel, teams, resources etc. as per the Incident Action Plan.
- Maintain record of various activities performed and send to sections concerned
- Perform any other duties assigned by the Chief Secretary

### Communication Unit Leader (Com. UL)-Director of Information

- Work under the direction of the Dy Secretary, Revenue and provide communications facility asand when required
- Ensure that all communications equipment available are in working condition and that the network is functional
- Supervise Communication Unit activities
- Maintain the records of all communications equipment deployed in the field and recover equipment provided by Communication Unit after the incident is over.
- Ensure setting up of a message centre to receive and transmit radio, telephone and other messages from various activated Sections, Branches, Units and higher authorities and maintain their records
- Prepare an alternative communication plan for execution in case of possible failure of the normal communications network. The alternative communications network may have wireless, satellitephones, cell phones, HAM radios etc
- Prepare a plan for integration of the communications set up of the central teams (NDRF, ArmedForces) with the local communications set up for the management of large scale disasters when they come to assist in the response effort
- Maintain record of various activities performed and send to SBD
- Perform any other duties assigned by the Director of Relief

### Medical Unit Leader (MUL)-Director Of Health

- Work under the direction of the Support Branch Director
- Prepare the Medical Plan and procurement of required resources as per Incident Action Plan, provide medical aid and ambulance for transportation of victims and maintain the records of thesame, obtain a road map of the area from the PS for the ambulance services, transportation of medical personnel and victims;
- Respond to requests of the Operation Section for medical aid, transportation and medical supplies etc. under intimation to the Dy Secretary, Revenue/Director of Relief
- Maintain the list of medical personnel who could be mobilized in times of need
- Prepare and circulate list of referral service centers to all the medical team leaders
- Maintain record of various activities performed and send to Dy Secretary, Revenue
- Perform any other duties assigned by the Dy Secretary, Revenue and Director of Relief

### Food Unit Leader (FUL)-Director, Food and Civil Supply

- Work under the direction of the Dy Secretary, Revenue
- Supply resources to various activated Sections, Branches, Units and Groups of IncidentResponse Team as per direction of the Dy Secretary, Revenue
- Supply food to:

a) Personnel of Incident Response Team (s) at Incident Command Post, Camps, Incident Base, SA, etc., and b) Victims at the temporary shelters, relief camps etc.

- Request for assistants if the task becomes very large. The Food Unit Leader (FUL) may request the Director of Relief to split the unit into two groups—one to supply food for personnel and another for victims. Requisition transport for supply of food to incident base, relief camp and other facilities
- Determine food and drinking water requirements and their transportation, and brief the Dy Secretary, Revenue and Director of Relief
- Maintain an inventory of receipt and dispatch of resources
- Supervise the Unit activities
- Maintain record of various activities performed and send to Dy Secretary, Revenue

# Support Branch Director (Sup. BD)-US/DS,GAD

- Work under the supervision of Director of Relief, and supervise the function of various activatedunits
- Procure and dispatch required tactical materials and resources for Operations with the concurrence of the Section Chief
- Participate in the planning meeting of the Logistics Section
- Maintain record of various activities performed and send to Section concerned

#### Resource Provisioning Leader (RPUL)-SO, Record Branch, Revenue

- Work under the supervision of Sup.BD and organize movement of personnel, equipment and supplies, etc.
- Receive and store safely all supplies required
- Maintain the records of receipt and dispatch of supplies including equipment and personnel
- Organize repair and servicing of non-expendable supplies and equipment
- Monitor the kind, type and quantity of supplies available and dispatched
- Receive and respond to requests for personnel, supplies and equipment from the activated sections, branches, divisions, units and groups
- Maintain record of various activities performed and send to Under Secretary/Deputy Secretary,GAD

### Facilities Unit Leader (Fac. UL)- US/DS, Revenue

- Prepare the layout and activation of incident facilities, e.g., Incident Base, Camp(s), Relief Camp(s), Incident Command Post, etc., and provide basic amenities to the responders
- Report to the Under Secretary/Deputy Secretary, GAD
- Locate the different facilities as per the Incident Action Plan
- Participate in the planning meeting of the section, prepare list for each facilities and its requirements in coordination with the Director of Relief
- Maintain record of various activities performed and send to Under Secretary/Deputy Secretary,GAD

