



ASSAM

STATE DISASTER MANAGEMENT PLAN

2022

Volume-2
(Strategic Action Plan)

ABBREVIATIONS

AAI	Airports Authority of India
AASC	Assam Administrative Staff College
ACSP	Assam Community Surveillance Plan
AEGCL	Assam Electricity Grid Corporation Limited
AHD	Assam Health Department
ALOHA	Aerial Locations of Hazardous Atmosphere
ANM	Auxiliary Nurse Midwife
APDCL	Assam Power Distribution Company Limited
APGCL	Assam Power Generation Corporation Ltd
ARDS	Acute Respiratory Distress Syndrome
ARMVs	Accident Relief Medical Vans
ARSAC	Assam Remote Sensing Application Centre
ASAPCC	Assam State Action Plan on Climate Change
ASDMA	Assam State Disaster Management Authority
ASDMP	Assam State Disaster Management Plan
ASHA	Accredited Social Health Activist
ASPCB	Assam State Pollution Control Board
ATI	Administrative Training Institute
AUWSSB	Assam Urban Water Supply & Sewerage Board
AYUSH	Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homeopathy
BDO	Block Development Officer
BIS	Bureau of Indian Standard
BLEVE	Boiling Liquid Expanding Vapour Explosion
BPHE	Biological and Public Health Emergencies
CAPF	Central Armed Police Forces
CBDM	Community Based Disaster Management
CBDP	Community Based Disaster Preparedness
CBDR	Common but Differentiated Responsibilities
CBO	Community Based Organization
CBRN	Chemical, Biological, Radiological and Nuclear
CCA	Climate Change Adaptation
CCC	COVID Care Centre
CHC	Community Health Centre
COP21	Conference of Parties-21
COVID19	Corona Virus Disease 2019
CRR	COVID Rapid Response
CSR	Corporate Social Responsibility
CWC	Central Water Commission
DCHC	Dedicated COVID Health Centers
DDMA	District Disaster Management Authority

DDMP	District Disaster Management Plan
DEOC	District Emergency Operations Centre
DFO	Divisional Forest Officer
DGM	Directorate of Geology and Mining
DM	Disaster Management
DMA	Directorate of Municipal Administration
DMT	Disaster Management Team
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DSYW	Directorate of Sports and Youth Welfare
DTCP	Directorate of Town & Country Planning
EMPRI	Environmental Management and Policy Research Institute
EOC	Emergency Operations Center
EPA	Environment Protection Act
ESF	Emergency Support Functions
EWS	Early Warning Systems
F&ES	Fire & Emergency Services
FCSCA	Food, Civil Supplies and Consumer Affairs
FLEWS	Flood Early Warning System
CC	Climate Change
GIS	Geographic Information System
GMCH	Guwahati Medical College and Hospital
GoA	Government of Assam
GoI	Government of India
GPDP	Gram Panchayat Development Plan
GPS	Global Positioning System
GSI	Geological Survey of India
GVK-EMRI	GVK Emergency Management and Research Institute
H&FW	Health & Family Welfare
H&UA	Housing and Urban Affairs
HAZCHEM	Hazardous Chemicals
HAZMAT	Hazardous Materials
HG&CD	Home Guards and Civil Defense
HRVCA	Hazard Risk Vulnerability and Capacity Assessment
HSCs	Health Sub-Centers
IAG	Inter-Agency Group
ICDS	Integrated Child Development Services
ICP	Incident Command Post
ICU	Intensive Care Unit
IDRN	Indian Disaster Resource Network
IDS	Integrated Defense Staff
IEC	Information; Education & Communication

IMD	India Meteorological Department
IPD	In Patient Department
IRS	Incident Response System
IRT	Incident Response Team
ISRO	Indian Space Research Organisation
MAH	Major Accident Hazard
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MHA	Ministry of Home Affairs
MIS	Management Information System
MoES	Ministry of Earth Sciences
MoHFW	Ministry of Health & Family Welfare
MPW	Multipurpose Workers
MSIHC	Manufacture, Storage and Import of Hazardous Chemical
NABARD	National Bank for Agriculture and Rural Development
NBC	National Building Code
NCC	National Cadet Corps
NCRMP	National Cyclone Risk Mitigation Project
NDMA	National Disaster Management Authority
NDMF	National Disaster Mitigation Fund
NDMP	National Disaster Management Plan
NDRF	National Disaster Response Fund
NDRMF	National Disaster Risk Mitigation Fund
NEEPCO	North Eastern Electric Power Corporation Limited
NEOC	National Emergency Operations Centre
NESAC	North East Space Application Centre
NGO	Non-governmental Organization
NHAI	National Highways Authority of India
NHM	National Health Mission
NHPC	National Hydroelectric Power Corporation
NIDM	National Institute of Disaster Management
NPDM	National Policy on Disaster Management
NRSC	National Remote Sensing Centre
NSS	National Service Scheme
NYKS	Nehru Yuva Kendra Sangathan
ONS	Observational Network Stations
OPD	Out Patient Department
P&RD	Panchayat & Rural Development Department
PDNA	Post-Disaster Needs Assessment
PHC	Primary Health Centre
PHED	Public Health and Engineering Department
PMJAY	Pradhan Mantri Jan Arogya Yojana
PPE	Personal Protective Equipment

PRA	Participatory Rural Appraisal
PRI	Panchayati Raj Institutions
PSSMHS	Psychosocial Support and Mental Health Services
PWD	Public Works Departments
PwDs	Persons with Disabilities
RD	Rural Development
RMC	Regional Meteorological Center
RTPCR	Real Time Polymerized Chain Reaction
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus 2
SDC	State Data Centre
SDGs	Sustainable Development Goals
SDMF	State Disaster Mitigation Fund
SDRF	State Disaster Response Force
SDRMF	State Disaster Risk Mitigation Fund
SDRN	State Disaster Resource Network
SEC	State Executive Committee
SEOC	State Emergency Operations Centre
SFDRR	Sendai Framework for Disaster Risk Reduction
SHGs	Self Help Groups
SIPRD	State Institute of Panchayat & Rural Development
SIRD	State Institute of Rural Development
SOP	Standard Operating Procedure
ToT	Training of Trainers
ULBs	Urban Local Bodies
UN	United Nation
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations International Children's Emergency Fund
UNISDR	United Nations International Strategy for Disaster Reduction
VDMC	Village Disaster Management Committee
VLMCC	Village Land Management and Conservation Committee
WASH	Water Supply, Sanitation and Hygiene
WDMC	Ward Disaster Management Committee
WHO	World Health Organisation
WRD	Water Resources Department

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PREFACE

This second volume of Assam State Disaster Management Plan (ASDMP) is conceived and organized as a strategic action plan. Volume 1 of ASDMP gives an overall historical, ideological and technical overview of the disaster management plan of the state of Assam from a long-term perspective of eight years of time horizon during 2022-2030. This includes the following: state's hazard, risk and vulnerability profile; emerging challenges in the wake of changing climate and its impact; the rationale and outline of a risk management and risk governance approach for disaster management in the state; need for mainstreaming DRR in development; social inclusion; strategies for building resilience of institutions and communities; capacity development etc.

Volume II seeks to present an action plan with a strategic approach and perspective. In view of the unprecedented challenge of emergency management as posed by the global pandemic of COVID-19, the first chapter of this volume presents a long-term strategy for dealing with pandemic/endemic, with focus on COVID-19. The inspiration for this Chapter is drawn from the State Disaster Management Plan (SDMP) of Karnataka, which was prepared and finalized during 2020, the year of the pandemic and is the first state to do so. The second chapter presents a detailed action plan on preparedness and response. The third chapter presents a hazard wise responsibility matrix for different departments at the state level, which could feed into various departmental disaster management plans, as a follow-up to this updated and revised ASDMP 2022.

Assam State Disaster Management Authority (ASDMA) is currently in the process of developing a Disaster Risk Reduction (DRR) Roadmap for the state of Assam, in line with national policy, plan and priorities and Sendai Framework for Disaster Risk Reduction (SFDRR). This DRR Roadmap for the state of Assam will constitute an integral part of Assam State Disaster Management Plan (ASDMP) 2022.

In view of the critical connections across sustainable development goals, climate change adaptation and disaster risk reduction, ASDMP 2022 seeks to achieve coherence and mutual reinforcement across Agenda 2030, Assam State Plan of Action for Climate Change (SPACC) and DRR Roadmap for the state of Assam.

It will be pertinent to add here that ASDMP 2022 is a live and dynamic document open to suitable modifications during the annual review and revision of the Plan as mandated by Disaster Management Act 2005.

CHAPTER 1: LONG TERM STRATEGY FOR COMBATING THE PANDEMIC / ENDEMIC OUTBREAK (WITH SPECIAL FOCUS ON COVID – 19)

This Chapter presents a strategy for dealing with pandemic/endemic in the state with special focus on COVID-19. It is envisaged that the long-term strategy as described here will help the state deal with pandemics or endemics of a similar or different nature in future in an efficient and effective manner. The process of revision of Assam Disaster Management Plan (ASDMP) 2022 coincided with the outbreak of COVID-19 in India including two of its spells and related lock downs during March-April 2020 and April-May 2021 respectively.

The COVID-19 pandemic in India is a part of the worldwide pandemic of corona virus disease 2019 (COVID-19) caused by severe acute respiratory syndrome corona virus 2 (SARS-CoV-2). This has underlined the need for a sharp and long-term strategy at the state level for combating the current and potential future pandemic of this nature.

The first case of COVID-19 in India, which originated from China, was reported on 30 January 2020. Assam reported 5, 94,846 confirmed cases of which 5, 83,193 recovered and 5,740 deceased as on 12th September, 2021.¹

The Government of Assam has been proactive in combating the COVID-19 pandemic in the state in line with national and global strategies and priorities. Assam State Disaster Management Authority formulated and adopted a ‘strategic response plan for COVID-19’ on 28 March, 2020. This document, attached as Annexure 1, lays down the details of the non-pharmaceutical response to COVID-19.

One of the elements of this strategy has been to shape up the pandemic response in real time in view of emerging issues and challenges including: sudden upsurge of infections and the resultant requirement for primary, advanced and critical care at various levels; unprecedented demand for ICU beds, oxygen and essential medicines; and non-pharmaceutical response including awareness creation and psycho-social care and counselling.

The response of Government of Assam to pandemic will be built on the following approach and guidelines laid down by the Ministry of Health and Family Welfare, GoI and the World Health Organization, along with the state level initiatives in view of the local realities.

- 1. Individual Protection: Mass awareness will be created** so as to help people protect themselves and others by adopting pandemic appropriate behaviours such as: washing hands, avoiding touching their face; practicing good respiratory etiquette including wearing masks; personal and social distancing; isolating themselves in a community facility or at home if they are sick; identifying themselves as a contact of a confirmed case when appropriate; and cooperating with physical distancing measures and movement restrictions when called on to do so.

¹Aarogya Setu, Government of India (State-wise breakdown for Assam as at 5.00 P.M. on 12.09.2021)

- 2. Community Protection: Communities will be empowered** to ensure that services and aid are planned and adapted based on their feedback about local contexts. Critical functions, such as community education, protecting vulnerable groups, supporting health workers, case finding, contact tracing, and cooperation with physical distancing measures can only happen with the support of every member of the affected communities.
- 3. Government: Governments will lead and coordinate the response** across party lines to enable and empower all individuals and communities to own the response through communication, education, engagement, capacity building and support. Governments must also re-purpose and engage all available public, community and private sector capacity to rapidly scale up the public health system to find and test, isolate, and care for confirmed cases (whether at home or in a medical facility), and identify, trace, quarantine and support contacts. At the same time, the state government will also give the health system the support it needs to treat patients with COVID-19 effectively and maintain other essential health and social services for all. Governments may have to implement blanket physical distancing measures and movement restrictions proportionate to the health risks faced by the community, if they need more time to put in place the above measures.
- 4. Private Agencies: Private companies will ensure the continuity of essential services** such as the food chain, public utilities, and the manufacture of medical supplies. Private companies can provide expertise and innovation to scale and sustain the response, most notably through the production and equitable distribution of laboratory diagnostics, personal protective equipment, ventilators, medical oxygen and other essential medical equipment at fair prices, and the research and development of diagnostic tests, treatments and vaccines.

1.1 STRATEGIC RESPONSE TO THE PANDEMIC/ENDEMIC/COVID-19

The Government of Assam will adopt a coordinated strategy in combating COVID-19 pandemic. **Effective inter-departmental coordination** will be the core principle adopted in combating the pandemics such as COVID-19. The technical support of Development Partners such as WHO, UNICEF and others will be sought as required for shaping up a robust strategic response to COVID-19 or similar public health emergencies in the state.

The mechanism of a **War Room**, such as the COVID War Room, will be made functional at the office of the National Health Mission (NHM), Assam, which will be the place, where all response plans and strategies will be finalized involving all key health functionaries and other allied department officials. The War Room will also be the site for all the latest updates, guidance to the concerned officials and functionaries, and media briefings. It will also be ensured by the War Room that the latest updates including guidelines, issued by Government from time to time, reach the target audience so that people at large have the correct and latest information in real time and can be protected from the menace of “infodemic”. Appropriate behavior is promoted with its stress on “Social Distancing” and maintaining “Personal Hygiene” (mainly in the form of “Hand wash for minimum 20 seconds”, use of mask by everyone, known as effective strategies to keep COVID or other public health emergencies at bay).

Assam in its fight against COVID-19 adopted and executed the, “**Assam Community Surveillance Plan (ACSP)**” to look for SARI (Severe Acute Respiratory Infections) and ILI (Influenza like Illness) and fever cases covering all the 28000 villages / wards of Assam from 7th May, 2020.² This practice will be institutionalized and will include: making door to door visits; listing out of the potential cases of different diseases to test them (wherever necessary) and to take follow up actions, as per the test reports. This opportunity of door-to-door visit will be used to look for any other diseases, like malaria, dengue, diarrhea etc. as well so as to initiative required preventive action in advance.

ACSP will cover all the villages and wards of Assam, as was done in the case of COVID during 2020. The adopted methodology of the interventions under ACSP will be as follows. The Assam Community Surveillance Plan will be based on the Health Sub Centers in all districts of Assam and the role of ASHA will be critical in rolling out the activity, as she is the one, who makes door to door visits and looks for potential cases and lists them. Once, ASHA does the listing of all potential cases by making house to house visit of her area, the medical team, comprising Medical Officer (as leader of the team), ANM, MPW, Lab Tech will visit the concerned village and meet those listed potential cases (as per ASHA list) and screen them. Based on the advice of the Medical Officer, the Lab Tech will collect swab, blood sample for confirming the positivity status of the suspected cases.

Other related initiatives as part of this state level strategy will include: participation of private health providers in treating non-COVID/other pandemic cases; rigorous community awareness drive by front line workers; robust contact tracing of positive cases, isolating suspected cases; treating patients following all set protocols; and implementation of a host of social safety-net initiatives. As adopted in the case of COVID pandemic, the following strategies will be adopted to fight similar potential or/and actual public health emergencies in future:

1. Sufficient availability of Personal Protective Equipment (PPE): The Government of Assam will ensure sufficient availability of PPEs (triple layer mask, N-95 and PPE) to ensure that the COVID/public health warriors feel confident of working at different settings (as per situation) related to management of public health emergencies such as COVID.

2. Identifying and addressing gaps in health facilities: The gaps of the health facilities, mainly of Medical Colleges and District Hospitals will be identified appropriate strategies will be adopted to address the identified gaps to deal with the emergency effectively. The Guwahati Medical College and Hospital (GMCH), the biggest state hospital, will be made functional as a dedicated COVID/public health emergency hospital, with handholding support of the officials from WHO and UNICEF, as was successfully done in the case of COVID. This will be followed up by having dedicated functional COVID/public health emergency Hospitals at district and sub district levels.

3. Participation of Private Health Facilities: Partnerships with private health facilities will be explored and strengthened, as was done in Guwahati, Dibrugarh and Cachar districts (which also have Medical Colleges attached with them) during COVID, which were quickly mobilized to take care of all the non-COVID, OPD and IPD cases in these private hospitals with medical colleges, designated as fully dedicated COVID hospitals. An agreement could be signed between Health Department, Assam and Owner of Private Hospitals for a specified period of

²Department of Health and Family Welfare, Govt. of Assam

time and payments could be made as per the agreed rate and norms. This will help in decongesting Medical Colleges and in managing COVID/public health emergency cases effectively. Along with Medical Colleges, the District Hospitals will also be made operationally ready for treating COVID/public health emergency patients. All districts will be attached to a particular Medical College, which would mentor the staff of the respective districts.

4. 100% coverage of COVID/other required vaccination for eligible persons: The Government of Assam will make efforts to ensure cent percent coverage of all eligible persons under COVID or other required vaccination, given the nature and magnitude of the public health emergency. The State Government will ensure strict adherence to SOP for halting the community transmission of COVID/or other communicable diseases in the relief camps which will be set up during flood season or such camps set up in the context of any other disaster. The State Government will remain in preparedness and set up Intensive Care Centres (ICC) to accommodate large number of affected persons caused by any major outbreak. The Health Department will undertake advocacy with the corporate houses for ensuring their engagement and investment under Corporate Social Responsibility (CSR). The Health Department will also make efforts to promote institutional care for affected persons above 50 years, to the extent necessary and feasible and also facilitate regular testing for symptomatic persons and community screening.

5. Training of staff in clinical management of COVID/public health emergency: Proper training of staff in clinical management of COVID/public health emergency at the very outset will help save lives and result in high survival rate of positive cases. Assam will build on different training teams formed during COVID with the support of WHO, UNICEF, Jhpiego members, who finalized the training contents for different level of cadres (Doctors, Para-Medical staff, Nursing, cleaning staff etc.) and imparted training to them. In case of the mobility and assembly restrictions imposed by the lockdown, as required, online training programs will be organized either through online platforms or video conferencing to train the district level trainers from different Medical Colleges, who in turn will train hospital staff and managerial staff of each district. In order to have strong back up of trained human resource, the Government of Assam will train final year MBBS students and final year nursing students, who will be kept ready as back up human resources.

6. Safety and security of COVID/public health warriors: During any public health emergency in future, the safety and security of public health warriors will be given utmost priority. As a step towards this, during COVID, Health Department, Assam decided that each team of health providers of all cadres would work for 7 days and after 7 days' work, the team will be necessarily quarantined for next 7 days in identified quarantine centres (mostly in hotels), where they will be taken care of by the department. After this mandatory 7-days quarantine period, each team again joined back on their duties. Similar arrangement will be followed in case of any future public health emergency as required

7. Active support from frontline workers in generating awareness on COVID/public health emergency: Active support of all frontline workers (ASHA, ANM, MPW) will be sought and mobilized for reaching out to the last household of the community with appropriate public health messages, mainly DOs and DON'Ts during the pandemic. It is pertinent to point out in this regard that the 1st suspected case of COVID-19 in Assam from Jorhat was identified by an ASHA worker.

8. Psychological management of patients through yoga session facilitation: In order to make sure that COVID/other public health emergency patients do not go through avoidable psychological distress, arrangements will be made for online yoga training to them at hospital, along with counselling sessions by trained clinical psychologists. Patients will be encouraged to speak with their family members using WhatsApp video call, in case they are in strict quarantine without an external contact for safety and security reasons. During COVID-19 pandemic, the Government of Assam started an initiative called “MONON”, whereby 220 psychiatric specialists, social workers came forward (many of them are faculties of Medical Colleges), to impart psychological counselling to home quarantined people and for this all one needed to do was to dial toll free no 104. Such initiatives will be nurtured and promoted in case of any future public health emergency of similar nature.

9. Arrangement of bringing stranded people from other states: Government of Assam will make arrangements for bringing stranded people from other states such as: students from Kota; especially, cancer and other terminally ill patients, particularly those who are reported to be stranded in other places and are not able to return home on their own due to mobility and other restrictions. This will be decided by the State Government on a case-to-case basis in view of the severity of the situation under consideration.