# Ground Support Unit Leader (GSUL)- Head, RTO

- In case air operations are activated, organize and provide required ground support through Commissionerof Ports & Transport
- Provide maintenance and repair services for all the vehicles and related equipment used for incident management as per proper procedures and keep the concerned line departments informed through the Under Secretary/Deputy Secretary, GAD and Director of Relief
- Develop and implement the Incident Traffic Plan
- Inform Resource Unit about the availability and serviceability of all vehicles and equipment
- Arrange for and activate fueling requirements for all transport including aircrafts in consultation with theUnder Secretary/Deputy Secretary, GAD
- Maintain inventory of assigned, available and off road or out of service resources
- Ensure safety measures within his jurisdiction
- Maintain record of various activities performed and send to the Under Secretary/Deputy Secretary, GAD

# Finance Branch Director (FBD)- Director of Relief

- Work under the Logistic section chief (LSC) and attend planning meetings
- Prepare a list of resources to be mobilized, procured or hired in accordance with the IAP. Obtainorders of the competent authority as per financial rules and take steps for their procurement without delay
- Ensure that time records of hired equipment, personnel and their services are accuratelymaintained as per Government norms for payment.
- Examine and scrutinize cost involved in the entire response activity including the demobilization, analysis the cost effectiveness and keep the LSC informed
- Ensure that all obligation documents initiated at the incident are properly prepared, completed, verified and signed by the appropriate Section Chief and Branch Director
- Brief the Director of Relief or Chief Secretary on all incident related financial issues needing attention or follow-up
- Maintain record of various activities performed and send to Sections concerned

### Time Unit Leader (TUL) - Section Officer, Revenue Dept.

- Maintain time recording of hired equipment and personnel and ensure their maintenance on adaily basis and as per government norms
- Examine logs of all hired equipment and personnel with regard to their optimal utilization
- Ensure that all records are correct and complete prior to demobilization of hired resources
- Brief the Director of Relief on current problems with recommendations on outstanding issues, and any follow-up required
- Ask for additional support of human resources for assistance, if required
- Maintain record of the activities performed and send to Director of Relief

# Procurement Unit Leader (PUL) -Industries Officer, CSPO

- Attend to all financial matters pertaining to vendors and contracts
- Review procurement needs in consultation with the Director of Relief
- Prepare a list of vendors from whom procurement can be done and follow proper procedures
- Ensure all procurements ordered are delivered on time
- Coordinate with the FBD for use of imprest funds, as required
- Complete final processing of all bills arising out of the response management and senddocuments for payment with the approval of the Director of Relief, and Chief Secretary
- Brief FBD on current problems with recommendations on outstanding issues and follow-up requirements
- Maintain record of activities performed and send to Director of Relief

#### Compensation/ Claim Unit Leader (Com. / CUL)-Section Officer, S-4 Branch, Revenue Dept.

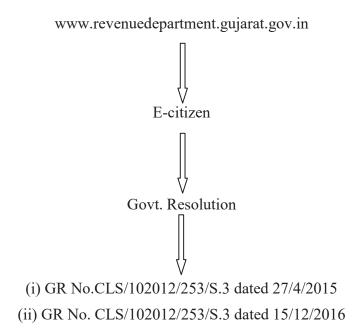
- Collect all cost data and provide cost estimates
- Prepare and maintain a list of requisitioned premises, services, resources and vehicles, etc. with correct date and time of such requisition
- Follow appropriate procedures for preparation of claims and compensation
- Requisition additional human resources, if required
- Maintain record of various activities performed and send to Director of Relief(/FBD)

# Cost Unit Leader (CUL)-Industries Officer, CSPO

- Develop incident cost summaries in consultation with the FBD on the basis of Cost AnalysisReport
- Make cost-saving recommendations to the FBD
- Complete all records relating to financial matters prior to demobilization
- Maintain record of various activities performed and send to FBD

# Annexure 7 (Ref Page 180) Detailed guidelines for providing relief

Detailed guidelines for providing relief to persons affected by disaster in the Statecan be downloaded from the website of Revenue Department, Government of Gujarat:



# Annexure 8 (Ref Page 181)

# **Relief Kits (Indicative)**

# 1. Immediate Family Relief Kit (For initial 1-2 days)

- a. Packaged drinking water
- b. Roasted peanuts/ roasted gram (chana)
- c. Salt, sugar
- d. Local snacks- thepla, khakra, flattened rice, sukhi puri, sev (dry snacks)
- e. Glucose biscuits
- f. Energy drink (Glucon-D/Electrolyte)

# 2. Family Ration Kit (1 Month)

Items	Description
Non Perishable Food Items	Milk (Powdered or canned)
	• Sugar- 1 kg
	• Salt- 1 kg
	• Tea leaves- 500gm
	• Jaggery (1 kg)
	• Local snacks- peanuts, <i>chana, khakhra,</i> flattened rice, etc
	• Dry fruits
	• Rice- 15 kg
	Green Moong Dal- 2 kg
	• Edible Oil- 2 kg
	• Spices- Red Chilli Powder (100 gm), Coriander Powder (100 gm), Turmeric Powder (100 gm)
Cooking Set and Associated	Bowl -5 (1 L, stainless steel)
Items	• Plates -5(deep, stainless steel, diameter 22 cm, capacity 0.75 L)
	• Cooking pot- 1 (7 L, stainless steel, diameter 24 cm, with handles)
	• Cup- 5(stainless steel, with handle, 300 ml)
	• Knife -1 (stainless steel)
	• Serving Spoons-2 (stainless steel)
	• Spoons -5 (stainless steel)
	• Scrubber pad -1 (for cleaning dishes)
	• Soap- 2
	Plastic Bucket-1
	• Plastic tumbler-1

# 3. Household Kit

Items	Description
Male Clothes	2
Female Clothes	4
Children Clothes	6
Blanket Cotton	1-2
Blanket Woolen	1
Mosquito Net	1-2
Tarpaulin White (4 x6 m)	1-2
Candle Packet	5
Match Box	5
Torch and Cell	1
Washing Powder	1kg
Bathing Soap	3
Detergent Soap	4
Toothpaste	2 tube (200gm)
Toothbrush	5
Sleepers	5 pair
Sanitary Napkins	3 packets
Blankets/ Bed sheets	3 (Depending on weather)
Tarpouline Sheets	2 (12'*8')