10. Massive IEC campaign/s for mass awareness on COVID-19/public health emergency: Targeted and need based Information; Education & Communication (IEC) campaign/s will be designed and launched for minimizing and preventing the spread of community transmission of deadly viruses or/and bacteria, as required. For awareness generation in field, ASHAs will be mobilized for door-to-door awareness campaign informing community on DO's and DON'Ts of COVID-19 or other public health emergencies of similar nature. IEC Materials will be designed and distributed on signs and symptoms, preventive measures (hand washing and social distancing) using different media channels. Street plays and smart messaging will be used to create awareness amongst the common people. Advertisements in local languages will be telecast through radio and television with focus on signs and symptoms of Corona/another virus/es. Appeals by popular public figures including opinion leaders and social influencers will be recorded and aired through electronic media of a wide variety including social media. Apart from all these, various informative videos will be produced and telecast on topics like handmade mask, respecting health workers, norms of quarantine, social distancing, rules of lockdown, myths and facts etc. Regular Press briefings will be given by designated government officials and functionaries.

11. State's policy of mandatory quarantine with humane approach: Government of Assam framed well thought out protocols for putting suspected and confirmed cases in quarantine during COVID-19 pandemic, which was widely appreciated. Anyone entering Assam by any means (air/railway/road) was to be necessarily quarantined at identified quarantine centres and tested before s/he is allowed to go home. Based on the test report, either s/he was admitted at hospital (if positive) directly from quarantine centre or s/he was allowed to go for strict home quarantine for the residual number of days out of total quarantine period of 14 days. As a result, more than 95% of the cases came only from different quarantine centres. This decision of Government to introduce “ruthless quarantine with humane approach” saved state from facing severe crisis. Similar arrangements will be followed in case of future public health emergencies

Learning from the COVID-19 Pandemic good practices, the state will develop a comprehensive, participatory and multi-stakeholder DRR action plan against Biological and Public Health Emergencies for making its health services and infrastructure resilient.

As mentioned in the beginning of this chapter, ASDMA formulated and issued a Strategic Response Plan for COVID-19 in March 2020, which covers strategic non-medical Response Plan as well. It inter alia covers mass spread, need for additional infrastructure and supplies, hospital preparedness, emergency surge and transitional health services, law and order situation, food security of marginalized families in a lock down situation, shortage of essential commodities in a lock down scenario, exclusion and discrimination, dead body management, and possible interaction of flood, erosion and COVID-19 response etc.³. These Plans need to be followed scrupulously from state to local level, not only for COVID-19, but for similar other public health emergencies as well.

1.2 LEARNING FROM GOOD PRACTICE AND CONTINGENCY PLANNING

Learning from Assam's own experience and the Karnataka State Disaster Management Plan 2020-21, a contingency plan with a clear response matrix and the required augmentation of resources is proposed. It also recommends the manner of coordination, monitoring and review. It lays down clear protocols for each level. The following response matrix draws on the strategy elements as adopted for COVID response in the state of Assam and included as part of the strategic action plan of the Assam Disaster Management Plan (ASDMP) 2022.

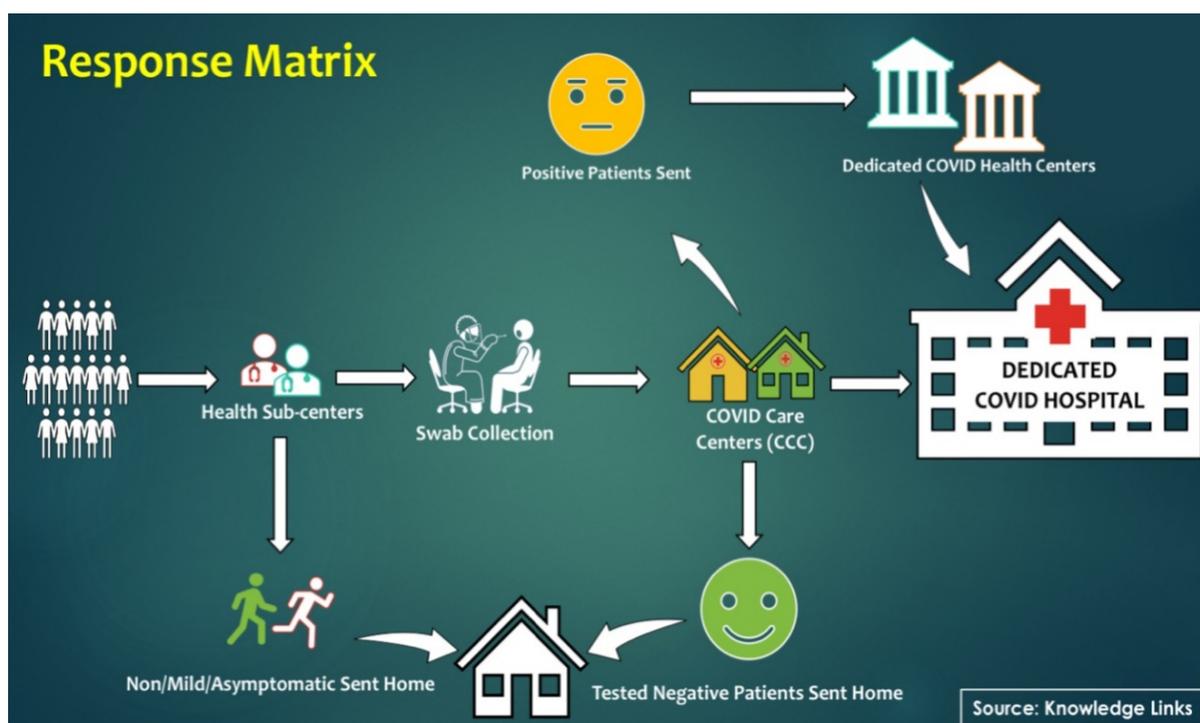


Figure A: Response Matrix

1.3 HEALTH SUB-CENTERS

Any citizen with any symptoms related to corona or other virus like fever, cough, sore throat or breathlessness will first reach the nearest health sub-center. The first point of contact for

³Strategic Response Plan for COVID-19 by ASDMA--

http://asdma.gov.in/COVID/Govt.%20of%20Assam%20Circular/Letter_SRP%20on%20COVID-19.pdf

suspected COVID-19/public health emergency patients in the state during the operation of the contingency plan shall be Health Sub-Centers only. These clinics will have a Rapid Response Team (RRT) comprising of a doctor, 2 nurses and a health care worker.

As per the prescribed protocol, the team will check the temperature of the citizens and their oxygen levels coming to the clinic based on the symptoms and temperature, will triage them into suspected group and safe group and the demographic details will be captured in case of the suspected group. The suspect will then be sent to the swab collection center, as designated by the state government or district administration, for collecting swab as per protocol. The suspect is then shifted to the nearest quarantine center until the result of the swab is received. Necessary augmentation of infrastructure and human resource will be established to run the Health Sub-Centers. It is also agreed that the private health care establishments will support in establishing and running these health sub-centers, if required.

- The first point of contact for suspected COVID-19 or other public health emergency patients should be the Health Sub-Centers (HSCs).
- The HSCs to be evenly spread across different districts for easy access and smooth implementation of the established protocols.
- The HSCs will have a Rapid Response Team (RRT) team to observe all the agreed protocols for screening and triage of suspected COVID-19 or other public health emergency patients.
- Suspected cases to be sent to Swab collection centers. Necessary augmentation of infrastructure and human resource will be established to run the Health Sub-Centers.
- Private health care centers can also be used to support in establishing and running these HSCs, if required.

1.4 COVID CARE CENTER- CCC

All suspected cases detected in the Health Sub-Centers (till a diagnosis is made), will be kept in a designated facility for CCC till such time they are tested negative.

Based on the projections, estimated number of CCCs required across the state will be worked out at a capacity of 150 per Center. CCCs could be located in Hotels, Hostels, Service apartments in urban areas, make shift accommodations for a minimum of 150 beds, as locally identified. In case of rural areas, the CCCs could be located in any public facility that could accommodate 20-50 patients. Based on the triage at the HSCs, suspected cases that have been recommended for swab tests are shifted to CCC after swab collection. Here suspected cases that are awaiting swab results and are not likely to be infected based on the symptoms are stationed.

CCC will have a team of 2 nurses, 1 doctor and 1 help per shift. The temperature and symptoms of the suspected cases will be monitored as per the agreed protocol. Suspected cases will remain in CCC till test results are received, based on which the patient is sent to the Isolation Center, if s/he has mild symptoms and to the COVID hospital if s/he has moderate or severe symptoms. If the result is negative, s/he is sent home and asked to come to the HSC if s/he again has symptoms as per protocol.

Process Flow

- Based on the triage at the HSCs, suspected cases who have been recommended for swab tests will be shifted to CCC after swab collection
- The cases treated here will be of mild category presented with fever and/or URTI (ILI)
- They can be located in Hotels, Hostels, Service apartments, makeshift accommodations for a minimum of 150 beds for urban areas and in other public facilities capable of accommodating 20-50 beds in rural areas such as Block Hospitals

Table 1: The human resource requirement for 50 bed Isolation Ward for Mild Symptoms (COVID Care Centre) will be for 8 Hours across 3 Shifts

S.N.	Human Resource	Ratio	Per Shift Requirement	Per Day Requirement
1	Staff Nurses	1:25	2	6
2	Junior Doctors	1:50	1	3
3	Consultants	1:50	1	3
4	Group D	1:50	1	3
5	Data Operator	1:50	1	3
6	Patients transfer staff	1:50	1	3
Total Human Resource Requirement			7	21

1.5 DEDICATED COVID HEALTH CENTERS- DCHC

Isolation for people who are confirmed to have COVID-19 is mandatory to prevent spread. Isolation refers to separation of individuals who are ill and suspected or confirmed of COVID-19. Based on the triage done at the CCC, COVID-19 positive patients who require close medical supervision will be shifted to DCHC.

DCHC will be isolation centres with medical care available by a team of 1 specialist, 2 doctor and 4 nurses and will follow the protocols for isolation centres. Special personal protective equipment will be used to care for these patients in health care settings. The number of DCHCs required across the state will be worked out on the basis of the available experience so far. Each DCHC will have a capacity of 200 beds per centre. COVID-19 positive patients will be kept under close observation and depending on the situation COVID -19 positive patients will be discharged. Critically ill patients will be sent to COVID-19 Hospitals for further treatment. Persons testing positive for COVID- 19 will remain in DCHC and will be hospitalized till such time 2 of their samples are tested negative as per MoHFW's discharge policy.

Process Flow

- Based on the decision of CCC, COVID -19 positive patients would be shifted to DCHC. As these patients will require constant care under close medical supervision, these hospitals would need to have dedicated oxygen supply and essential medicines.
- Cases admitted here could also be of Pneumonia with no signs of severe disease (RR 15 to 30 per minute and Spo2 saturation 90-94%) such as.: District Hospitals / Private Hospitals

- A 50 bed Isolation Ward with Moderate symptoms at Dedicated COVID Health Center with O2 will have the human resource requirement of 8 Hours across 3 Shifts a day

Table 2: The human resource requirement for 50 bed Isolation Ward with Moderate symptoms at dedicated COVID health center with O2 will be for 8 Hours across 3 Shifts a day

S.N.	Human Resource	Ratio	Per Shift Requirement	Per Day Requirement
1	Staff Nurses	1:10	5	15
2	Junior Doctors	1:25	2	6
3	Consultants	1:50	1	3
4	Group D	1:25	2	6
5	Data Operator	1:50	1	3
6	Patients transfer staff	1:50	1	3
Total Human Resource Requirement			12	36

1.6 DEDICATED COVID- 19 HOSPITALS

These hospitals will be the apex centre for treating critically ill COVID-19 patients. Only patients from either isolation or quarantine centres will be allowed to be admitted in the COVID-19 hospitals. Here all the facilities like central oxygen line and ICU with ventilators will be available.

These will be at least one identified Dedicated COVID-19 Hospital in each district. These hospitals will have ICU facility with piped oxygen supply and ventilators. There will be three teams in the Hospital,

1. Medical team of general physicians, pulmonologists and infectious disease experts headed by a senior physician from the government hospital with members from both government and private hospitals will be available to treat patients.
2. ICU team of anesthesiologists and other specialists headed by a physician from the government hospital with members from both government and private hospitals.
3. A team of trained psychologists and social workers capable of offering required psycho-social care and counseling services as required

The requirement of Anesthesiologists, Intensivists, Pulmonologists, ICU Trained Nurses, Junior doctors with basic knowledge of ICU care, Nephrologists, Radiologists, Gastroenterologists, Neurologists, and Cardiologists will be met by pooling of resources from government, medical colleges and private sector hospitals.

Psychologists, social workers and yoga teachers could be accessed from universities, NGOs and CBOs as per their availability and orientation.

About 15% of the patients are likely to develop pneumonia, 5 % of whom are likely to require ventilator support and management. Hence dedicated Intensive care beds need to be earmarked. Some among them may progress to multi organ failure and hence critical care facility will need to be identified and put in place.

At all times doctors, nurses and para-medics working in the clinical areas will wear three layered surgical masks and gloves. The medical personnel working in isolation and critical care facilities will wear full complement of PPE (including N95 masks). The support staff engaged in cleaning and disinfection will also wear full complement of PPE.

Environmental cleaning will be done twice daily and consist of damp dusting and floor mopping with Lysol or other phenolic disinfectants and cleaning of surfaces with sodium hypochlorite solution as per protocols. (Detailed guidelines available on MoHFW's website will be followed for the same).

Process Flow

- Will be the apex centre for treating severe/critically ill COVID-19 patients
- These hospitals will have ICU facility with piped oxygen supply and ventilators.
- Patients admitted here will be confirmed severe category patients (Severe Pneumonia with RR more than 30/min and /or SPo₂<90% in room air) or ARDS or septic shock
- There will be two teams in the Hospital -Medical team and ICU team
- Few COVID hospitals which have Isolation beds with O₂ supply and also ICUs can admit moderate and severe category of patients such as: District Hospitals

Table 3: Requirement for a 10 bed ICU (Dedicated COVID Hospital) human resource requirement - 4 Shifts of 6 Hours every day

S.N.	Human Resource	Ratio	Per Shift Requirement	Per Day Requirement
1	ICU Nurses	1:5	2	8
2	Junior Doctors	1:5	2	8
3	Consultants	1:10	1	4
4	Group D	1:10	1	4
5	Data Operator	1:10	1	4
Total Human Resource Requirement			7	28

Requirements for each of the response units:

- Requirements for fever clinics would be: 2 Thermal Scanners; 2 BP Apparatus; 2 Pulse Oximeters; Masks and Sanitizers; Floor Mopping Solution; and 2 Ambulances.
- Requirements for Swab Collection Centre would be: Swab Collection Kits; PPEs; Viral Transport Media (VTMs); Cold Transport Boxes; Sodium Hypochlorite Solution; Adequate Sanitizers; Bio Medical Waste Bins; 6 Staff Nurse/ Technicians and Ambulance.
- Requirements for the Swab Testing Centre would be: a RTPCR (Real Time Polymerized Chain Reaction) Kits; 3 Sample Receivers; 3 RNA Extractors; 3 Assorters;

3 PCR Sample Runners; 2 Reporters; 3 Dispatchers/ Data Entry Operators; PPE Kits; and Consumables Reagents etc.

- d. Requirements for Quarantine Centres would be: 150 bed Centre with drinking water toilets, food for the patients; 2 Thermal Scanners; 2 BP Apparatus; 2 Pulse Oximeters; Masks and Sanitizers, Floor mopping solution and 2 Ambulances.
- e. Requirements for Isolation Centres would be: 5 Thermal Scanners; 8 BP Apparatus; 10 Pulse Oximeter; Portable Oxygen Cylinders; 50 IV Stands; 10 Cardiac Table; IV fluids- RL/DNS; Emergency Drug Santi Allergen; Hydro Cortisone; 100 Oxygen Delivery Masks; HEPA Installation; and 2 Ambulances.

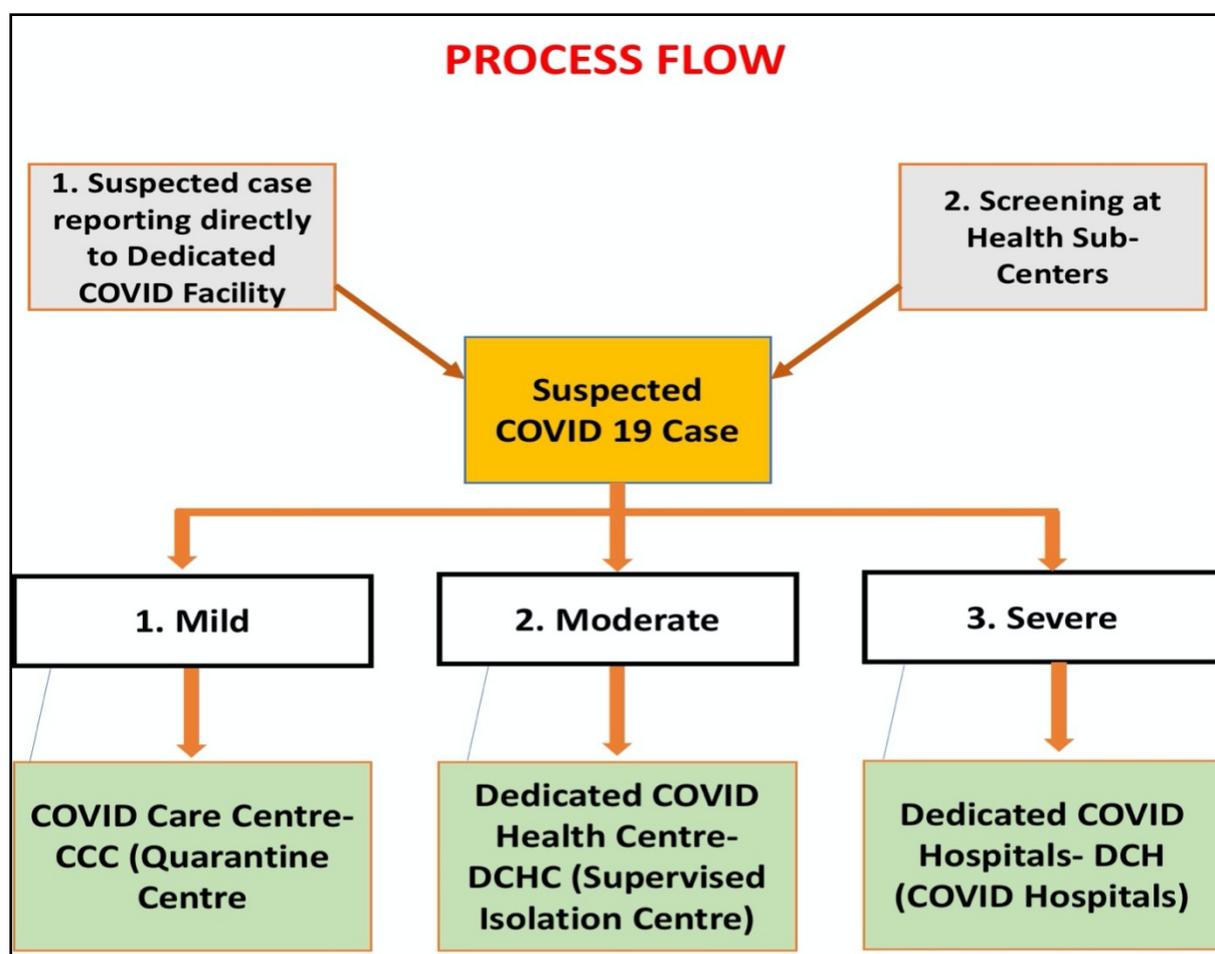


Figure B: Process Flow 1

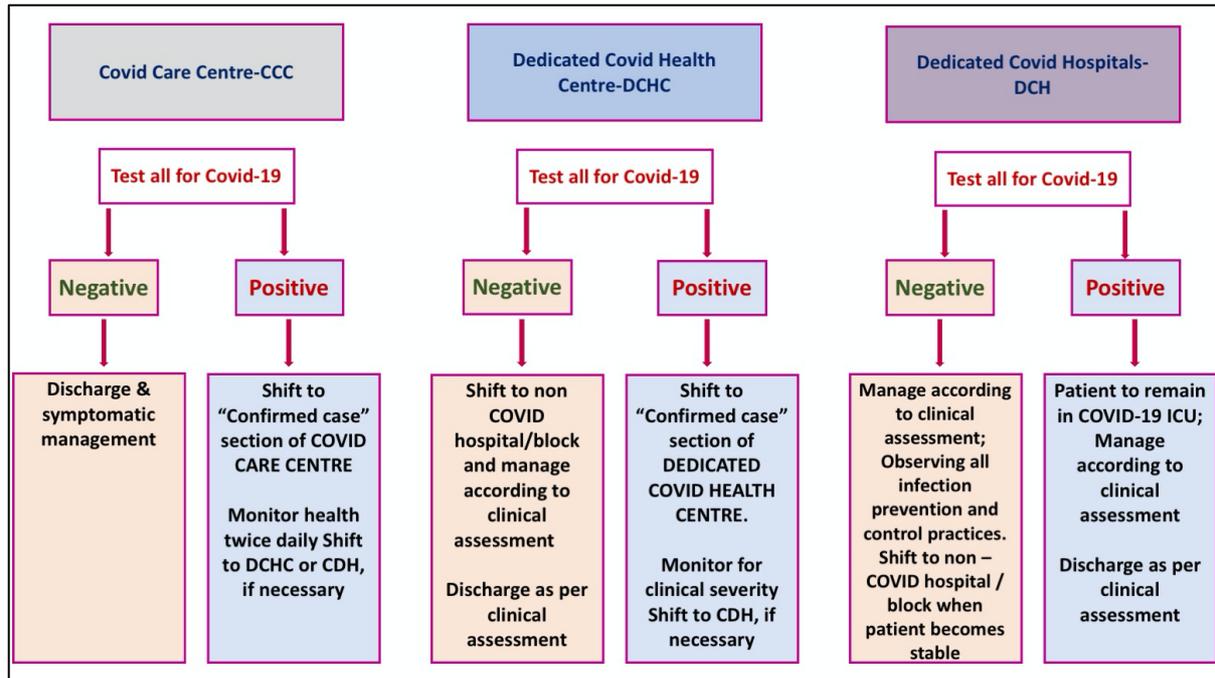


Figure C: Process Flow 2

The contingency plan proposes a MIS monitoring tool where daily data can be collected in real time from all the response units and can be compiled centrally. The response units will report work status as well as the consumables consumed daily on the portal. MIS reports would be required for effective management of resources and in making policy decision. Identification of resources and augmentation of