# Annexure 9 (Ref Page 184)

# Format for Damage and Loss Assessment (Relief Memorandum)

Structure Engineer:	A.	Inspection Team		Inspection Date & T	l'ime:	
Junior Engineer:		6				
Officer of Local Competent:		6				
Authority (from engg. section)       Area Inspected:       Exterior Only         Photographer:						
Photographer:		1				
B. Type of Disaster				Area Inspected:		
		Photographer:		L	Exterior & Interio	or
C       Location, Type & Occupancy of Building:         Location:       Brief Details:         Building Name:	B.	Type of Disaster				
Location:       Brief Details:         Building Name:       Number of stones above ground:         Address:       below ground:         Address:       below ground:		🗌 Earthquake	☐ Flood □	Fire Cyclone	🗌 Blast	Other
Building Name:       Number of stones       above ground:         Address:       below ground:         Address:       Parking Floor:       Ground Level         Basement Level       Approx. Footprint area (sqm):       No. of residential units:         Survey No.:       No. of residential units:       No. of residential units:         Final Plot No.:       No. of residential units:       No. of residential units:         Sub Plot No.:       not habitable         Town Planning Scheme No.:       No. of residential units:       No. of residential units:         (To be collected from Competent Authority)       Type of Construction       Reinforced Masonry         Masonry Construction       Kiln burnt bricks       Hollow Concrete Blocks         Unburnt bricks       Concrete Frame       Concrete Shear Wall         Random Rubble Uncoarsed       Dual System       Precast Concrete Construction         Steel Structure       Composite Structure       Composite Structure         Other:       Primary Occupancy:       Educational       Group Housing	С.	Location, Type & Occupa	ncy of Building:			
Address       below ground:	Loc	ation:		Brief Details:		
Parking Floor:       Ground Level         Contact:       Phone:       Approx. Footprint area (sqm):         Survey No.:       No. of residential units:       No. of residential units:         Survey No.:       No. of residential units:       No. of residential units:         Final Plot No.:       not habitable         Sub Plot No.:       not habitable         Town Planning Scheme No.:       not habitable         Town Planning Scheme No.:       Import Authority)         Type of Construction       Import Reinforced Masonry         Masonry Construction       Import Reinforced Masonry         Masonry Construction       Import Reinforced Masonry         Import Reinforced Masonry       Import Reinforced Masonry         Import Reinforced Reinforced Reinforc	Bui	lding Name:		Number of stones	above ground:	
	Add	ress:			below ground: _	
Contact:       Phone:       Approx. Footprint area (sqm):         Survey No.:       No. of residential units:       No. of residential units:         Final Plot No.:       not habitable         Sub Plot No.:       not habitable         Town Planning Scheme No.:       not habitable         Town Planning Scheme No.:       Kiln burnt bricks         Timber Construction       Kiln burnt bricks         Kiln burnt bricks       Hollow Concrete Blocks         Unburnt bricks       Concrete Frame         Random Rubble Uncoarsed       Concrete Shear Wall         Random Rubble Coarsed       Dual System         Hollow Concrete Blocks       Precast Concrete Construction         Steel Structure       Composite Structure         Other:       Composite Structure				Parking Floor:	Ground Level	
Survey No.:				. [	Basement Level	
Survey No.:       No. of residential units:         Final Plot No.:       No. of residential units:         Sub Plot No.:       not habitable         Town Planning Scheme No.:       not habitable         (To be collected from Competent Authority)       Type of Construction:         Timber Construction       Reinforced Masonry         Masonry Construction       Kiln burnt bricks         Unburnt bricks       Concrete Blocks         Random Rubble Uncoarsed       Concrete Shear Wall         Random Rubble Coarsed       Dual System         Hollow Concrete Blocks       Precast Concrete Construction         Steel Structure       Composite Structure         Other:       Group Housing	Cor	ntact:Pho	one:	Approx. Footprint a	rea (sqm):	
Final Plot No.:       No. of residential units:         Sub Plot No.:       not habitable         Sub Plot No.:       not habitable         Town Planning Scheme No.:       not habitable         (To be collected from Competent Authority)       Image: Construction image: Construction image: Construction image: Construction image: Concrete Blocks image: Concrete Construction image: Composite Structure image: Concrete Blocks image: Concrete Construction image: Composite Structure image: Concrete Construction image: Concrete Blocks image: Concrete Construction image: Concrete Blocks image: Concrete Construction image: Concrete Construction image: Concrete Construction image: Concrete Blocks image: Concrete Construction image: Concrete Constructimage: Concrete Construction imag				No. of residential	units:	
Sub Plot No.:		,				
Town Planning Scheme No.:				not hal	bitable	
(To be collected from Competent Authority)  Type of Construction  Timber Construction  Masonry Construction Kiln burnt bricks Unburnt bricks Unburnt bricks Random Rubble Uncoarsed Random Rubble Coarsed Hollow Concrete Blocks Precast Concrete Construction Steel Structure Other: Primary Occupancy: Individual House Commercial Comme						
Type of Construction:       Reinforced Masonry         Image: Masonry Construction       Kiln burnt bricks         Kiln burnt bricks       Hollow Concrete Blocks         Unburnt bricks       Concrete Frame         Random Rubble Uncoarsed       Concrete Shear Wall         Random Rubble Coarsed       Dual System         Hollow Concrete Blocks       Precast Concrete Construction         Steel Structure       Composite Structure         Other:       Group Housing	10%	/ii Flamining Scheme 140				
Timber Construction       Reinforced Masonry         Masonry Construction       Kiln burnt bricks         Kiln burnt bricks       Hollow Concrete Blocks         Unburnt bricks       Concrete Frame         Random Rubble Uncoarsed       Concrete Shear Wall         Random Rubble Coarsed       Dual System         Hollow Concrete Blocks       Precast Concrete Construction         Steel Structure       Composite Structure         Other:       Group Housing	(To	be collected from Competer	nt Authority)			
Masonry Construction       Individual House         Masonry Construction       Individual Individual House	Тур	e of Construction:				
Kiln burnt bricks       Hollow Concrete Blocks         Unburnt bricks       Concrete Frame         Random Rubble Uncoarsed       Concrete Shear Wall         Random Rubble Coarsed       Dual System         Hollow Concrete Blocks       Precast Concrete Construction         Steel Structure       Composite Structure         Other:       Other:		Timber Construction		Reinforced	Masonry	
Image: Construction of the construc		Masonry Construction		🗌 Kiln bu	rnt bricks	
Random Rubble Uncoarsed       Concrete Shear Wall         Random Rubble Coarsed       Dual System         Hollow Concrete Blocks       Precast Concrete Construction         Steel Structure       Composite Structure         Other:       Primary Occupancy:         Individual House       Commercial       Educational		🔲 Kiln burnt bricks		Hollow	Concrete Blocks	
<ul> <li>Random Rubble Coarsed</li> <li>Hollow Concrete Blocks</li> <li>Steel Structure</li> <li>Other:</li> </ul> Primary Occupancy:           Individual House         Commercial         Educational         Group Housing		<ul> <li>Unburnt bricks</li> </ul>		Concrete Fr	ame	
Hollow Concrete Blocks     Precast Concrete Construction     Steel Structure     Other:  Primary Occupancy:     Individual House     Commercial     Educational     Group Housing		🔲 Random Rubble Ur	ncoarsed	Concrete Sh	near Wall	
□ Steel Structure       □ Composite Structure         □ Other:       □ Composite Structure         Primary Occupancy:       □ Individual House         □ Individual House       □ Commercial       □ Educational		🔲 Random Rubble Co	arsed	🗌 Dual Systen	n	
Other:  Primary Occupancy:     Individual House      Commercial      Educational      Group Housing		Hollow Concrete B	ocks	Precast Con	crete Construction	
Primary Occupancy: Individual House Commercial Educational Group Housing		Steel Structure		Composite	Structure	
□ Individual House □ Commercial □ Educational □ Group Housing		Other:				
□ Individual House □ Commercial □ Educational □ Group Housing	Prir	nary Occupancy:				
			Commercial	Educational	C Gro	up Uqueing
□ Offices □ Restaurant □ School □ Tenaments		Offices	_		_	
Government     Hotel     College     Flats				—		
□ Semi Government □ Industrial □ University □ Historic				0		
Emergency Services     Cinema House, Auditoriums, Assembly Halls     Fire Stations					*	
Hospital     Other:						Stations