- a. Health Sub-Centers (HSCs): location and identification; infrastructure; teams; protocols
- b. COVID Rapid Response teams for Health Sub-Centers and training on protocols
- c. Testing and Screening infrastructure at Health Sub-Centers
- d. COVID-19 hospitals: location and identification; and necessary infrastructure augmentation.
- e. Medics and Paramedics for QCs, SIC's and COVID-19 Hospitals
- f. PPE availability, distribution and necessary training
- g. Other resources: oxygen cylinders; masks; sanitizers, drugs etc.
- h. Uninterrupted availability of oxygen including refill of storage tanks in hospitals for piped oxygen supply, oxygen concentrators for use at home and during emergencies due to short supply of oxygen temporarily, oxygen cylinders etc. will be ensured with advance planning and arrangements.
 1. Pooling of resources – infrastructure and manpower of Governments, Medical colleges and private establishments
 2. Establish Command and Control Room as access points for citizens
 3. Targets of probable positive cases, hospitalization, ICU to be given district/corporation wise and communicate to Districts
 4. Reporting, monitoring and review tool-portal

Besides, ASDMA will ensure, with the assistance of DDMA's and state and district Health Departments, that the measures needed for combating COVID-19 and similar other public health emergencies are integrated with the village master plans developed by VLMCCs, GPDP and DRR Plans developed at Panchayat level.

ASDMA and the State Health Department will ensure, with the help of DDMA/ District Health and other concerned departments that the mock drills are carried out and the outcomes arrived at are made use of in the revision of local response and contingency plans, along with de-briefing and evaluation.

In addition, documentation of such public health emergencies is essential. ASDMA/DDMAs will ensure that such documentation is undertaken in a systematic and organized manner, with the assistance of other stakeholders including voluntary organizations and the good practices as also “what went wrong” is captured for future use. ASDMA will take it up as a forward-looking exercise instead of a fault-finding exercise so that weakness in the system and the bottlenecks faced at grass root level are clearly captured and rectified for such disasters in future.

This plan can serve as the guide post in managing COVID-19 Pandemic or similar pandemics/endemics in the state of Assam. The Contingency planning actions encompassing the preparedness and mitigation activities and protocols are also included as part of the responsibility matrix related to ‘Biological and Public Health Emergencies (BPHE)’ as included in Chapter 3 of this Volume.

CHAPTER 2: PREPAREDNESS AND RESPONSE

2.1 PREPAREDNESS

Preparedness and response are intimately linked, as good preparedness results in prompt and effective response during disaster induced emergencies. Preparedness includes activities and measures taken in advance to ensure effective response to the impact of hazardous events, including the issuance of timely and effective early warnings and the temporary evacuation of people and property from threatened locations.

The Disaster Management Act, 2005 defines ‘preparedness’ as “the state of readiness to deal with a threatening disaster situation or disaster”. Preparedness consists of the knowledge and capacities developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent or current disasters. It is based on a sound analysis of disaster risks, good linkages with early warning systems, and includes activities such as:

- Contingency planning,
- Stockpiling of equipment and supplies,
- Development of arrangements for coordination,
- Evacuation and public information, and
- Associated training and field exercises

These would be supported by formal institutional, legal and budgetary capacities. The related term “readiness” describes the ability to quickly and appropriately respond when required. This section would focus on disaster management planning of stakeholders, officials and communities for safeguarding lives, protecting assets and efficiently utilizing resources by taking appropriate actions in the face of any disaster.

Preparedness planning will further ensure that concerned authorities and local agencies are able to respond to potential damage zones in a prompt and coordinated manner. In most disaster situations, loss of life and property could be significantly reduced through appropriate preparedness measures and warning system.

The intent is to go for the all-hazard approach, with comprehensive emergency management based on participatory planning, which will be rigorously tested on regular basis through simulation methods/mock drills and table top exercises at the local level.

Although the preparedness is required to start at the community level, it equally applies to government departments, public utilities and services, private sector organizations, community-based organizations (CBOs) and non-government organizations (NGOs), who need to work closely with communities before, during and after disasters.

The various **components of preparedness plan** have been covered in this section, which are as follows: -

i. Community Based Disaster Preparedness (CBDP)

Communities, being the first responder and having greater contextual familiarity with hazards and locally available resources, are in a better position to engage in community level planning and executing immediate rescue and relief actions at that level. In areas that experience repeated disasters such as floods in Assam, almost on an annual basis, it has been realized that communities need to work out a plan to prevent losses and at the same time enable faster recovery in the event of an emergency situation. To convert this realization into an effective plan, they need guidelines which will help them to prepare their own Community Based Disaster Preparedness (CBDP) plans to safeguard lives, livelihood and property.

The approach of preparing the CBDP planning considers people's participation a necessary pre-requisite for disaster management. By involving the community in the preparedness phase, it not only increases the likelihood of coordinated-action by the communities to help in mitigating disasters but also brings the communities together to address the issue collectively. There is evidence of collective and coordinated actions yielding good results, particularly in terms of their effectiveness in lessening the impact of disasters, from many parts of the State of Assam.

- **Components of CBDP**

a) Ward and Village level Disaster Management Committees: The Ward and Village level Disaster Management Committees (WDMCs and VDMCs) will be formed in each city (ward level) and village of Assam, and will be responsible for initiating disaster preparedness activities at their respective levels. It will consist of local elected representatives, grass roots level government functionaries, local Non-Government Organizations (NGOs)/ Community Based Organizations (CBOs), members of youth groups such as the National Service Scheme (NSS) and Nehru Yuva Kendra Sangathan (NYKS), women groups, youth club members, grass roots level government functionaries, etc. The size of WDMC and VDMC would be based on the population and need of the city wards and villagers. The head of the WDMC and VDMC will take a lead in mobilizing the community for the preparation of the CBDP plans.

b) Review & Analysis of Past Disasters: It refers to prioritizing disasters based on their frequency and intensity and analysis of the estimated losses. This will be carried out by taking the help of elderly people of the ward and village as also the documentation available for the past similar disasters for that particular ward/ village at district or sub-district level. The city residents and villagers would analyze the losses that they had incurred during various disasters and would learn about the best practices. This is an important activity as it forms the basis for preparedness and mitigation planning.

c) Seasonality Calendar of Disasters: While analyzing the past experiences pertaining to various natural disasters, communities would develop the seasonality calendar based on the occurrence of disaster events. In the calendar prepared by the community, the time in terms of

days/months of occurrence of the disaster and steps taken for preparedness and mock drills have to be shown.

d) Mapping Exercises: One of the most important activities of CBDP is the mapping of risk, vulnerabilities and capacities of the Ward and Village by the community itself because it is considered to be a very simple and cost-effective tool to collect ground level data. This is done through Participatory Rural Appraisal (PRA) exercises. Before the mapping exercise starts, the community members first discuss among themselves, about the experience of previous disasters they have faced or the disasters they may face in future. It aims to provide a pictorial base to the planning process especially for the semi — literate populace and ensures maximum community involvement across gender, caste and other divides. Special care may be taken to ensure that women in the village are consulted as participants of the integrated community group or, if this approach is either not feasible or participation of women is subdued, then as a separate women's group with the assistance of women volunteers from NGOs/ SHGs working in the village.

The maps generate awareness among the community about the avenues for smooth evacuation during any imminent disaster. The strategy for Assam will be to use locally available resources rather than depending on the external agencies for help and support. The villagers/ community members are encouraged to draw the maps on the ground using locally available materials such as stone, sand and various colour powders for different items and indicators. The maps drawn need not be as per scale.

The types of maps to be drawn are as follows:

- **Resource map:** Resource mapping focuses on identifying locally available assets and resources that could be utilized for building the capacities of the community before, during and after disasters. Apart from infrastructure and funds, there would be individuals with specific skills, local institutions and people's knowledge as all these have the capacity to create awareness and bring about changes in the community. A resource map would be therefore not be limited to a map depicting the available resources but will also plot the distribution, access and its use by communities inhabiting the concerned ward or/and village.
- **Risk and vulnerability map:** In the vulnerability map the community members will have to identify the hazards that ward and village are prone to and the possible areas that would be affected. They also demarcate the low-lying areas, areas near the water bodies such as the sea and river, direction of wind, etc. Through this mapping exercise the community members identify the location of groups at risk and the assets that require protection from various hazards.
- **Safe and alternate route map:** In a similar exercise, the villagers identify safe areas such as strong houses /buildings, raised platforms etc. These act as a shelter place for people in the event of an evacuation. It would be useful to identify the alternate approach routes which would be used during the time of an emergency.

e) Disaster Management Team: Disaster Management Teams (DMTs)/ Task Forces at the ward and village level are formed to outline coordinated response during crisis situations. DMTs will have the functional/operational focus such as early warning, shelter management, evacuation & rescue, medical and first aid, water and sanitation, carcass disposal, counselling, damage assessment and relief and coordination. Based on a need assessment of the teams, specialized training would be provided to the members. DMT members would be linked to the existing service providers for continuous training and discharging of their responsibilities effectively. If necessary, a team may be divided into several sub-teams for imparting training in different specialized fields mentioned above. It will be ensured that the teams have adequate representation of economically and socially marginalized people in the ward/ village, including women. The roles and responsibilities of the DMTs are the following:

- **Early Warning Team:** Members of this team will be responsible for providing latest warning information to wards and villagers so that residents get ample time to get prepared for an effective response to the impending hazard. At the time of the disaster the members of this team will keep a track of the developments in real time. Emergency contact telephone numbers are collected well in advance of the hazard (such as floods) season, tools such as radio, television, telephone, mobile etc. are to be kept in working condition prior to the hazard period. During the occurrence of the event, the team would be responsible to inform every household of the latest position. They would also keep a track of the situation and listen to the de-warning messages to decide on the timing for calling off the emergency state.
- **Evacuation, Search and Rescue:** Team Members of this task force will be mainly responsible to evacuate and carry out search and rescue operations during the time of emergency. The members of this team are mainly young men and women of the ward and village, ex-service men; swimmers, etc. The effort may be to have a judicious mix of young persons as also few able-bodied middle-aged persons permanently settled in the village so that in case of migration for employment/ education or migration of girls to other villages/ towns due to marriage/ education, at least some members are available to induct and train new entrants to the team. The Rescue kits necessary to carry out activities of this team would be ideally made locally with indigenous materials available. These members are trained with the help of Civil Defense, Police, Fire services etc.
- **Shelter Management:** Team Members of this team will take care of the identified shelter buildings in pre, during and post disaster scenario. Care will be taken to stock necessary material such as food, drinking water, medicines, bleaching powder, firewood, lantern, etc. The persons with disabilities (PwDs) would require special care and attention. Appropriate measures will be decided and undertaken for the safety of the animal population within the ward/village during any disaster. It may be ensured that there is sufficient number of toilets for the people in the shelters, particularly for women, if the arrangements are to be made for more than few hours.
- The team will ensure hygiene in and around the shelters. Women are generally positioned as members of the shelter team at the village level, but special care will be

taken to ensure that men also constitute the members of this team and extend all possible support to women members so that they are not over-burdened in their efforts to manage shelters effectively during emergency. The team leader or any other team member would have the keys of the safe shelters so that prior to the disaster they clean up the place and make available the necessary materials including food, water, medicines, leaching powder, firewood, lantern, etc. required for the evacuees during disaster period.

- **Setting up child friendly spaces:** A child friendly space will be an ideal place for children during disaster, which will be taken care of by trained staff members, who have the capacity to care, protect and provide psycho-social support to them while the appropriate authorities undertake the task of locating and resolving complex issues. Child friendly spaces will be operated by staff members, who have the required experience, skills and expertise. Many volunteers from the communities, who have the necessary knowledge, skills and aptitude, will be identified and trained to operate child friendly space/s during emergencies. They include teachers, child care workers, community services personnel, and health care workers.
- **Water & Sanitation Team:** Members of this team will ensure the availability of safe drinking water and cleanliness of the ward and village so that there is no danger of epidemics even after the event. They will make arrangements for storing drinking water and water for cooking and other chores. As regards sanitation, regular cleaning of toilets available at the shelter has to be ensured so that avoidable infections and diseases could be reduced or/and ruled out.
- **Medical & First Aid Team:** This specialized team will be responsible for preparing and updating the list of vulnerable population like old and ailing people, pregnant ladies, children etc. They also will have to procure the necessary medicines before the hazard season and conduct a routine check-up of the ailing people in the ward and village. They will collect health related information and make community aware of the health measures to be taken up. Women and existing health practitioners of the village are the members of this team. This team would receive periodic training from the local medical (local health center) personnel.
- **Relief and Coordination Team:** This team will maintain the list of all household members so that they can arrange or procure sufficient quantity of food materials for each category of people. They are also responsible for the distribution of relief materials. And in the post disaster period they will make arrangements for getting relief materials from the Block office. They will have the list of shops, wholesale dealerships where food grains are available for use during the time of emergency.
- **Carcasses Disposal Team:** The team would be responsible for the clearing of carcasses (if any) after the disaster. They will be trained in different types of safe carcass disposal methods. The team would put in all their efforts to check spread of diseases by disposing of carcasses at the earliest and in the right manner.

- **Trauma Counseling Team:** It has been seen that most of the community members are traumatized due to loss of family members and assets. After large scale damages, it becomes difficult for some of the victims to get back to a normal state of mind easily. In such a situation, counselling team will be responsible for counselling the victims to ease them of their trauma.
- **Damage Assessment Team** With things getting better after the disaster, the damage assessment team carries out an assessment of the damaged houses, livelihood assets and crops etc. Usually, a government functionary from the state Revenue Department carries out such assessments after a particular period. During this exercise, the damage assessment team will help him/her in making a timely and useful assessment.
- **Simulation Drill:** Simulation drill is an integral part of the ward and village CBDP plan, as it is a scenario-based preparedness exercise to keep the community and the concerned officials fully alert, where different stakeholders play their specific roles. Keeping this in view, the simulations will be organized in all wards and villages to activate DMTs and modification of the DM plan based on the gaps identified during such exercises. Basically, this is a role play simulation exercise, which would help in improving the cohesiveness of the community and coordination with all concerned, during an emergency.

ii. Medical Preparedness

Assam State Disaster Management Authority (ASDMA), in close coordination with Department of Health & Family Welfare, state medical institutes and premier private medical institutions, is working in a cohesive manner to enhance the capacity in emergency medical response and mass casualty management. Disaster management plans for hospitals are being prepared, which are addressing the development and training of medical teams and paramedics, capacity building, trauma and psycho-social care, mass casualty management, triage and COVID care. The surge and casualty handling capacity of all hospitals at the time of disasters have been worked out and recorded (also keeping in view any pandemic), through a consultative process by all districts in the pre disaster phase.

The district hospitals, CHCs and PHCs are being encouraged to formulate appropriate procedures for treatment of casualties during disasters; private hospitals have also been encouraged to prepare similar plans. These plans address the post-disaster disease surveillance systems, networking with hospitals, referral institutions and accessing services and facilities such as availability of ambulances and blood banks.

Creation of mobile surgical teams, mobile hospitals and air/Heli-ambulances, if feasible, for evacuation of patients is a crucial component of disaster management efforts. Further, 108 (Government of Assam Ambulance / Mrityunjay Services), GVK-EMRI services, private ambulance operators, St. John's ambulance services, and where available the Accident Relief Medical Vans (ARMVs) of the Railways will be utilized for emergency medical response. Proper and speedy disposal of dead bodies and animal carcasses will be given due attention in the guidelines. In case of dead bodies, a record of their religion will be maintained together

with their photographs for future identification, before cremation/ burial and such cremation/ burial will be carried out in accordance with the religious practices of the concerned persons.

In addition, the First Aid and Medical Group at district and sub-district level, with equal number of men and women, those with some knowledge of nursing (such as trained 'DAIs' and AWW/ ANMs) will be placed. The members have to go through intensive training and drills for first aid and medical responsibility.

In emergency, the following procedure will be followed for evacuation of marooned persons:

In case of marooned communities, the state/district administration will reach out to the marooned persons on priority, providing relief supplies and may decide to evacuate them as required. In case administration decides to evacuate the marooned persons, the following would need to be followed:

- Evacuation will be carried out within the shortest possible time
- The marooned persons will be transferred to transit camps on priority
- Marooned people will be provided water, medicines, first-aid, and cooked food
- Emergency transport for the seriously injured by motorized boats / air ambulance
- The senior medical officer of PHC would accompany the rescue team along with required medical kit and ensure priority for shifting of those seriously injured or requiring immediate medical attention.
- Water supplied will be in accordance with acceptable standards of potable water.

iii. Key check points for Health Centers, in case of any emergency:

Organize mobile medical teams of specialists within state (and outside if need arises) for immediate response, coordinate with adjoining districts on request from district control room for supply of;

- Medical relief for the injured
- Number of ambulances required and locate hospitals where patients could be sent
- Medical equipment and medicines required
- Special information required regarding treatment as for epidemics etc.
- Blood requirements in emergency
- Treatment of the injured and sick
- Disposal of dead bodies, carcasses
- Preventive medicine and anti-epidemic actions
- Reports on food, water supplies, sanitation and disposal of waste and coordination of services of investigation laboratories, for support services at district level.
- Transit and relief camps for cooking arrangements, sanitation, water supply, disposal of waste, water stagnation and health services.

2.2 EXCLUSIVE EMERGENCY SERVICE IN ASSAM

108 is a free telephone number for emergency services to call anywhere in Assam during an emergency event. The 108 Emergency Response Services is a free 24/7 emergency service for providing integrated medical, police and fire emergency services. The service is provided in Public Private Partnership between State Government and GVK Emergency Management and Research Institute. When an emergency is reported through 1-0-8, the call taker gathers the needed basic information and dispatches appropriate services. Basic information obtained includes:

- Where the call is placed from (District/City/Town/exact location/landmark)
- The type of emergency
- Number of people injured and the condition of the injured
- The caller's name and contact number – for location guidance if required

In addition, St. John's Ambulance Services are also available to handle any sort of medical emergency, as and when required in the state of Assam.

i. Early Warning and Dissemination:

India Meteorological Department (IMD) has been entrusted with this function since its inception in 1875. IMD has nodal stations across the country, including Regional Meteorological Center (RMC) Guwahati, which not only observes the overall weather conditions but also generates forecasting.

In addition, in the state of Assam, there are key IMD nodal stations, which are based at Dibrugarh, Silchar, Barpeta, Kaziranga, North Lakhimpur and Tezpur. These nodal stations monitor the overall weather conditions, and disseminate the information/ warning to concerned officials, after observing the change in normal weather.

The system under CWC (Central Water Commission) focuses on major interstate rivers (Brahmaputra and Barak) and issues flood advisory and the state further supplements these by their own efforts and the weather stations.

With reliable advance information warning about impending floods, loss of human lives and movable properties and human miseries will be reduced to a considerable extent. People and livestock will be shifted to safer places. The Flood Early Warning System will be strengthened further with mutual coordination among agencies, including National Remote Sensing Agency, IMD, CWC, NDMA, ASDMA and DDMA.

Dissemination of warning will have to be done by the following means:

- Inform, update through website, sending emails to the concerned

- Telecast of warning bulletins through TV broadcasting
- Broadcast of information through AIR
- Informing through Police Wireless
- Telegram with highest priority
- SMS, WhatsApp, Signal
- Bulletins to the press
- Broadcast through Postal and Telegraph's (P&T) radio stations.
- Announcement through hand-held loudspeakers in the village/ ward

Table 4: Key Activities of Early Warning Dissemination

Activities	Responsibilities
Setting up Control Rooms (24/7) at the site/ district	Special Relief Commissioner
Assigning duties / functions to the district officials and Sub-Collectors / Revenue Circle Officers.	Revenue Department
Arranging vehicles and sound system for information broadcasting	Government Departments, both at state and district level
Alerting NGOs and seeking assistance from them; assigning responsibilities	District Collector
Early warning to communities close to the rivers and canals	Emergency Officers, All district level officials
Ensure functioning of warning systems and communication systems	State and local NGOs. Local cable operators and radio stations
Holding District-level natural calamity meeting	Deputy Commissioner
Drafting local cable operators to broadcast alerts as running flashes on the TVs/SMS	District Disaster Management Team
State-wide emergency alerts	
Drafting local radio stations/Ham radios with early warning message	
Undertaking mock drills and rehearsals of Preparedness.	

IMD also issues the weather based agro advisory every Tuesday and Friday for farmers, which are found to be fairly useful by its end users. Besides, additional IMD Observatories, Automatic Weather Stations are also going to be very useful in terms of weather forecasting and early warning.

2.3 PREPAREDNESS THROUGH MOCK DRILLS AT ALL LEVELS

Mock drills are important in normal times as well as during an emergency. The mock drill and preparedness activities for disasters will be carried out by the respective nodal agencies at various levels (state, district, sub-district, and at the entity/ unit level). Mock drill on different hazards-based scenarios will be conducted at state level and also across all the districts to make the agencies alert / fit to cope with any situation.

In Assam, there are 27 MAH (Major Accident Hazard) Units, spread across 10 districts of Cachar, Chirang, Dibrugarh, Golaghat, Hailakandi, Kamrup, Karimganj, Morigaon, Sibsaganj, and Tinsukia. Here in these hazardous industries, the mock drills are essential as per the respective onsite and offsite emergency planning. These drills have to be conducted at regular intervals.

As per Manufacture, Storage and Import of Hazardous Chemical (MSIHC) Rules 1989, under The Environment Protection (EP) Act 1986, the onsite mock drills are mandated every six months in the industries. And the comprehensive district level offsite mock drills are mandated every year, for the overall preparedness, including all the stakeholders such as industries, associated departments, communities, civil society organizations and volunteers.

The hospitals will also have to check the preparedness of hospital emergency planning through conducting drills. The Fire and Emergency Services Department would carry out the periodic mock drill, and will specifically note down the parameters like the time taken to reach the affected site and address the emergency, which will help them to be better prepared in case of an emergency. Similarly, the schools, colleges and important office buildings will also have to check the respective preparedness plans through conducting the simulation exercises internally and mock drills at the site.

Besides, the hazard specific contingency drills would be conducted (based on scenario of flood, earthquake, fire, major accident etc.), involving all the key stakeholders, so that everyone would know what s/he would do and where s/he would go.

Mock drill is also an integral part of the ward and village CDBP plan, as it is a preparedness drill to keep the community alert and in operational readiness for effective disaster response at all times. Keeping this in view, mock drills are organized in all villages to activate the DMTs and modification of the DM plan based on the gaps identified during such exercises.

2.4 VOLUNTARY INITIATIVES

Including Aapda Mitra and Local Platform for Stakeholders

With the help of NDMA, Aapda Mitra Scheme has been implemented, in Jorhat and Kamrup districts of Assam. 400 volunteers have been trained (Source: NDMA, GoI Website). The scheme aims to provide the community volunteers with the skills that they would need to respond to their community's immediate needs in the aftermath of a disaster thereby enabling them to undertake basic relief and rescue tasks during emergency situations such as during floods, flash-floods and urban flooding, which are recurrent events in many parts of the State.

The services of these trained community volunteers have been utilized in rescuing the stranded people during floods and cyclones such as Assam perennial Floods. The trained volunteers have also been providing the following services during COVID-19 pandemic under the guidance of District Administrations, which is commendable:

- Distribution of ration and monitoring of temperature.
- Home delivery of essential items such as food, ration, medicines etc. for women headed households, senior citizens, and people with disabilities.
- Logistic support in running and monitoring quarantine and isolation centers and homes of suspect cases.
- Dissemination of information and awareness generation through IEC material, campaigns at public places and at doorsteps to reach the last mile.
- Preparation and distribution of food among the affected population including migrants and homeless people across slum clusters and remote rural areas.
- Conducting an awareness drive to educate rural communities.
- Ensuring that people wear masks and distributing essential items to the community and to migrant labourers.

The Aapda Mitra community initiative would be extended further in other districts of Assam. On similar lines as Aapda Mitra, voluntary initiatives like **Pratirodhi Bandhu** etc. are being undertaken, in some parts of the State of Assam. The local platforms would be utilized extensively, by engaging the **Village Land Management and Conservation Committees (VLMCC)** and the other allied stakeholders, for the overall disaster preparedness, required at the local level. In addition, the required help and guidance will also be taken from DDMA, SDO and Circle Officer as well.

2.5 HAZARD SPECIFIC PREPAREDNESS PLANNING⁴

The hazard specific plans will have to address hazard specific actions by respective government departments/agencies primarily responsible for management function. The hazard specific preparedness plans will be shared with all the concerned stakeholders, who would also be involved in testing the plans through required table-top exercises/simulation exercises/scenario planning, plan updating, monitoring progress and review. The identified Primary Agencies will be reporting to the State Executive Committee (SEC) and ASDMA, and will operate within the arrangements outlined as per the National DM guidelines issued by NDMA. The Fire Services department was renamed as Fire and Emergency Services, Assam in 2013 with a mandate to provide essential services for hazard response in all types of disasters and emergency situations, both natural and manmade, caused by fire, earthquake, landslides, flood and erosion, drought emergency, chemical and biological mishaps, bomb explosions, major accidents in road, air and water, hostage situation etc. and thus being one of the primary agencies in all kinds of

⁴ Reference taken from previous ASDMP

emergency situations. The Table 2 below indicates a list of primary agencies responsible for preparation of hazard specific planning for the State.

Table 5: Primary Agencies Responsible for different hazards/emergencies

Hazard	Primary Agency/ies
Earthquake	Revenue & Disaster Management Department / ASDMA, Fire and Emergency Services
Landslides	Revenue & Disaster Management Department / ASDMA /Housing and Urban Affairs (H&UA) / Fire and Emergency Services
Cyclone and Wind	Revenue & Disaster Management Department / ASDMA, Fire and Emergency Services
Floods	Water Resources Department, Fire and Emergency Services
Urban flooding	Housing and Urban Affairs Department / Local Government, Fire and Emergency Services
Drought	Agriculture Department, Irrigation Department, Fire and Emergency Services
Forest Fire	Environment & Forests Department, Fire and Emergency Services
Lightning	Revenue & Disaster Management Department, Fire and Emergency Services
Chemical / Hazardous Material release	Industries & Commerce Department, Fire and Emergency Services
Accident	Indian Railways (rail) Transport Department (road) Transport department (inland waterways), Fire and Emergency Services
Pandemic (including COVID)/ Epidemic / Biological related	Health and Family Welfare Department, Fire and Emergency Services
Structural collapse	Public Works Department and Housing and Urban Affairs Department, Fire and Emergency Services
Chemical, Biological, Radiological, Nuclear (CBRN)	Home Department, Fire and Emergency Services
Crop Failure	Agriculture Department
Power Failure	Power (Electricity) Department

2.6 FUNCTION SPECIFIC PREPAREDNESS PLANNING

A total of 19 key functions have been outlined, which are specific to different sectors and allied services. All these key functions are addressed, mainly by one Primary Department, and followed by the secondary department, from the sector specific/function specific preparedness planning point of view.

Although a single department is featured with primary responsibility, the functions usually spread beyond the capabilities of an individual department. Primary responsibility agency will provide the leadership and coordination support and technical inputs for conduct of activities as per the intended function.

The following table⁵ outlines primary responsibility and key functions of the Departments:

Table 6: Primary responsibility of the key functions and their concerned Departments

Primary Responsibility	Department
DM Operations and Plans, Warnings	Revenue & DM Department
of Medical Care and Health Services	Health & Family Welfare Department
Law & Order, Safety & Security	Home Department
Emergency Response, Search & Rescue	Home Department (Police, Fire and Emergency Services, Civil Defense)
Buildings & Lifeline Infrastructure / Communication Infrastructure (<i>Roads & Bridges</i>)	Public Works Department
Drinking Water Supply & Sanitation	Public Health Engineering Department
Transport Systems	Transport Department
Emergency supply of food & basic needs	Food & Civil Supplies Department
Broadcasting & relay of public information	Information & Public Relations Department
Welfare Services	Department/ Directorate of Women and Child Development; Department/Directorate of Social Justice & Empowerment; Department/Directorate of Tribal Affairs (Plain)
Drought management	Agriculture Department, Irrigation Department
Flood Protection and River Erosion Management & Drainage Development Works	Water Resources Department
Power supply	Power (Electricity) Department

⁵ Reference taken from previous ASDMP

DM Education & School/Institution Safety	Education Department
Vulnerability reduction in rural areas	Panchayat & Rural Development Department
Vulnerability reduction in urban areas & built environment	Department of Housing and Urban Affairs
Finance arrangements	Finance Department
Livestock management, animal care services	Animal Husbandry & Veterinary Department
Information Technology and Communication	Information Technology Department

2.7 RESPONSE

For effective response, all the stakeholders need to have a clear vision about all potential hazards, their consequences, clarity on the plans of action, and well versed with their roles and responsibilities. Any emergency requires a quick response to save lives, contain the responders such as members of Incident Response Teams (IRT) of district, block, or other agencies (medical fire, police, civil supplies, and municipalities), manage emergencies immediately at the local level. If an emergency escalates beyond their capabilities, the local administration will seek assistance from the district administration or the State Government of Assam. If the State Government considers it necessary, it will seek central assistance.

i. Institutional Framework

The general superintendence, direction and control of NDRF is with NDMA, GoI. Further, there are specific tasks exercised by the NDMA and similarly State will command and control the SDRF. The immediate response in the event of a disaster lies with the local authorities with the support of the state government, central government and the specialized agencies.

The central government supplements the efforts of state governments by providing logistic and financial support, deploying NDRF, Armed Forces, CAPF, and other specialized agencies mandated to respond to particular types of disasters. It deposes experts to assist the state government in planning and its implementation as per request from the state government.

An integrated State Emergency Operations Centre (SEOC), operational at ASDMA, will be further strengthened and networked with all the DEOCs in the state. It will be connected to the following control:

All agencies designated to provide early warnings and information about hazardous events

- District Emergency Operations Centre (DEOC)
- Concerned Ministries of The Government of India (including IMD, CWC, NRSC & other entities)
- National Disaster Management Authority
- NDRF & SDRF
- Integrated Defense Staff (IDS)
- Neighboring SEOCs/ DEOCs

The National Emergency Operations Centre (NEOC) will act as communication and coordination hub and it will maintain constant touch with early warning agencies for updated inputs to State Emergency Operations Centre (SEOC) and District Emergency Operations Centre (DEOC) through all the available communication channels and mechanism.

ii. Key components of Response Plan

Following are the key components of State Disaster Response Plan of Assam:

(a) State Disaster Response Force:

Assam State has created response capabilities from its existing resources by equipping and training at least one battalion equivalent force for effective management of disasters and necessary training arrangement aligned with disaster management skills in consultation with the National Disaster Response Force. Primarily, the State Disaster Response Force will be responsible for handling any sort of emergencies, at the state level. One battalion of NDRF/SDRF has 6 companies, each company having 3 teams with about 43-44 personnel each.

(b) Role of Civil Defense & Home Guards

Providing the public safety, minimizing damages to property and protecting public lives are the primary objectives of Civil Defense and Home Guards of Assam. The trainings are imparted to the Civil Defense and Home Guards to include disaster management aspects, especially on response, recovery and relief operations, which actually strengthen the mission of disaster-free state and are expected to yield significant results in mitigating disasters in Assam. At state level, this portfolio will be headed by DG Civil Defense and Commandant General Home Guards to command and control the entire state level functions pertaining to Civil Defense and Home Guards.

(c) Fire and Emergency Services

The Assam Fire & Emergency Services have always been discharging duties round the clock and are always in an operational readiness to respond to any emergent nature of calls. The Fire and Emergency Services are crucial and one of the most immediate responders to disasters. Fire Services can be approached by dialing the direct number 101, in case of any emergency. In order to further enhance the level of services in crisis, the staff of Fire & Emergency Services is being trained and retrained in disaster management skills on periodic basis, and will have to be further upgraded to acquire multi-hazard rescue capabilities, in order to tackle any emergency related to fire or the allied substances.

(d) Media support

In emergency and disaster situations, the media will act both for collecting reliable information on status of disaster and disaster victims and broadcasting it for the effective coordination of relief work at every level. The role of media, print as well as electronic, thus becomes critical, especially the ways, in which media can play a vital role in public awareness and preparedness. The media does this in the following ways: through educating the public about the disasters, warnings, information dissemination, to alert the government machinery and nodal entities, reaching the affected communities well in time, helping out the relief communities and facilitating discussions about disaster preparedness, and updating the people. The nodal person

will act as the public relations officer and the person will coordinate with local media to publicize the right information.

(e) Role of NGOs and Volunteer Organizations

NGOs and voluntary organizations are the first to respond before any outside assistance can reach the disaster site. In certain disaster-prone areas of Assam, the group of young volunteers are being formed and trained to undertake essential tasks which would reduce loss of life and property. A wide range of volunteer organizations including INGOs such as UNICEF, local NGOs, CBOs such as SHGs and a number of other institutions such as NCC, NSS, National Yuva Kendra Sanghathan (NYKS) are active in the state in various ways during disaster response scenarios.

(f) Assam State Emergency Operations Centre (SEOC)

The Assam State Emergency Operation Center (SEOC) will be the hub of all the activities related to disaster response in the state. The primary function of the SEOC is to execute all the planned activities for disaster response and relief during any emergency situation, which includes the coordination, data collection, operation management, record keeping, public information and resource management. For the effective management of resources, disaster supplies and other response activities, focal points or centers will have to be established. These points will have to be well networked starting from the State to the District and finally leading to the disaster site.

State Emergency Operations Centre (SEOC), District Emergency Operations Centre (DEOC) and Incident Command Post (ICP) at the disaster site are the designated focal points that will be responsible for coordinating overall activities and the flow of relief supplies from the State. The State Emergency Operations Centre (SEOC) will be maintained and run round the clock which will expand to undertake and coordinate activities during a disaster. Once a warning or a First Information Report is received, the SEOC will become fully operational. In-Charge of Assam SEOC will be the designated Project Response Officer, and will be based in Guwahati. The State Emergency Operations Centre stays operational through-out the year in preparedness mode, working during day time in order to take care of the extended preparedness activities of data management, staff awareness and training, which is essential for the smooth functioning of the SEOC during crisis situations.

The Assam SEOC Toll Free Contact Lines are available at number 1070 and 1079, for any emergency situation. The SEOC Assam, Guwahati, In Charge may be contacted at 0361-2237219 and at 0361-2237377. During an emergency, the SEOC will get upgraded, which with the support of all the emergency stakeholders, will be operating it round the clock.

The aim of the SEOC will be to provide centralized direction and control of all the following functions:

- Emergency operations
- Communications and warning, which includes handling of 24 hrs. emergency toll free numbers.

- Centralized state level disaster resource database
- Requesting additional resources during the disaster phase from neighbouring districts of the affected area
- Coordinating overseas support and aid.
- Issuing emergency information and instructions specific to departments,
- Consolidation, analysis, and dissemination of damage assessment data and preparation of consolidated reports

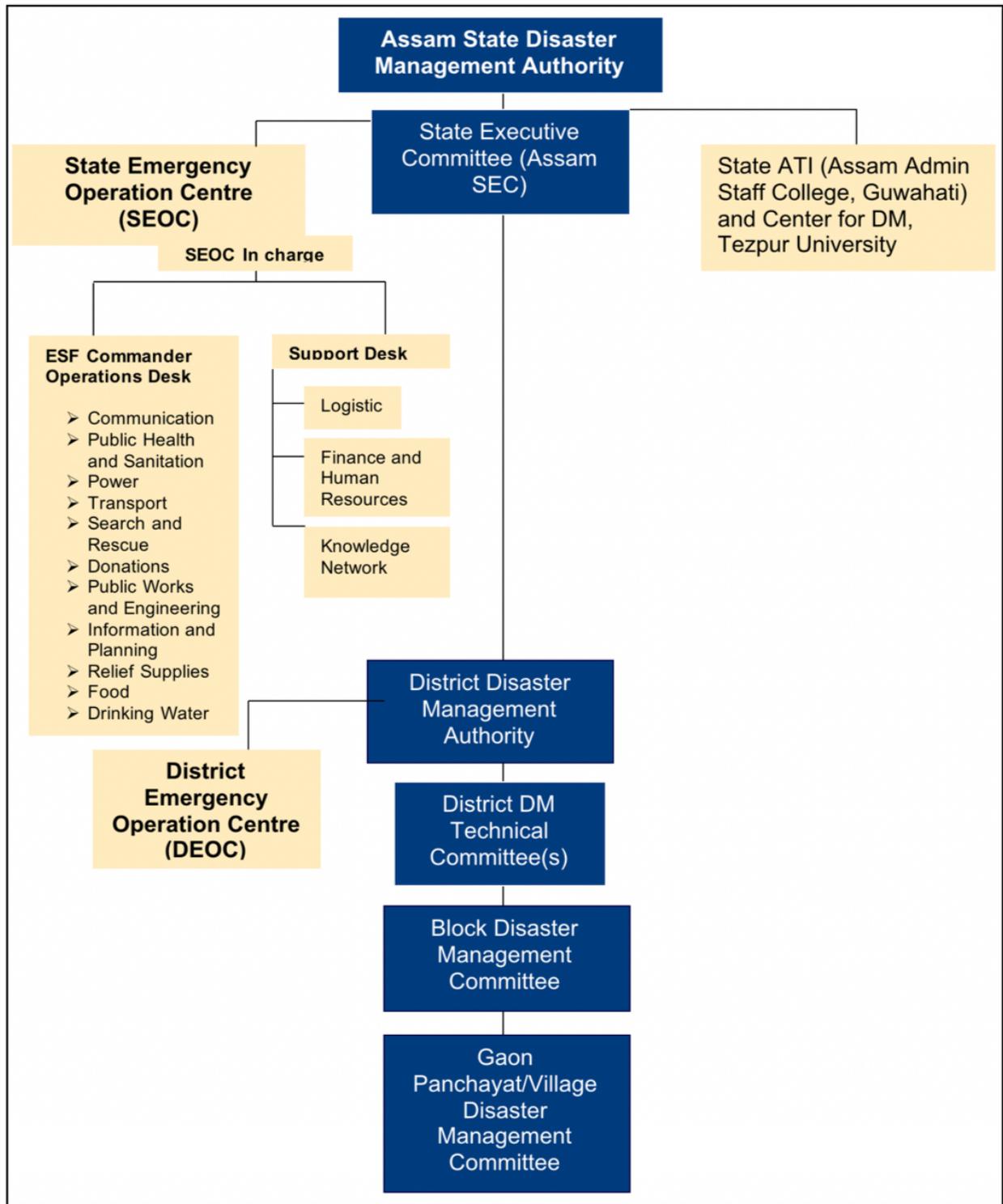


Figure D: Organizational Setup of SEOC

The EOC will comprise the following:

1. SEOC In-charge

During non-disaster times, the SEOC will work under the supervision of the relief commissioner. In a disaster situation, the SEOC will come under direct control of the Additional Chief Secretary or the person designated by him as the Chief of Operations. He/she is the primary role player in the EOC, and is responsible for the overall coordination and decision making. He/she will also report the status of the SEOC operations and the disaster situation to the Chief Secretary.