#### D. Assessment:

# Investigate the building for the conditions given below and check the appropriate column.

Observed Conditions	None	Minor	Moderate	Severe
<ul> <li>Collapse, partial collapse, or subsidence or uneven settlement of foundations</li> </ul>				
Building or story leaning				
Structural Damage to Bearing Walls				
Structural Damage to Frame Structure				
Columns				
Beams				
Column-Beam Junction				
Stairs				
Walls				
Other:				
<ul> <li>Parapet Wall, Architectural Elements, other Falling Hazard</li> </ul>				
<ul> <li>Subsidence of ground, cracking ground slope movement</li> </ul>				
Internal Services				
Water supply				
Drainage				
Electricity				
Lift				
Fire Fighting				
Site Hazards				
Gas				
Electricity				
Water Supply				
Drainage				
Storm Water				
Toxic Chemicals				
Other				

Sketches:

Photographers:

# **References:**

- 1. Are you prepared for Disasters? Mitigation and Management of Disasters by Rajni Sekhari Sibal, IAS Secretary GOI.
- 2. Bio security and Emergency Threats, Environmental and Engineering Health, John Hopkins University
- 3. Census of India (http://censusindia.gov.in).
- 4. CERT In (https://www.cert-in.org.in/)
- 5. COP 21 (http://www.cop21paris.org/).
- 6. Disaster Management Act, 2005.
- 7. Disaster Management in India: Challenges and Strategies by Dr. R. K. Dave
- 8. Environmental Impact Assessment Report for Kakrapar Atomic Power Project, National Environmental Engineering Research Institute, Nagpur & Nuclear Power Corporation of India Limited, Mumbai, October 2006.
- 9. gad.gujarat.gov.in
- 10. Gujarat Disaster Management Act, 2003.
- 11. Hazard Risk and Vulnerability Assessment Study by Gujarat State Disaster Management Authority, 2005.
- 12. http://censusindia.gov.in/vital_statistics/SRS_Bulletins/SRS_Bulletin-Rate-2017-_May_2019.pdf
- 13. http://www.barc.gov.in (Bhabha Atomic Research Center)
- 14. http://www.dae.gov.in (Department of Atomic Energy)
- 15. https://ehe.jhu.edu/research/research-areas/biosecurity-and-emerging-threats.html
- 16. https://en.wikipedia.org/wiki/SIM_swap_scam
- 17. https://forests.gujarat.gov.in/forest-cover.htm
- 18. https://gujaratindia.gov.in/state-profile/demography.htm
- 19. https://invest-india-revamp-static-files.s3.ap-south-1.amazonaws.com/s3fs-public/2020-03/Gujarat%20Socio%20Economic%20review.pdf
- 20. https://ncdp.columbia.edu/research/vulnerable-populations/
- 21. https://nhm.gujarat.gov.in/health-indicators-new.htm
- 22. https://portal.ct.gov/DPH/Public-Health-Preparedness/Main-Page/Biological-Emergencies
- 23. https://tribal.gujarat.gov.in/tribal-demography-of-gujarat#
- 24. https://www.ems.gov/pdf/CDC_Emergency_Preparednes_Response_Capabilities_October_20 18.pdf
- 25. https://www.futuremedicineindia.com/indian-healthcare-website-hacked-68-lakh-records-stolen- report/
- 26. https://www.npcil.nic.in/content/301_1_Kakrapar Atomic Power Project.aspx (Page on Kakrapar Atomic Power Project 3 & 4)
- 27. https://www.npcil.nic.in/content/504_1_KakaraparSite.aspx (Nuclear Power Corporation of India Limited)
- 28. https://www.nti.org (Nuclear Threat Initiative)
- 29. https://www.nti.org/learn/facilities/73 (Page on Kakrapar Atomic Power Station)