2. Operations Section

The Operations Section will ensure smooth and planned functioning of the SEOC.

It will fulfill the following functions:

- Handle requests for emergency personnel, equipment and other resources
- Designate responsibilities and duties for management of the SEOC
- Manage storage, handling and set-up of incoming equipment and personnel
- Ensure medical care, feeding and housing for SEOC personnel
- Maintain documentation of resource inventories, allocation and availability.
- Manage finances for SEOC operations

3. Representatives in SEOC

Representatives of the concerned State Departments as indicated in the Organizational Set up of SEOC and the associated entities will be present (as far as possible) at the SEOC to take part in the operations and facilitate quick coordination between the SEOC command and their parent departments towards ensuring quick information availability and decision making:

Further, the Emergency Support Functions (ESF) have been established to support the SEOC functions. Each ESF is headed by a lead department for coordinating the delivery of goods and services to the disaster area, and it's supported by various departments and agencies. During a disaster, the ESFs will be an integral part of the overall system to carry out response activities. After a major disaster or emergency requiring State response, primary agencies, when directed by the EOC, will take actions to identify requirements and mobilize and deploy resources to the affected. These would assist the State in its response actions under fourteen ESFs.

The ESFs have been explained in detail, in the Preparedness and Response Matrix section of this chapter, along with the concerned agencies responsible at the State and District level.

iii. Coordination of Response at State Level

At the State level, the State Government has assigned nodal responsibilities to specific departments for coordinating disaster-specific response. The Department of Revenue (mandated with Disaster Management) will coordinate response in the event of any disaster.

The State Government will activate the IRTs at State, District, or block level and ensure coordination with the SEOC. The ASDMA will provide the technical support needed to strengthen the response system.

It is essential that the first responders and relief reach the affected areas in the shortest possible time. Often, the rare inordinate delays due to real constraints imposed by the location, nature of disasters and, most regrettably, due to inadequate preparedness. In many situations, even a delay of an hour/ couple of hours can prove to be too late or unacceptable. To make matters worse, relief tends to arrive in a highly fragmented or uncoordinated form with multiple organizations acting independently of each other without a cohesive plan, without mechanisms to avoid overlaps and without proper prioritization of different aspects of relief such as shelter, clothing, food, or medicine. From an operational perspective, the challenges are similar across most hazards. The state will consider the IRS Guidelines (Formulated by NDMA) for standardization of operations, bring clarity to the roles of various departments and other agencies, which are common to most disaster response situations.

The district administration shall identify sites for establishment of various facilities, as mentioned in the IRS guidelines such as Incident Command Post, relief camp base, staging area, camp, and helipad, for providing various services during the response. The local administration shall widely disseminate and publicize information about these arrangements as mandated in the SDMP and DDMP.

Since disaster response operations are multifaceted, time-sensitive, extremely fast-moving, and mostly unpredictable, it requires rapid assessment, close coordination among several departments, quick machinery as well as close monitoring. To prevent delays and eliminate ambiguities regarding chain of command, the DDMPs shall clearly spell out the response organization as per IRS. These plans will clearly identify the personnel to be deputed, various responsibilities in the IRT at different levels of administration along with proper responsibility and accountability framework.

iv. Responding to requests for Central Assistance State

In the State of Assam, the major disasters like earthquakes, floods, chemical accidents, oil fires etc. result in large casualties and inflict tremendous damage on the lives, property, infrastructure and the surrounding environment. The Government of India has established a flexible response mechanism for a prompt and effective delivery of essential services as well as resources to assist a State Government hit hard by a severe disaster. Disaster management is considered as the responsibility of the State Government, and hence the primary responsibility for under taking rescue, relief and rehabilitation measures during a disaster lies with the State Government.

The Central Government supplements their efforts through logistic and financial support during severe disasters as requested by the State Government. Responding to such emergencies stretches their sources of district and State administration to the utmost and they may seek the assistance of Central Ministries/Specialized Ministries/Agencies as required.

v. Management of Disasters impacting more than one State

The administrative hierarchy of the Country is categorized into National, State and District level administrations. This presents the challenges in respect of disasters impacting more than one State. At times, the impact of disasters occurring in Assam State may spread over to the areas of other States. Similarly, preventive measures in respect of certain disasters, such as floods, etc. will be taken in one State, as the impact of their occurrence may affect another. Management of such situations calls for a coordinated approach, which can respond to a range of issues quite different from those that normally present themselves – before, during and after the event. The National Crisis Management Committee (NCCM) will play a major role in handling such multi-state disasters. The NDMA will encourage the identification of such situations and promote the establishment of mechanisms for coordinated strategies for dealing with them by the States and Central Ministries, departments and other relevant agencies.

vi. Emergency Functions and Responsibilities: State and District level

While there are specific departments or/and agencies that provide emergency response to various aspects of a disaster situation, the response intrinsically follows a multi-hazard approach. Therefore, all the response activities have been summarized in as in the matrix applicable to all types of disasters. The responsibility matrix specifies the major theme of response. It specifies the agencies of the State Government responsible for the major theme of response. Different departments will provide specialized emergency support to the response effort. Certain agencies of State Government will play a lead role, while others will be in a supporting role. The SDMA, the Department of Revenue (DM) is the nodal agency at the state level for coordination of response.

The DDMA is the nodal agency for coordination of response at District level. Various departments, agencies of state government will prepare their own hazard specific response plans as per guidelines of the NDMA and in line with the NDMP and SDMP. They would ensure the preparedness for response and will carry out regular mock drills and conduct tests of readiness periodically, and the departments, district administrations and other agencies will report the status to the ASDMA.

Early Warning, Satellite inputs, Information Dissemination	Drinking Water/Dewatering Pumps/Sanitation Facilities/Public Health	Housing and Temporary Shelters
<ul style="list-style-type: none"> •Evacuation •Search and Rescue •Medical care for casualties •Disposal of animal carcasses •Fodder for livestock in scarcity-hit areas 	<ul style="list-style-type: none"> •Food and Essential Supplies •Communication •Relief Logistics and Supply Chain Management •Data Collection and Management 	<ul style="list-style-type: none"> •Power •Fuel •Transportation •Livestock Camps/Shelters •Relief Employment •Media Relation

Figure E: The major tasks of response given in the responsibility matrix

Table 7: Responsibility Matrix for Preparedness and Response at State level⁶

The major tasks of response given in the responsibility matrix are:					
S	Emergency Support Function (ESF)	State Agencies	State	District	Responsibility District
1	Communication	Revenue and Disaster Management, ASD MA	<p>Fail safe communication plan is prepared with all early warning agencies.</p> <p>Logistic section of the state level IRT coordinates with central agencies to provide effective communication support to the field level IRTs for response.</p> <p>Establish protocols and responsibilities for coordinating with central agencies and various service providers could be contacted and deployed at the site of emergency.</p> <p>Inter-Operability the ability of emergency responders to communicate among jurisdictions, disciplines, and levels of government using a variety of frequency bands, as needed and as authorized of communication services.</p>	DDMA; DEOC; PRIs; ULBs; Police; Health; Fire; HAM Radio operator; Fisheries; Veterinary; DIO and all other relevant departments.	<p>Establishment of control room at district, and Panchayat level along with communication. Pre-deploying information officer to media and public as per IRS guidelines. Prepare plan for Fail safe communication with all early warning agencies.</p> <p>Logistic section of the district level IRT coordinates with State and district agencies/ departments to provide effective communication support to the field level IRTs for response.</p> <p>District EOCs are equipped with satellite phones/ VHF/ HF as a backup to the landline.</p> <p>Ensure all communication equipment, especially the V-SAT, satellite phones are in good working condition 24x7 on all days through regular testing.</p> <p>Prepare Communication Plans for smooth coordination</p>

⁶ Inspired by National DM Plan of India

			<p>Coordination with mobile service providers.</p> <p>Have binding agreements with telecom service provider stores to re damaged facilities and setup temporary facilities on emergency basis.</p>		<p>with the field level IRTs.</p> <p>Establish protocols and responsibilities for coordinating with all agencies and various service providers.</p> <p>Prepare, update and maintain list of HAM Operators who could be contacted and deployed at the site of emergency.</p> <p>Have binding agreements with telecom service providers to restore damaged facilities and setup temporary facilities on emergency basis. Procuring wireless communication (walky-talky).</p> <p>Ensure Inter-Operability among different telecom service providers.</p>
		Dept. of Information and Public relations and other relevant agencies	To provide emergency communication to communities. To ensure communication facilities to support state and district actions. To coordinate the temporary communication requirement		
2.	Data Collection &	Revenue Dept (DM)	Maintain proper records of all the essential services needed or rescue, response and phases, both by the	DDMA (DEOC)P&RD; PRI;	Representative of DDMA works with the planning section at state level for making of Incident Action

	Management); ASDMA	Departments and Private sector.	ULB's; Police; Health & Family Welfare (H&FW); F&ES; Fisheries; Veterinary; DIO; Information and public relations	Plan (IAP) and dissemination of information. Creation of a cell at the district level (preferably as part of DEOC) and place dedicated resources to collect / update data on all essential services (as per the template given in the IRS guidelines) which will help during the response phase for effective reporting and compilation
		ASDMA; SEO C	Representative of ASDMA works with the planning section at state level for making of IAP and dissemination of information		
		SEO C	Place dedicated resources to collect / updated at a on all essential services which will help during response for effective reporting and compilation		
3	Disposal of Animal Carcasses.	Lead Agencies : Dept of Animal Husbandry & Veterinary	Provide clarity when required in following the national guidelines. Facilitate the support from various national laboratories and institutions relevant for recording evidence and compiling data on the dead such as forensic, DNA studies, etc. Ensure that no other health hazard is created both for the staff as well as the public	DDMA; AHD; Police; Health; PRI; ULB; Fire & Emergency Services; Police; SDRF; Civil Defense; SDRF and NGOs	Burial shall be performed in the most remote area possible. Burial areas shall be located a minimum of 300 feet down gradient from wells, springs and other water sources. Depth of the pit should be 10 feet and width should be as per requirement. Use of disinfectant and guarding the area with bamboo fencing. Activate the Animal Carcass Management Group in the IRS as per national

				<p>other relevant departments at district level.</p> <p>guidelines.</p> <p>Equip and train the staff in carcass removal/disposal at pre-identified sites to ensure that no other health hazard is created both for the staff as well as the public.</p> <p>Establish an information Centre at the site of Disaster / District HQ with logistic support of recovery van, labour, etc. Inform all other Stakeholders, both in government and non-Governmental sector, including the elected, Panchayat Raj functionaries and the community.</p> <p>Activate the District DM Plan. Nodal Officer in the incident Response System will activate all other stakeholders associated with Disposal of the Dead.</p> <p>Establish an information Centre at the site of Disaster/ District HQ. Inform all other Stakeholders, both in government and non-Governmental sector, including the elected, Panchayat Raj functionaries and the community.</p> <p>Activate search and Rescue teams of Fire & Emergency Services, Police, SDRF, Civil Defense, SDRF and NGOs for the retrieval of the injured and the dead</p>
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					<p>animals.</p> <p>The injured will get the priority for First Aid and evacuation to hospital.</p> <p>Prepare a record of details of the bodies retrieved in the Dead Body Inventory Record Register, allocated individual Identification Number, photographed, and then Dead Body identification Form initiated.</p>
		<p>ULB s; PRIs in coor dinat ion with Dept of Ani mal Husb andr y & Vete rinar y</p>	<p>Burial shall be performed in most remote area possible. Burial are as shall be located a minimum of 300 feet down gradient from wells, springs and other water Resources.</p> <p>Activate the Animal Carcass Management Group in the IRS as per national guidelines</p>		
			<p>Equip and train the staff in carcass removal/ disposal at pre-identified sites to ensure that no other health hazard is created both for the staff as well as the public.</p> <p>Activate the State DM Plan</p>		

			<p>Nodal Officer in the incident Response System will activate all other stakeholders associated with Disposal of the dead body.</p> <p>Use of recommended safety kits and personal protection by the staff deployed in carcass disposal so that they are not infected.</p> <p>Take measures for dispersal of financial relief as per norms.</p> <p>Use of recommended safety kits and personal protection by the staff deployed in carcass disposal so that they are not infected.</p> <p>Take measures for dispersal financial relief as per Norms.</p>		
4	<p>Drinking Water / De-watering Pumps/ Sanitation Facilities</p>	<p>PHED; PRIs; H&UAs; ULBs; DDMA</p>	<p>Ensure strict compliance with minimum standards of relief as per Section 12 of DM Act 2005.</p> <p>Provide emergency water supplies when there is scarcity of potable water.</p> <p>Dept. of PHED works with the logistic section of the state level IRT to provide effective services to the field level IRTs.</p>	<p>DDMA ; DEOC; PRI; ULB's; PHED; all other relevant Departments/ Agencies; Civil Defense</p>	<p>Water Resources mapping.</p> <p>Arrangement of Mobile toilets or temporary toilets in Relief camps.</p> <p>Ensure strict compliance with minimum standards of relief as per Section 12 of DM Act 2005.</p> <p>Provide disaster-affected areas with clean drinking water and to prevent the spread of water borne diseases.</p>

		<p>Necessary arrangements are made for supplying drinking water through tankers.</p> <p>Necessary arrangements are made for supplying chlorine tablets.</p> <p>MoU in place with vehicle manufactures for vehicle mounted RO Systems.</p> <p>Providing vehicle mounted heavy duty de watering pumps with a condition to make them available usually within 6 hours of request.</p> <p>Availability of hygienic portable toilets and bleaching powder through pre-disaster agreements/ contracts with suppliers.</p> <p>Provide disaster-affected areas with clean drinking water and to prevent the spread of water borne diseases</p>		<p>Provide emergency water supplies when there is scarcity of potable water.</p> <p>Respond to the public health needs so as to prevent and mitigate a sudden outbreak of epidemic and water contamination as well as other public health-related problems in the aftermath of a disaster.</p> <p>Dept. of Water Resources and Drinking Water and Sanitation works with the logistic section of the state level IRT to provide effective services to the field level IRTs.</p> <p>Necessary arrangements are made for supplying drinking water through tankers.</p> <p>Necessary arrangements are made for supplying chlorine tablets.</p> <p>Regular testing of drinking water, Scientific Disposal of waste water. Solid waste management in scientific way.</p>
	Health and Family Welfare Department	Respond to the public health needs so as to prevent and mitigate a sudden outbreak of epidemic, water and food contamination as well as other public health-related problems		

		nt	in the aftermath of a disaster.		
		Power Dept	Integrated power source and pouch facility with a condition that system would be in place usually within 6 hours of placing order		
5	Early Warning, Maps, Satellite Data, Information Dissemination	MoES; IMD; NRS; C; ISR; CW; C Support Agencies: ASD; MA; SEO; C; all other relevant Departments/Agencies	Issue forecasts, alerts, early warnings (where possible) to reduce loss of life and property. Disseminating warnings and information to all Departments/Agencies of State Government and stakeholders. Early warning through mass media, Internet, Phone call and all possible communication channels. Use of satellite imageries and other scientific methods for risk assessment and forecasting. On request, support the affected state government in evacuation of people and animals from areas likely to be affected by major disaster. Mobilize transport and resources for evacuation. Identify and prepare	DEOC; DDMA; all other relevant Departments/Agencies at district Level.	To disseminate early warnings to the local authorities, and the public at large in the areas likely to be affected by a disaster so as to reduce loss of life and property. Dissemination of warnings and information up to the last mile. Ensure appropriate compilation/analysis of received data. Early warning through mass media, Internet, Phone call.

		<p>sites for temporary relocation of affected people and animals.</p> <p>Identify requirements of resources for evacuation such as helicopters, aircrafts, high speed boats and ships to be provided to the affected state government.</p> <p>Request for central resources, if needed.</p> <p>Coordinate with central agencies to mobilize required resources.</p> <p>Monitor the situation.</p> <p>Earmark resources / units / battalions of SDRF for quick deployment.</p> <p>Prepare handbook/ manuals and SOP for evacuation for people and animals.</p> <p>Undertake review and revise DMPs and SOPs after each major incident.</p> <p>Prepare evacuation plan considering local condition and periodically update it</p> <p>Undertake mock/simulation drills</p>	
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			<p>Prepare operational checklists.</p> <p>Prepare list of agencies/organizations who could assist in evacuation.</p> <p>Web-based resource inventory, regular updates.</p>		
6	Evacuation of People and Animals	<p>Lead Agency: Police; Home guards; Assam State F&E S; civil defense; SDRF</p> <p>Support Agencies: Animal Husbandry & Veterinary;</p>	<p>Issue forecasts, alerts, early warnings. (Where possible) to reduce loss of life and property.</p> <p>Disseminating warnings and information to all Departments / Agencies of State Government and stakeholders.</p> <p>Early warning through mass media, Internet, Phone call and all possible communication channels.</p> <p>Use of satellite imageries and other scientific methods for risk assessment and forecasting.</p> <p>On request, support the affected state government in evacuation of people and animals from areas likely to be affected by major disaster.</p> <p>Mobilize transport and resources for</p>	DDMA; PRIs; ULBs; Animal Husbandry & Veterinary; Health and Family Welfare ; all other relevant Departments/ Agencies at district level	<p>Quick assessment of evacuation needs such as the number of people and animals to be evacuated and mode of evacuation.</p> <p>Mobilize transport and resources for evacuation.</p> <p>Identify and prepare sites for temporary relocation of affected people and animals.</p> <p>Identify requirements of resources for evacuation such as helicopters, aircrafts, high speed boats and ships to be provided to the affected state government.</p> <p>Monitor the situation.</p> <p>Earmark resources/units/ battalions of SDRF for quick deployment.</p> <p>Prepare handbook/ manuals and SOP for evacuation for people and animals.</p> <p>Under take review and revise DMPs and SOPs after reach</p>

		<p>P&R D (DM); ASD MA; Health and Family Welfare</p> <p>evacuation.</p> <p>Identify and prepare sites for temporary relocation of affected people and animals.</p> <p>Identify requirements of resources for evacuation such as helicopters, aircrafts, high speed boats and ships to be provided to the affected state government.</p> <p>Request for central resources, if needed.</p> <p>Coordinate with central agencies to mobilize required resources.</p> <p>Monitor the situation.</p> <p>Earmark resources/units/battalions of SDRF for quick deployment.</p> <p>Prepare handbook/manuals and SOP for evacuation for people and animals.</p> <p>Undertake review and revise DMPs and SOPs after each major incident.</p> <p>Prepare evacuation plan considering local conditions and periodically update it.</p>	<p>major incident.</p> <p>Prepare evacuation plan considering local conditions and periodically update it.</p> <p>Undertake mock/simulation drills.</p> <p>Prepare operational checklists.</p> <p>Prepare list of agencies/organizations who could assist in evacuation.</p> <p>Web-based resource inventory and its regular updates.</p>
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			<p>Undertake mock/simulation drills Prepare operational checklists.</p> <p>Prepare list of agencies/organizations who could assist in evacuation.</p> <p>Web-based resource inventory and its regular updates.</p>		
7	Fodder for livestock in scarcity-hit areas	<p>Lead Agencies: Animal Husbandry & Veterinary Dept.</p> <p>Support Agencies: Agriculture and Horticulture Dept.</p>	<p>Mobilize fodder and cattle feed to meet shortages, as in drought or scarcity conditions.</p> <p>Transport fodder from storage facilities or collection centers to the scarcity-hit areas.</p> <p>Organize collection centres for fodder and cattle feed.</p> <p>Enlist PSUs and private agencies for providing fodder and other support.</p>	DDMA; Animal Husbandry & Veterinary; Agriculture and Horticulture Dept; PRIs; ULBs; all other relevant Departments/Agencies at district level	<p>Ensure adequate storage and supply of fodder.</p> <p>Fodder banks to be set up in all the disaster affected areas. Goshala to be setup.</p> <p>Mobilize fodder and cattle feed to meet shortages, as in drought or scarcity conditions.</p> <p>Transport fodder from storage facilities or collection centres to the scarcity-hit areas.</p> <p>Organize collection centres for fodder and cattle feed.</p> <p>Enlist PSUs and private agencies for providing fodder and other support</p>
8	Food &Ess	Lead	Dept. of Food and Civil Supply to work with the	DDMA;	Coordinate the activities involved with the

	<p>entia l Supp lies</p>	<p>Age ncie s: Foo d, Civi l Sup plies and Con sum er Affa irs (FC SCA)</p>	<p>logistic section of the state level IRT to provide effective services to the field level IRTs for response. Agreements/MoUs with organisations, trusts, and firms for setting up community kitchens in the affected areas.</p> <p>Depending upon the requirement, coordinate with the relevant Central Ministry to make sure that the supplies reach the site on time.</p> <p>Identify a dedicated team at the local level to receive the supplies, maintain log, and distribute the mat required locations.</p> <p>Ensure food storage facilities have sufficient stocks and are located in relatively risk-free locations provide effective services to the field level IRTs for response. Agreements/ MoUs with organisations, trusts, and firms for setting up community kitchens in the affected areas.</p> <p>Depending upon the requirement, coordinate with the relevant Central Ministry to make sure</p>	<p>PRIs ; ULB s; FCS CA; PDS cente rs; All other relev ant Depa rtme nts/ Age ncies</p> <p>at distri ct level</p>	<p>emergency provisions.</p> <p>Temporary shelters.</p> <p>Emergency mass feeding.</p> <p>To coordinate bulk distribution of emergency supplies.</p> <p>To provide logistical and resource support to local entities.</p> <p>In some instances, services also may be provided to disaster workers.</p> <p>To coordinate post disaster needs assessment.</p> <p>Support to Local Administration.</p> <p>Allocate and specify type of requirements depending on need.</p> <p>Organize donation (material) for easy distribution before entering disaster site.</p> <p>To assist the primary agency in arranging and supplying relief supplies.</p> <p>To assist the primary agency in running the relief camps.</p> <p>Agreements/MoUs with organisations, trusts, and firms for setting up community kitchens in the affected areas.</p>
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			that the supplies reach the site on time. Deploy a dedicated team at the local level to receive the supplies, maintain log (manual or computerized), and distribute the material at required locations.		Deploy a dedicated team at the local level to receive the supplies, maintain log and distribute them at required locations. Ensure food storage facilities have sufficient stocks and are located in relatively risk-free locations
9	Fuel	Lead Agencies : Food, Civil Supplies and Consumer Affairs	Logistic section of the state level IRT to coordinate with the relevant departments/agencies to provide effective services (Ground Support Unit) to the field level IRTs for response. Assess and make the requirement of fuel clear with the Central Ministry and coordinate the delivery of fuel through local arrangements. Ensure sufficient availability of tankers/other vehicles for local transportation through the relevant Dept. Establish mechanism for stocking the fuel at strategic locations with relevant agencies.	DDMA; ULBs PRIs; FCSCA ; all other relevant Departments	Logistic section of the state level IRT to coordinate with the relevant departments/agencies to provide effective services (Ground Support Unit) to the field level IRTs for response. Assess and make the requirement of fuel clear with the Central Ministry and coordinate the delivery of fuel through local arrangements. Ensure sufficient availability of other vehicles for local transportation through the relevant Dept. Establish mechanism for stocking the fuel at strategic locations.
10	Housing and Temporary Shelter	Lead Agencies : Housing and	Ensure strict compliance with minimum standards of relief as per Section 12 of DM Act 2005. Logistic section of the state level IRT must	PRIs; ULBs; All other housing departments	Provide adequate and appropriate shelter to all population; Quick assessment and identifying the area for the establishment of the relief

<p>ers/Relief Camp management</p>	<p>Urban Affairs</p>	<p>coordinate with Railways to provide effective services to the field level IRTs for response.</p> <p>Alternate places for establishment of facilities as mentioned in the IRS guidelines such as relief camp, base, camp etc. are identified in advance and included in the local DM Plan.</p> <p>Identify shelter suppliers for supply of tents/shelters up to the village level and enter in to an MoU for supply at short notice (usually less than 24 hours) as per requirement.</p> <p>Stock pile tents, tarpaulin and temporary shelter material in regional warehouses/stores.</p> <p>Depending upon the requirement, coordinate with the relevant Central/State Ministry to make sure that the tents/shelters reach the site on time.</p> <p>Deploy a dedicated team at the local level to receive the tents/shelters.</p> <p>Maintain logs (manual or</p>	<p>/Agencies</p>	<p>camps;</p> <p>Identification of public buildings as possible shelters; Identifying the population which can be provided with support in their own place and need not be shifted reallocated;</p> <p>Locate relief camps close to open traffic and transport links.</p> <p>Support to Local Administration;</p> <p>Locate adequate relief camps based on survey of damaged houses;</p> <p>Develop alternative arrangements for population living in structures that might be affected even after the disaster. PWD Dept would assist the primary agency in establishing temporary shelters of larger dimensions; Department of Panchayat Raj through local Panchayats would assist the primary agency in establishing shelters of smaller dimensions.</p> <ul style="list-style-type: none"> • Please refer to the relief camp management SoP for specific actions: http://asdma.gov.in/download/SOP_on_Relief%20Camp%20Management_final.pdf
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			computerized) of all material movements and details of distribution to required locations.		
11	Management of Dead Persons	<p>Lead Agencies: Health and Family Welfare Dept.</p> <p>Supporting Agencies: Police</p>	<p>Adopt SOP in SDMP and DDMP as per National Guidelines and implement it properly.</p> <p>Establishing Dead Body Management Group in the IRS at state and district levels as per national guidelines.</p> <p>Deploy trained squads for detection and recovery of the survivors and the dead as early as possible after the event. The recovery team will use basic personal protective kit and follow adequate precautions.</p> <p>Follow the protocols for the identification of the dead, recording evidence, transport and burial (i.e., disposal as per norms).</p> <p>Follow protocols to maintain the dignity of the dead in all possible ways.</p> <p>If required, establish temporary mortuaries with adequate facilities where it is possible.</p> <p>In special cases,</p>	DDMA; ULBs; PRIs; District level departments; Health and Family Welfare ; Police; F&ES.	<p>Nodal Officer in the incident Response System will activate all other stakeholders associated with Disposal of the Dead.</p> <p>Establish an information Centre at the site of Disaster/District HQ.</p> <p>Inform all other Stakeholders, both in government and non-Governmental sector, including the elected, Panchayat Raj functionaries and the community.</p> <p>Activate search and Rescue teams of Fire & Emergency Services, Police, SDRF, Civil Defense, NDRF and NGOs for the retrieval of the injured and the dead. The injured will get the priority for First Aid and evacuation to hospital.</p> <p>Prepare a record of details of the bodies retrieved in the Dead Body Inventory Record Register, allocated individual Identification Number, photographed, and then Dead Body Identification Form initiated.</p> <p>Associate relatives and community members for the identification of the bodies.</p>

		<p>appropriate arrangements and relevant protocol must be followed for victims in certain types of disaster keeping in view the safety of survivors and emergency workers.</p> <p>Inform the affected community by giving wide publicity to the procedure for the management of the dead.</p> <p>Take urgent steps for release of ex-gratia payment.</p> <p>Ensure to the extent possible ethical management of the dead, along with respect for religious and cultural sensitivities.</p> <p>Deal with the psychological impacts as per the national guidelines on psycho-social support.</p> <p>Ensure due documentation such as inventory record of the dead, dead body identification and all relevant information as given in the national guidelines.</p>	<p>Hand over the identified bodies to the relatives or the community, and if necessary, after cross-matching Dead Body Identification Form with that of the Missing Person Form, for the last rites as per local, cultural and religious denomination.</p> <p>Un identified or unclaimed dead bodies/ body parts shall be transported to the mortuaries for proper preservation and storage at the designated sites.</p> <p>Consult relatives, legal and forensic experts for positive identification.</p> <p>Final disposal of un identified bodies/ body parts shall be done by District authorities after applying all the possible means of identification as per the legal provisions.</p> <p>The bodies of foreign nationals shall be properly preserved either by embalming or chemical methods and then placed in body bags or in coffins with proper labelling. Handing over and transportation of such bodies shall take place through the Ministry of Extern Affairs, in consultation with the Consular offices of the</p>
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					concerned countries and other actors such as International Committee of the Red Cross, if necessary and possible
1 2	Media Relations	Lead Agencies: Department of Information and Public Relations	Collect, process and disseminate information about an actual or potential disaster situation to all stakeholders so as to facilitate response and relief operations; update information on disaster and disaster victims; maintain contacts with mass media; inform public regarding the impact of disaster and the measures taken for the welfare of the affected people. Ethical guidelines for disaster coverage by media as per accepted global standards respecting dignity and privacy of the affected communities and individuals and work with media to adopt the guidelines through self-regulation as well as oversight by relevant regulatory institutions. Mechanisms for broadcasting warnings, do's and don'ts etc. to media and public before (if applicable), during and after the disasters.	DDMA; Department of Information and Public Relations, all other relevant Departments	Dept. of Information and Public Relations works with the Command staff as Information and media officer of the state level IRT to provide effective services Ethical guidelines for coverage of disaster is prepared and shared with all media agencies Plan is prepared for providing/broadcasting warnings, do's and don'ts etc. to media and ensure its dissemination To Provide and collect reliable information on the status of the disaster and disaster victims for effective coordination of relief work at state level; Not to intrude on the privacy of individuals and families while collecting information; Coordinate with DOCs at the airport and railways for required information for international and national relief workers; Acquire accurate scientific information from the ministry of Science and

			Proper schedule for media briefing (depending on the severity of the disaster) and designate a nodal officer for interacting with media on behalf of the Government.		Technology; Coordinate with all TV and radio networks to send news flashes for specific needs of Donation; Respect the socio-cultural and emotional state of the disaster victims while collecting information for dissemination
13	Medical Care and Public Health	Lead Agencies: Health and Family Welfare Dept.	<p>Develop specialized facilities to handle chemical, biological, radiological and nuclear emergencies.</p> <p>Strengthening of emergency departments of all major hospitals in the state.</p> <p>Deploy PSSMHS professionals, para-professionals and trained community level workers.</p> <p>To coordinate, direct and integrate State level response;</p> <p>Direct activation of medical personnel, supplies and equipment; Coordinate the evacuation of patients; Provide human services under the Dept. of health;</p> <p>To prepare and keep ready Mobile Hospitals</p>	DDMA; Health Dept; ULBs; PRIs; F&ES; Civil Defense ; all other relevant departments	<p>Provide systematic approach to patient care;</p> <p>Perform medical evaluation and treatment as needed;</p> <p>Maintain patient tracking system to keep record of all patients treated;</p> <p>Mobilization of the private health services providers for emergency response.</p> <p>In the event of CBRN disaster to provide for mass decontamination of the affected population;</p> <p>Maintain record of dead and arrange for their postmortem. To perform the same functions as assigned to the primary agency;</p> <p>Provide man power to the primary agency wherever available and needed;</p> <p>Make available its resources to the primary agency where ever needed and</p>

			<p>and stock;</p> <p>To network with private health service providers;</p> <p>To provide for mass decontamination;</p> <p>Check stocks of equipment and drugs</p> <p>Activating Public Health IRS</p> <p>Assess public health needs in coordination with central agencies as per situation.</p> <p>Coordinate with agencies in case of biological emergencies. Coordinate with central agencies for epidemiological surveillance</p> <p>Manage public health logistics (drugs and vaccines), non-pharmaceutical interventions. Carry out immunization, disinfection, vaccination and vector control measures.</p>		available
14	Power	Lead Agencies : Power Dept. Sup	Electricity Board and Power Distribution Companies work with the logistic section of the state level IRT to provide effective services to the field level IRTs for response.	DDMA; DEOC; APDCL ; AEGCL ; APGCL	Support to Local Administration; Review the total extent of damage to the power supply installations by a reconnaissance survey; To provide alternative means of power supply for

		<p>porting Agencies : APD CL; AEG CL; APG CL</p> <p>Pre-disaster arrangements for quick restoration of power supply with alternate mechanisms to critical facilities usually within 6 to 12 hours of placement of order.</p> <p>Pre-disaster agreements with central and neighboring state governments for technical support in restoration of power supply and infrastructure.</p> <p>Mobile power supply units or other arrangements with power generation.</p> <p>Companies for quick deployment at the site during emergency.</p> <p>Provide and coordinate State support until the local authorities are prepared to handle all power related problems;</p> <p>Identify requirements of external equipment required such as DG sets etc.;</p> <p>Assess damage for national assistance</p>		<p>emergency purposes;</p> <p>Dispatch emergency repair teams equipped with tools, tents and food;</p> <p>Hire casual labor for the clearing of damaged poles etc.</p> <p>Make arrangement for and to provide the alternative sources of lighting and heating to the affected populations and for the relief camps.</p>
15	Rehabilitation and	<p>Lead Agencies :</p> <p>Include provisions for evacuation, safety, and rehabilitation of animals in SDMP.</p>	DDMA; PRIs, ULBs,	<p>Include provisions for evacuation, safety, and rehabilitation of animals in DDMP.</p>

	Ensuring Safety of Livestock and Other Animals, Veterinary Care	Animal Husbandry & Veterinary	<p>Set up of livestock camps/ shelters for animals in distress due to disasters, including drought.</p> <p>Organize proper care of animals in the camps/shelters.</p> <p>Ensure proper management and running of livestock camps/ shelters.</p> <p>Proper rehabilitation of animals.</p> <p>Provide veterinary care to disaster-affected livestock, including in drought-hit areas</p>	Animal Husbandry & Veterinary, Police	<p>Setup of livestock camps/ shelters for animals in distress due to disasters, including drought</p> <p>Treatment of animals;</p> <p>Provision of vaccination;</p> <p>Disposal of dead animals.</p> <p>To arrange for timely care and treatment of animals in distress;</p> <p>Removal of dead animals to avoid outbreak of epidemics</p> <p>Organize proper care of animals in the camps/shelters</p> <p>Ensure proper management and running of livestock camps/shelters</p> <p>Proper rehabilitation of animals.</p> <p>Provide veterinary care to disaster-affected livestock, including in drought-hit areas.</p>
16.	Relief Employment	Lead Agencies: Dept. of skill development, H&UA	<p>Provide opportunities for unskilled workers for people seeking work in drought affected areas as a relief measure.</p> <p>Ensure quick and prompt payment of wages.</p> <p>Carry out health check-up of those seeking work.</p>	DDMA; P&RD; All relevant departments	<p>Collect information on unemployed disaster affected persons</p> <p>Provide employment to such persons through MGNREGA and other schemes.</p> <p>Provide skill training to unskilled and semi-skilled persons for self-employment and to make them employable.</p>

			Draw from various funds including Disaster Response Fund to implement the employment schemes.		<p>Promote self-employment through schemes and financial support.</p> <p>Provide opportunities for unskilled work in public works for people seeking work in drought affected areas as a relief measure.</p> <p>Ensure quick and prompt payment of wages.</p> <p>Carryout health check-up of those seeking work</p> <p>Draw from various funds including Disaster Response Fund to implement the employment schemes.</p>
17	Relief Logistics and Supply Chain Management	Revenue Department Transportation Department Food and Civil Supplies Department	<p>To coordinate damage assessment and post disaster needs assessment.</p> <p>Establish a mobilization center at the airport/railway station for the movement of relief supplies within the state.</p> <p>Deploy special transportation for the movement of relief supplies within the state.</p> <p>Make arrangements to receive and distribute relief and emergency supplies received from different parts of the country.</p>	DDMA; Food and Civil Supplies; Housing Agencies; Health and Family Welfare; All relevant departments	<p>Organize donation (material) for easy distribution before entering disaster site.</p> <p>To coordinate damage assessment and post disaster needs assessment.</p> <p>Establish a mobilization center at the airport/railway station for the movement of relief supplies within the state.</p> <p>Deploy special transportation for the movement of relief supplies within the state.</p> <p>Make arrangements to receive and distribute relief and emergency supplies</p>

			<p>Coordinate transportation (air, rail, road, water) with Central ministries/departments/agencies.</p> <p>Arrange alternative means of transportation to reach relief supplies to the affected locations if normal transport cannot reach.</p> <p>Coordinate activities involved with the emergency provisions; Temporary shelters; Emergency mass feeding; To coordinate bulk distribution of emergency supplies.</p>		<p>received from different parts of the country.</p> <p>Coordinate transportation (air, rail, road, water) with Central ministries/departments/agencies.</p> <p>Arrange alternative means of transportation to reach relief supplies to the affected locations if normal transport cannot reach.</p> <p>Coordinate activities involved with the emergency provisions; Temporary shelters; Emergency mass feeding; to coordinate bulk distribution of emergency supplies.</p>
18	Search and Rescue of People and Animals	<p>Lead Agencies: F&ES; SDRF; Police; Homeguards; Civil defence</p> <p>Sup</p>	<p>Various positions of IRTs (State, District, and Block) are trained and activated for response at the irrespective administrative jurisdiction. SDRF teams are trained, equipped and ready to move at a short notice to the affected areas.</p> <p>Strategic stationing of state-of-the-art equipment for search, rescue and response with dedicated trained manpower.</p> <p>MoU is in place with suppliers for blankets, tarpaulins, tents, boats,</p>	<p>DDMA; F&ES; SDRF; Police; Homeguards; ULBs; PRIs; All relevant departments</p>	<p>Keep IDR data on search and rescue materials in the district.</p> <p>Arrange search and rescue equipment.</p> <p>SDRF teams are trained, equipped and ready to move at a short notice to the affected areas.</p> <p>Strategic stationing of state-of-the-art equipment for search, rescue and response with dedicated trained manpower.</p> <p>MoU is in place with suppliers for blankets, tarpaulins, tents, boats, inflatable lights, torches,</p>