- 30. https://www.preventionweb.net/english/
- 31. India Meteorological Department (https://mausam.imd.gov.in/).
- 32. Indian National Centre for Ocean Information Services (https://incois.gov.in/hrd/hrd.jsp).
- 33. Institute of Seismological Research (https://isr.gujarat.gov.in/).
- 34. Intergovernmental Panel for Climate Change (https://www.ipcc.ch/).
- 35. Location identification from Rapid Evacuation from a disaster site: A case study from KAPS; paper issued in Research and Publications from Indian Institute of Management, Ahmedabad.
- 36. Management of Nuclear and Radiological Emergencies, National Disaster Management Guidelines, National Disaster Management Authority, February 2009.
- 37. Ministry of Communication and Information Technology (https://dot.gov.in/).
- 38. National Cyber Security Policy, 2013
- 39. National Disaster Management Authority (https://ndma.gov.in/en/).
- 40. National Disaster Management Plan 2019.
- 41. National Institute of Disaster Management (https://nidm.gov.in/).
- 42. National Institute of Oceanic Technology (https://www.niot.res.in/niot1/index.php).
- 43. NDMA guidelines on Biological Hazards,2008
- 44. NDMA guidelines on Chemical Disaster, 2007.
- 45. NDMA guidelines on Cyclone Management on Cyclone, 2008.
- 46. NDMA guidelines on Floods,2008
- 47. NDMA guidelines on Management of Earthquake, 2007.
- 48. NDMA guidelines on Urban Floods,2010
- 49. Preparation of State Disaster Management Plans, National Disaster Management Guidelines, National Disaster Management Authority, July 2007.
- 50. Public Health Emergency Preparedness and Response Capabilities: National Standards for State, Local, Tribal, and Territorial Public Health, U.S. Department of Health and Human Services Centers for Disease Control and Prevention.
- 51. Regional Specialized Meteorological Centre. (http://www.rsmcnewdelhi.imd.gov.in)
- 52. Report on developing a baseline document to capture and analyze existing approaches and methodologies for Hazard Risk and Vulnerability Assessment by Winrock International India.
- 53. Researchgate.net
- 54. Sendai Framework for Disaster Risk Reduction (https://www.undrr.org/).
- 55. shodhganga.inflibnet.ac.in
- 56. Socio Economic review of Gujarat 2019-2020.
- 57. State of Queensland Biological Disaster Management Plan, 2004, Queensland Government
- 58. Sustainable Development Goals (https://sustainabledevelopment.un.org).
- 59. The Disaster Management Act, 2005
- 60. The Information Technology Act, 2000
- 61. Urban Flood Real-Time Forecasting And Modeling: A State-Of-Threat Review, Justine Hénonin et al., 6-8 September 2010, MIKE by DHI Conference Copenhagen

- 62. Vulnerability Atlas of India (https://www.bmtpc.org/DataFiles/CMS/file/map%20of%20india/Vulnerability%20Atlas%20 of%20India.pdf).
- 63. Vulnerable Populations, Earth Institute, Columbia University, National center for disaster preparedness
- 64. www.ifrc.org
- 65. www.mohfw.gov.in
- 66. www.sciencedirect.com
- 67. www.who.int

_____

Government Central Press, Gandhinagar.