		<p>port Agencies : Health, & Family Welfare Dept, Animal Husbandry & Veterinary Services</p>	<p>inflatable lights, torches, ropes, etc. with a condition that they will be supplied quickly at short notice (usually within 24 hours).</p> <p>Nodal officer selected for coordination is in regular touch with MHA/NDMA for additional requirements (including help from other Central Ministries).</p>		<p>ropes, etc. with a condition that they will be supplied quickly at short notice (usually within 24 hours).</p> <p>Nodal officer selected for coordination is in regular touch with MHA/NDMA for additional requirements (including help from other Central Ministries).</p>
19	Transportation	<p>Transport Dept</p> <p>Railway/ Civil Aviation</p> <p>SEO C</p>	<p>Dept. of Transport works with the logistic section of the state level IRT to provide effective services (Ground Support Unit) to the field level IRTs for response.</p> <p>Requirement of transport for the transportation of relief material, responders are arranged.</p> <p>Need of the transport of various activated section of the IRT as per Incident Action Plan is fulfilled.</p> <p>Liaise with Railways for seeking support for transportation.</p>	<p>DDMA; Transport Dept.; PWD; Railways; AAI; and all other relevant Departments</p>	<p>Coordinate with central and state govt. for transportation of relief materials of the central government.</p> <p>Coordination with state and district administration to provide air support.</p> <p>Cater to the needs of transporting affected people if required.</p> <p>Overall coordination of the requirement of transport;</p> <p>Make an inventory of vehicles available for various purposes;</p> <p>Coordinate and implement emergency related response and recovery functions, search and rescue and</p>

		<p>Operational plans are in place for quick restoration of train services, providing additional railway wagons, containers and passenger coaches for movement of relief supplies/rescue equipment and personnel and shifting affected population to safer places/shifting stranded passengers in consultation with State Government.</p> <p>Availability of diesel locos and drivers in disaster-affected areas where power is disrupted/ shut as a preventive measure; maintain a live roster of such emergency support systems which can be mobilized at very short notice by periodic review of readiness.</p> <p>Establishment of emergency services group with in the railways having staff with experience of working in disaster situations.</p> <p>Contingency plan is in place to deploy rail coaches as make shift shelters if required.</p>	<p>damage assessment.</p> <p>Make available its fleet for the purpose of SAR, transportation of supplies, victims etc.;</p> <p>Act as stocking place for fuel for emergency operations; Making available cranes to the Dist. Administration;</p> <p>District Administration and Civil aviation will coordinate for helicopter services etc. required for transportation of injured, SAR team, relief and emergency supplies.</p>
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		<p>Activation of railway hospitals/mobile rail ambulances to shift/treat injured patients in consultation with the Health Ministry.</p> <p>Easy availability of heavy equipment available with the Railways for search and rescue.</p> <p>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 specialized response force.</p> <p>Operational plans are in place to transport heavy machinery (like dewatering pumps, boats, etc.) through road in close coordination with the relevant Ministries.</p> <p>Plan is in place for quick restoration of airport runway and restoration of air traffic for facilitation of transport</p>	
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		<p>of relief teams/supply/equipment, stranded passengers, etc.</p> <p>Availability of trained manpower for making night landing during emergencies.</p> <p>Availability of Air Ambulances at strategic locations with trained manpower and equipment in close coordination with Health Dept.</p> <p>Control room gets activated for smooth coordination in receiving and dispatching resources and equipment in close coordination with the State Government.</p>		
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2.8 INCIDENT RESPONSE SYSTEM

IRS is guided by a thorough planning exercise that ensures that the critical resources which are used while responding to disasters are deployed in its rightful positions, are mobilized and demobilized in a timely manner to avoid wastage, and puts further emphasis on a detailed documentation of use of resources, actions and decisions.

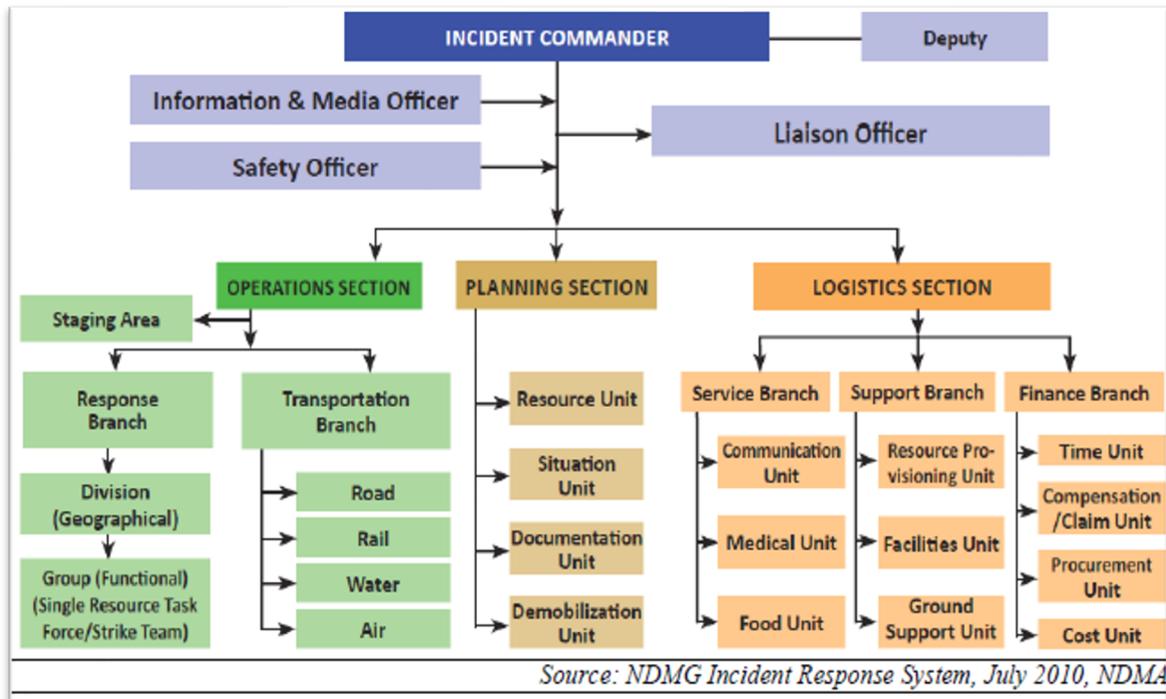


Figure F: Incident Response System

IRS achieves this by identifying required functions for responding to disasters and organizes them (as depicted in chart) which is suitable while responding to disaster. The activation of the staffing is done on the scale of the event and the demand for response. As it is not possible to keep dedicated human resources on stand-by 24x7 waiting for a disaster event, the IRS envisages to draw trained persons and press them in to service to respond to disasters. As the functional expertise required for responding to disasters are various kinds, the IRS envisages to draw human resource with different expertise from different department or agencies as Health, Water, Sanitation, Veterinary, food and Civil Supplies etc.) and deploy them as a part of the responding team under the IRS framework.

One of the primary requisites for implementation of IRS is to get the team members trained in their respective roles and create management structure/arrangement through consultations with respective State agencies traditionally responsible for undertaking response actions/measures. Prior training helps these staff members to understand their roles and responsibilities when mobilized. Training helps the staff members to take quick action as they are aware of the position and location within the IRS system. A time bound strategy with fixed responsibilities is being rolled out by ASDMA towards effective implementation of IRS in the State of Assam.

The important aspects of the IRS are:

- It is a temporary team and shall handle only ‘response’
- It can be implemented irrespective of size, location, type and complexity of disasters
- It develops a common understanding of the mission
- It develops a common operational picture and strategy
- It provides participatory, well structured, fail safe, multi-disciplinary, multi-departmental and systematic approach to guide administrative mechanisms at all levels of the Government
- It works through persons appointed with appropriate delegation of decision-making
- It creates appropriate structures and process for coordinating operational decisions to be taken at lowest possible level, and scale it to highest necessary level
- It involves team members, who are trained in their function, role and IRS operation for maximum effectiveness
- Once the IRS team or the individual members are demobilized, they return back to their original job/role & responsibility
- Continuous training of the identified staff enhances their role clarity and effectiveness and hence to the performance of the team.

i. The Response Plan - Incident Response Teams - Command Staff and General Staff

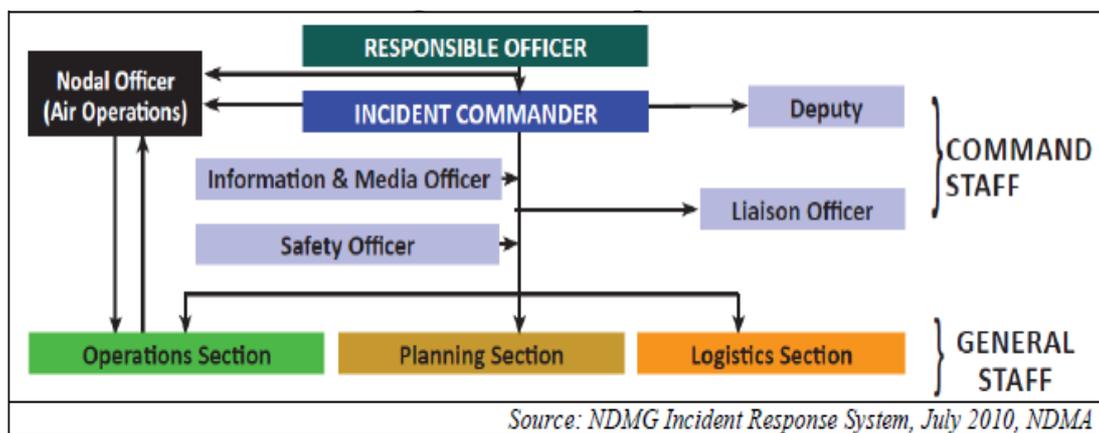


Figure G: The Response Plan

IRS organization functions through Incident Response Teams (IRTs) in the field (depicted in the figure). Responsible Officers (ROs) have been designated at the State (Chief Secretary) and District (District Magistrate) level as overall in-charge of the incident response management.

The RO may however delegate the responsibilities to Incident Commander (IC), who in turn will manage the incident through IRTs.

IRTs are pre-designated at different levels - State, District, Sub-Division and Block. The RO will activate on receipt of early warning. In case of no warning, IRT will respond and contact RO for further support. A Nodal Officer (NO) will be designated for proper coordination between the District, State and National Level in activating air support for response.

Apart from RO and NO, the IRS has two main components: Command Staff and General Staff.

- **Function of Command Staff**

The Command Staff consists of Incident Commander (IC), Information & Media Officer (IMO), Safety Officer (SO) and Liaison Officer (LO). They report directly to the IC and may have assistants. The Command Staff may or may not have supporting organizations under them.

- **Functions of General Staff**

General Staff has three components:

The **Operations Section (OS)** is responsible for directing the required tactical actions to meet incident objectives. Management of disaster may not immediately require activation of Branch, Division and Group. Expansion of the OS depends on the enormity of the situation and number of different types and kinds of functional Groups required in the response management.

- **Planning Section (PS)** is responsible for collection, evaluation and display of incident information, maintaining and tracking resources, preparing the Incident Action Plan (IAP) and other necessary incident related documentation. They will assess the requirement of additional resources, propose from where it can be mobilized and keep IC informed.
- **Logistics/Finance Section (L/FS)** is responsible for providing facilities, services, materials, equipment and other resources in support of the incident response. The Section Chief participates in development and implementation of the IAP, activates and supervises Branches and Units of his section. In order to ensure prompt and smooth procurement and supply of resources as per financial rules, the Finance Branch has been included in the L/FS.
- **IRT at State, District, Sub-Division and Block levels**

The IRT is a team comprising of all positions of IRS organization headed by IC. The OS helps to prepare different tactical operations as required. The PS helps in obtaining different information and preparing plans as required. The L/FS assesses the availability and requirement of resources and takes action for obtaining them. IRTs will function at State, District, Sub-Division and Block levels. These teams will respond to all natural and manmade disasters.

The lowest administrative unit (Sub-Division/Block) will be the first responder as the case may be. If the incident becomes complex and is beyond the control of IRT (Sub-Division/Block), the higher level IRT (District or State) will be informed and they will take over the response management. In such cases the lower level IRT will merge with higher level IRT. For formation

of Incident Response Teams at State, District, Sub-division and Block levels, guidelines on Incident Response System published by NDMA (Annexure - XI) may be followed.

ii. Coordination of Response at State Level

In any disaster response, the initial efforts would always be taken by the District Administration. However, when Districts are overwhelmed in any situation, the support necessarily has to come from the State and National level. While the IRS is mainly relevant at the basic functional level, it is absolutely necessary that the support functionaries from the State and the National level also conform to the principles of IRS in the emergency support duties. This will be greatly beneficial for the proper coordination of the various response efforts at the National and State level with that of the District. It is therefore necessary to clearly understand the structure of the IRS in the context of State response. The hierarchical representation of RO with State EOC, Headquarters IRT and its lower level of IRTs at District levels are given below.

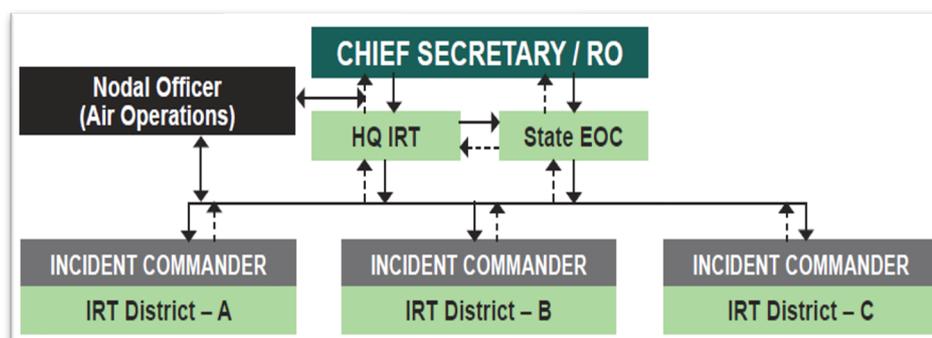


Figure H: Coordination at State Level

The State Government / CS who is designated as will designate various officers of line departments for the corresponding IRS positions to perform duties as enumerated in the IRS Guidelines published by NDMA in 2010. Being the administrative head of the State as well as the CEO of SDMA, the CS is designated as the RO of the State. S/he may delegate some of his functions to the Secretary, DM of the State, for the day-to-day supervision and management of the incident. He will however remain fully briefed by EOC and IC and be aware of all developments and progress of response activities at all times. Please check that IRS guidelines published by NDMA in 2010 have not since been revised or updated.

In case an incident is beyond the control of a District administration or a number of Districts are affected, the RO of the State will consider the setting up of an Area Command and designate an Area Commander (AC). The RO may also deploy some supporting staff to assist him. In case when central teams (NDRF, Armed Forces) are deployed, the RO would ensure resolution of all conflicts. For this purpose, he may attach a representative of such agencies in the EOC.

iii. Coordination of Response at District Level

The District Magistrate/DC is the head of the District administrative set up and chairperson of the DDMA as per the DM Act, 2005. He has been designated as the RO in the District. The heads of different departments in the District will have separate roles to play depending on the

nature and kind of disaster. The roles and responsibilities of the members of the DDMA will be decided in advance in consultation with the concerned members.

The complete IRS organizational structure at District level is depicted below. The structure depicted may be activated as and when required. For monitoring and support of the incident response, the RO will involve all required ESF and headquarter IRT to support the on-scene IC. In case when the state team (SDRF) or the central teams (NDRF, Armed Forces) are deployed, the RO will ensure the resolution of all the conflicts.

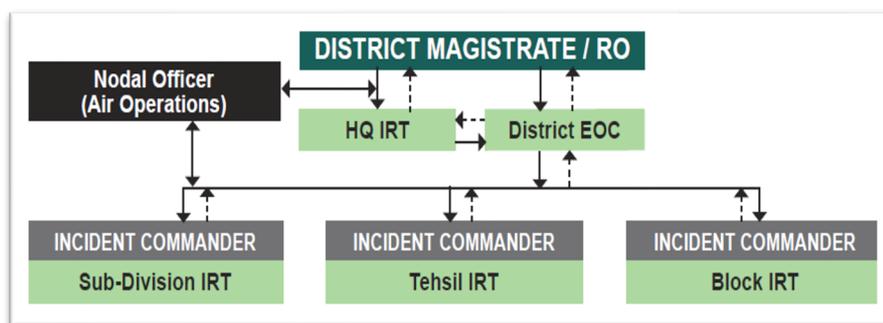


Figure I: Coordination at District Level

There will be clear linkage among the Sub-Division, Tehsil and Block level IRT, which will be established with the help of District EOC, and Head Quarter IRT. This will certainly help in smooth coordination at the sub district level.

iv. Formation of IRTs at district level involving various departments of State government and their role:

The Chief Secretary and District Magistrate, who are designated as RO will issue a Standing Order for formation of IRT at State and District headquarters / Sub-Division and Block levels respectively. The RO of the respective jurisdiction will ensure that appropriate and experienced officers are selected for IRTs and trained in their respective roles and responsibilities. The RO will ensure capacity building of all IRT members in their respective roles and responsibilities. Suitable officers for IRT and various positions available at state and district to man it, are as follows.

A list of officers who will man various positions of state level Incident Response Team may be indicated. A template of suitable officers who will man various positions at state level IRT is given below and may be adapted in this document.

Table 8: Formation of IRTs at district level involving various departments of State government and their role

IRS Position	Recommended Suitable Officer
Responsible Officer	Chief Secretary
Incident Commander	Secretary Disaster Management
Deputy Incident Commander	Home Commissioner

Information & Media Officer	Commissioner & Secretary, IPR
Senior Factory Inspector	District Fire Officer / Dy. SP (Police) / Medical Officer / Factory Inspector or any other suitable position at District level as deemed by IC ⁷ .
Liaison Officer	State level Public Relation Officer.
Operation Section	
Operation Section Chief	Secretary Home or any other suitable position at State level as deemed by RO/ IC ⁸
Staging Area Manager	SDO/SDM, BDO of affected site as deemed by IC
Response Branch Director	Sr. Administrative officer of SDMA as deemed by IC
Division Supervisor/ Group I/C	Dy. Commandant General, HG&CD
Task Force/ Strike Team	Resource of various Line departments. For example; Fire, Police, Civil Defense, NDRF, DFO, Irrigation and Water Resources, BDO and Village level teams headed by elected representatives or officers from any other appropriate Line Departments and Specialists of various corporate sectors etc. may be deployed ⁹ .
Single Resource Unit leader	Personnel and their equipment of various line departments of state administration such as; Health Department / PHD and PWD / Electricity Board / Fire Department / Police Department / Civil Defense / NDRF / Environment and Forest Department / NGOs / CBOs / Irrigation Department/ Water Resource Department / Specialists of various corporate sectors (Safety officer, chemical specialist, etc.) / Other specialists of Government sectors including NDRF and Civil Defense or from any other appropriate Line Department may be deployed.
Transportation Unit leader	Transport Commissioner or as deemed by RO/IC
Road Group I/C	Officers of Road & Transport or as deemed by RO/IC
Vehicle Coordinator	General Manager – State Transport or as deemed by RO/IC
Loading and unloading I/C	Officers of Road & Transport or as deemed by RO/IC
Planning Section	
Planning Section Chief	ACS & Dev. Commissioner or any other suitable officer as deemed by RO/IC

⁷Officers will be deployed to ensure safety of entire response activity as per requirement.

⁸Selection of the Operations Section Chief depends on the nature of operations required. Rescuing people and taking them to shelter in case of earthquake or floods can best be handled by the police/Armed Forces and thus in such cases it should ideally be headed by them. However, in cases of such disaster like bird flu epidemic, the main requirement will be providing medical treatment to the victims, vaccinating and culling of birds, etc. In such cases the Operation Section shall have to be headed by doctors for treatment of victims and supported by Animal Husbandry & Veterinary department and Municipal institutions for vaccinating and culling of birds.

⁹Depending on the task to be performed, the personnel and their resources belonging to various line departments of state administration shall combine to form the Task Force / Strike Team.

Logistics / Finance Section	
Logistic/Finance Section Chief	Sr. Administrative Officer of SDMA or any other suitable officer as deemed by RO/IC
Finance Branch Director	Director, Treasury & Accounts or any other suitable officer as deemed by RO/IC

For detail responsibilities, refer IRS guidelines issued by NDMA, 2010

- **Selection of Incident Commander in the IRTs:**

In case of State and District levels the Secretary Revenue and Disaster Management and ADM would act as ICs respectively. Whereas in case Sub-Division or Block, the respective heads, i.e. SDO, BDO will function as the ICs in their respective IRTs.

- **Selection of Operations Section Chief in the IRT:**

The selection of the Operation Sections Chief (OSC) will however depend on the nature of the disaster. In case of flood and earthquakes reaching the affected area, rescuing the affected people and providing relief to them is the main task of the responders. People have to leave their home in a hurry and they are not able to take away their valuables. These abandoned houses become vulnerable. The relief materials while being transported also become prone to damage and loot. In such cases, Police and the Armed Forces are best suited to handle and lead the operations.

In case of fire at District level, it will be the District Fire Officer who will be the appropriate officer to handle the situation. In case of health-related disaster, it would be the District Chief Medical Officer and so on. There could even be such situations when the District officials may have no expertise in operationalizing the response like CBRN disasters. For such disaster situations the OSC would be identified in advance, so that he could be easily mobilized to lead the OS as Section Chief. Other Section Chiefs will be selected according to the suitability and capability of the officer.

Table 9: Indicates the situational analysis for typical onset hazard and selection of Operation Sections Chief (OSC)

Hazard	Situation analysis	OSC
Flood	The situation requires reaching the inundated area, rescuing the affected people and providing relief to them, which is the main task of the responders. People have to leave their home in a hurry and they are not able to take away their valuables/move assets. These abandoned houses may also become vulnerable. The relief materials while being transported may also become prone to damage and loot.	Police / CEO DDMA, Fire and Emergency Services
Earthquake	The situation requires reaching the affected area, rescuing the affected people and providing relief to them, which is the main task of the responders.	Police / Additional Deputy Commissioners

	People have to leave their damaged homes and valuables/ assets. These abandoned houses may also become vulnerable. The relief materials while being transported may also become prone to damage and loot.	/ CEO DDMA; Fire and Emergency Services
Fire	This requires specialized team to handle fire spread and have to be backed with equipment cache.	Additional Deputy Commissioners / CEO DDMA / Director of Fire and Emergency Services (Technical)
Epidemics	Situation requires specialized team of doctors and trained health professionals to provide treatment to victims and to manage rushing the patients to health care facilities, and to perform regular health care activities.	Additional Deputy Commissioners / CEO DDMA; Fire and Emergency Services

v. Coordination of Response in Urban Areas:

The Cities are large and densely populated with a complex administrative setup. The different departments and agencies functioning within the cities are large with resources and independent hierarchical setups having autonomy and complete chain of command of their own. To visualize an IRT on the pattern of the other Districts of the country in such Metropolitan Cities would not be appropriate. A concept of Unified Command (UC) will be introduced in such cases for effective disaster response.

For all Metropolitan Cities, the CM / CS shall set up a UC involving all the existing departments and agencies like the existing District Administrations, Armed Forces, Municipal Corporations and Local Bodies etc. The CS will function as the RO and constitute IRTs in advance on the principle of IRS to respond to and manage disasters. The IRT members will be identified in advance, roles assigned and trained accordingly. The existing District authorities of the Metropolitan Cities will function as per the directions of the Unified Command (UC).

vi. Triggering Mechanism for Deployment of IRT

Some of the natural hazards have a well-established early warning system. States and Districts also have a functional 24 x 7 EOC / Control Room. On receipt of information regarding the impending disaster, the EOC will inform the RO, who in turn will activate the required IRT and mobilize resources. The scale of their deployment will depend on the magnitude of the incident.

At times the information about an incident may be received only on its occurrence without any warning. In such cases the local IRT (District, Sub-Division, Block) as the case may be, will respond and inform the higher authority and if required seek reinforcement and guidance.

The measures decided to be taken for response will be jotted down by the Command Staff and later handed over to Planning Section (PS). It will thus form the initial Incident Action Plan (IAP).

vii. Staging Area Management

A Staging Area will be a temporary location (preferably open space near the incident site) where personnel and equipment (operators/ In charge) will wait for the tactical assignments and the directions from the concerned Operations Section Chief or Incident Commander (IC). An incident may have more than one Staging Area. Staging Areas can be set up to meet specific functional needs: for example, for transport vehicles, JCB, ambulances, water tankers etc., Resources in a Staging Area are always in or on an available status, which means they are ready for assignment at the earliest. This is an important consideration for resource use planning and would be closely adhered to. Staging Areas may also include temporary sanitation facilities.

All Staging Areas will have Staging Area Manager. The Staging Area manager will report to the Operations Section Chief or to the Incident Commander if an Operation Section has not been established. A Staging Area will be in the same general area or adjacent to other incident facilities; however, it will have its own separate location established.

viii. Inter- Agency Coordination

Inter-agency coordination is a key component of strengthening the disaster risk governance, which is also the Priority 2 of the Sendai DRR Framework. Primarily it is the responsibility of ASDMA and DDMAs, to establish robust inter agency mechanisms for coordination and the networking activities (information and knowledge management, training and capacity building, collaborative advocacy, quality and accountability) at State and District levels. To enhance the inter-agency coordination, all the stakeholders would be engaged, including Government/ Administration, NGOs, Institutions, Corporate and existing PSUs in the State. The Stakeholders shall also include the State Government Offices, Central and State PSUs located in the State/ particular District, in terms of provision of the Disaster Management Act. All the stakeholders would support and supplement at the time of any crisis situation through their existing capacities and existence in the respective locations.

Note:

- **For the specific functions to be performed by all the concerned Departments under the IRS, the specific SOPs would be developed and included in the respective Departmental Disaster Management Plan, depending upon the requirements at the time of incident.**
- **As per the IRS, the concerned Operations Section Chief/ Incident Commander will have the responsibility and authority to take call at the incident site and accordingly mobilize resources for immediate actions. The flexibility will be allowed to OSC/ IC.**

2.9 RELIEF

Disaster relief is a very important phase of disaster management cycle. In broader terms it is a provision of assistance or short-term intervention immediately after a disaster, to meet the life preservation and basic subsistence needs of the affected people.

i. Accountability

Primarily, the Commissioner & Secretary, Revenue & Disaster Management Department will be responsible for all relief related functions and allied activities. The Revenue & Disaster Management Department of Assam will follow the Instructions of State Relief Commissioner, and will also take care of the major relief activities, on a high priority basis. Besides, the other concerned nodal departments will also play their part in relief related activities, with support from administration.

ii. Key Relief Functions

The following will be the key relief functions, which will be taken care of by Relief Commissioner and his/ her team:

- Carry out the primary responsibility of co-ordinating the effective emergency relief with nodal agencies, on the occurrence of a disaster.
- Develop an appropriate relief implementation strategy for the State in consultation with the ASDMA, taking into account the unique circumstances of each district and deficiency in institutional capacity and resources of the State.
- Analyze the emergency situation, take stock of the arrangements, and recommend the State Government accordingly, to declare the level of disaster.
- Provide directions to the Collector and the local authority having jurisdiction over the affected area to provide emergency relief in order to minimize the effects of disaster.
- Assess search and rescue requirements as per information from the concerned district control room and take necessary action.
- Direct, supervise and provide assistance to agencies wherever necessary for the following:
 - Set up relief camps; livestock camps
 - Relief supplies to relief camps or to staging areas
 - Set up mobile surgical teams, mobile hospitals, promptly arrange ambulances, vans in order to provide the prompt medical support
 - Supplies of fodder and cattle-feed to livestock camps
 - Supply of seeds, agriculture inputs and services to staging areas
 - Maintain law and order through district police
 - Arrange to provide the safe drinking water to the concerned
 - Arrange to provide logistic support, including temporary housing
 - Extend financial support to disaster affected people as per the Relief Manual
 - Carry out post relief assessment, document learning from relief experience, which can be used as inputs into future relief and rehabilitation plans.
 - Set up Emergency Kitchen.

Table 10: Presents some of the key relief activities and the concerned responsible agencies

Relief Activities	Responsible Agencies
Procuring and transporting relief materials to affected districts/ villages	Commissioner & Secretary to the Government of Assam, Revenue & Disaster Management Department.
Identifying and assigning one high ranking district official to coordinate setting up kitchen operations	District Collector
Setting up free kitchen for affected villages in the vicinity of shelter camps or in shelter camps itself	District Collector
Coordinating with NGOs/ CBOs and the other voluntary groups to continue kitchen operations beyond the planned timeline (as required)	District Collector and other district level officials and departments including Civil Supplies Department
Assist in relief operations during/post disaster	Government functionaries at District and Sub District level
Monitor and assessing the need to continue kitchen operations by assigned authority	NGOs/ CBOs, Civil Defense structures such as NCC/NSS
Maintain discipline, law & order and make all the security requirements at the relief camp/s	Police Department

iii. Minimum standards in Relief w.r.t. Humanitarian Services

The minimum standards describe conditions that must be achieved in any humanitarian response and relief in order for disaster affected population to survive and recover in stable conditions and with dignity. Focusing on the period of humanitarian response and relief, the sphere minimum standards cover activities that meet the urgent survival needs of disaster affected populations. The Sphere Handbook 2011, will be followed for the purpose of adhering minimum standards in the following sectors:

- Minimum standards in water supply, sanitation and hygiene promotion (WASH)
- Minimum standards in food security and nutrition
- Minimum standards in temporary shelters, and non-food items
- Minimum standards in Health Action

Under each section of minimum standards, there are few sub sections to address the respective sectors, like in the first case of WASH. There will be other sub sections on water supply, vector control, hygiene, drainage and solid waste management etc. The sphere standards provide a set of guiding tools, which would be referred by the State Inter Agency Group (IAG), Assam, while carrying out the relief work in State.

iv. Child friendly spaces

Child friendly spaces are a global setting to take care and protect children in conflict zones and disaster areas. Following an emergency or disaster, child friendly spaces are generally a short-term response. The purpose of a child friendly space is to support the wellbeing of children in

the midst of an emergency or disaster through safeguarding them by providing safe spaces with supervised activities. Child friendly spaces will be supervised by trained, pre-screened staff and volunteers and they assist in reducing a range of distressing effects that arise from a child's exposure to emergencies and disasters.

A key principle of child friendly spaces is that they are inclusive of all children regardless of age, mental or physical ability, health issues, race and ethnicity or gender. Efforts will be made to engage with marginalized groups like homeless young people.

v. State Specific Relief Measures

The Government of Assam has taken various disaster relief measures in the last few decades. Following are some of the key relief measures, which would be followed in the State of Assam:

vi. Assam Disaster Management Manual (earlier Assam State Relief Manual)

The comprehensive Assam Disaster Management Manual is in existence since year 2015. This manual supersedes the earlier Assam Relief Manual 1976. The earlier manual was also quite detailed and addressed the administrative functions, roles and responsibilities in elaborate manner, particularly the functions of various departments and entities, pertaining to relief and coordination.

The Disaster Management Manual 2015 throws more light on the latest guidelines and instructions regarding the gratuitous relief (including food and various civil supply items) for the affected people, who take shelter in relief camps at the time of disaster. The Assam Disaster Management Manual further elaborates the emergency provisioning of items and norms of assistance for affected persons, also including the food, fodder, shelter, medical care and other essential supplies required in relief.

vii. Relief Guidelines issued by the State

The Assam State Disaster Management Authority (ASDMA) came out with specific Guidelines on Management of Relief Camps in context of the COVID and other allied emergencies in Assam.

The Relief Camp Management Guidelines mainly highlights the following key parameters:

- Relief camp and accommodation capacity earmarking in advance
- Deputing Pratirodhi Bandhu volunteers in the revenue circles
- Toilet facilities, proportionate to the relief camps capacity
- Ensuring sufficient sanitation facilities in relief camps
- Medical support & health surveillance team in camps
- SOPs for the cooked food distribution in the camps
- Arrangement for fodder livestock of camp inmates
- Quarantine/ Isolation facilities for COVID suspected cases

- E-help desk platform in all the operational relief camps

The revised Relief Camp Management Guidelines will be very handy, particularly in the context of perennial flooding and its management in Assam and COVID-19 like pandemic situations. The guiding tips of the Guidelines on the basic facilities (including WASH, food supplies etc.), camp setting & overall administration, special arrangement for women and children (their schooling) elderly and physically challenged people (Persons with Disabilities) etc. would be followed. The prescribed checklist recommended for District & allied officials would also be referred.

viii. Financial Arrangement

- **Financial support from Central Government**

The financial supports from the National Government and related provisions for relief etc. have been covered in detail in Chapter 12 on Financial Arrangements of the Assam State Disaster Management Plan. Therefore, it is requested to please refer the same for detailed information.

- **Finalizing relief payouts and packages at state level:**

The Relief packages shall be customized, if required, to the specifics of the disaster by the Government of Assam. Relief packages would include details relating to collection, allocation and disbursement of funds to the affected people. The State Govt allocates funds in the state Budget for relief activities. In addition, funds may be available through the State Disaster Response Fund (Calamity Relief Fund will be merged into SDRF). However, these funds may not be adequate to meet disaster management requirements in the aftermath of large-scale disasters. In such circumstances, State Government of Assam, shall explore the additional sources of funding through aid, grants, loans, CSR provisioning from corporate etc.

The Finance Department of Government of Assam has come out with detailed notification, which has covered 9 crucial attributes where the relief support will be provided as per prescribed standards. The Central Govt notification on the Gratuitous Relief (and related Norms) include the damage due to natural calamity, nature induced event, fire, loss of lives, animals, collapse of house, damage to crops so as livelihood etc. In addition, the details of the Notification order issued by the Governor, are available in Disaster Management Manual. The State website may also be referred.

It will be notified that every department both at state and district level providing emergency support, will maintain the records of all the operations, including cost records during the relief and recovery operations for eventual reimbursement.

CHAPTER 3: HAZARD WISE RESPONSIBILITY FRAMEWORK FOR RISK REDUCTION

3.1 BUILDING DISASTER RESILIENCE

The Responsibility Framework

Assam is multi-hazard prone state and requires a multi-pronged, multi-sectoral and multi-stakeholder approach to planning actions for sustainable disaster risk reduction in the State. Given the cross-cutting nature of disasters and their impact, disaster risk management and risk reduction have to be everybody's business.

A review of the departmental DM Plans and the feedback provided by these departments has indicated that Assam has quite a robust institutional and regulatory mechanism to manage disaster management in the state. However, inter-agency coordination, capacity gaps and budgetary constraints are identified as some of the major governance issues that need to be addressed for effective management of disaster and climate risk.

Hence, Assam needs a strong governance system with a clear and transparent responsibility allocation among different departments and agencies. This arrangement has to be backed up with the following: relevant laws and policies; institutions and coordination mechanisms; strong leadership; clear roles and responsibility; resources; monitoring and accountability mechanisms. These would need to be set up across all sectors, all actors and all levels. This will be essential for strengthening institutional and community resilience against disasters and climate change.

Some of the key features of NDMP 2019 and ASDMP 2022 include: coherence across appropriate policies, plans and practices; risk reduction responsibilities to be shared with relevant stakeholders and; integrated and inclusive social, economic and environmental measures (activities) that prevent and reduce exposure and vulnerability. The Strategic Action Plan of ASDMP aims to achieve sustainable reduction of disaster losses and damages in the state.

The complex and extensive nature of the task of building disaster resilience is presented in a concise form in this section along with the necessary detailed responsibility framework. Different agencies must carry out not only their own responsibilities but also work in a well-coordinated manner with several others.

For the disaster risk management plans to succeed, it is necessary to identify various stakeholders/agencies and clearly specify their roles and responsibilities. At all levels - from local to the state - the relevant authorities must institutionalize programmes and activities at the department level and increase inter-ministerial and inter-agency coordination and networking. They must also rationalize and augment the existing regulatory framework and infrastructure.

A hazard-wise **Action Plan and Responsibility Matrix** covering different hazards and disaster situations are as follows:

- 1) Earthquake
- 2) Floods
- 3) Urban Floods
- 4) Landslides
- 5) Drought
- 6) Cyclone and Wind
- 7) Heat wave
- 8) Thunderstorm & Lightning
- 9) Forest Fire
- 10) Biological and Public Health Emergencies (BPHE)
- 11) Chemical (Industrial) Disasters
- 12) Nuclear and Radiological Emergencies

The primary role of the central agencies in most disasters and emergencies is of providing various types of support to the disaster- affected State, usually in response to requests for assistance. However, in certain disasters or when the situation requires, the state agencies will play a pro-active role. In the domains of DM planning, preparedness, and capacity building, the state agencies will constantly work to upgrade the DM systems and practices as per global trends. For each hazard, in the sub-sections that follow, themes for action are presented in a separate responsibility matrix for each of the six Thematic Areas (TA) for DRM and related Sub-Thematic Areas for DRM.

3.2 HAZARD –SPECIFIC ACTION PLAN AND RESPONSIBILITY MATRIX

3.2.1 EARTHQUAKE

3.2.1.1 UNDERSTANDING DISASTER RISK

Earthquake		Understanding Disaster Risk	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Earthquake Monitoring Services Earthquake Hazard and Risk Assessment (EHRA)	ASDMA in collaboration with Ministry of Earth Sciences (MoES)	Recurring/ Regular <ul style="list-style-type: none"> Estimate the earthquake parameters quickly after detection. Disseminate information. Share seismic activity data with State and National Scientific, academic and R&D institutions. Carry out studies on Seismic Hazard Risk Assessment. Carry out Seismic Hazard Assessment. Carry out Seismic Zoning. Carry out Seismic Micro-Zoning.
2	Scientific Seismic Zonation	ASDMA in collaboration with MoES	<ul style="list-style-type: none"> Develop Seismic Vulnerability Zone Map for State. Collaborate and support scientific Organizations in Seismic Vulnerability Zone Map for State
		Directorate of Town and Country Planning (DTCP)	<ul style="list-style-type: none"> Monitor implementation of Seismic Zonation Codes.
3	Seismic Micro-zonation	ARSAC	<ul style="list-style-type: none"> Carry out needs assessment from end-users, conduct Micro-Zonation Studies, prioritize important urban areas for Micro-Zonation, do professional review before adoption.
		DTCP	<ul style="list-style-type: none"> Develop Micro Zonation Map for important Urban areas, do professional review before adoption.
4	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	ASDMA in collaboration with MoES	<ul style="list-style-type: none"> Promote studies, documentation and research. Undertake studies on vulnerabilities and capacities covering Social, Physical, Economic, Ecological, Gender, Social inclusion and Equity aspects. Provide technical support and guidance for comprehensive HRVCA. Constitute/ strengthen the mechanisms for consultation with experts and stakeholders.
		ASDMA	<ul style="list-style-type: none"> Undertake HRVA as part of preparing and periodic revision of DM plans at State and District Level.

5	Dissemination of warnings, Data and information	ASDMA; SEOC; IMD	Recurring/ Regular <ul style="list-style-type: none"> • Ensure quick, clear, and effective dissemination among state agencies and communities with last mile connectivity
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3.2.1.2 INTER-AGENCY COORDINATION

Earthquake		Inter-Agency Coordination	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Overall disaster governance	ASDMA	Recurring/ Regular <ul style="list-style-type: none"> • Ensure preparation and implementation of State DM plan and ensure the functioning of agencies with DM tasks. • Cover all aspects of disaster risk management and mainstreaming DRR • Ensure coherence and mutual reinforcement of DRR, CCA and development.
		PWD; H&UA; PRIs; ULBs; DTCP and Line Departments	<ul style="list-style-type: none"> • Develop model building by-laws for Seismic Resistant Planning. • Ensure Strict implementation of earthquake resistant building codes and National Building Code (NBC) 2016 in all Urban Local Bodies and PRIs.
2	Response	P&RD & DM; Police; Civil Defense; NDRF; SDRF; Health and Family Welfare	Recurring/ Regular <ul style="list-style-type: none"> • Coordinate with Central Agencies. • Organize and coordinate the immediate response. • Implement IRS at District and Local level. • Provide equipment for Search and Rescue Operations and Sniffers.
		ULBs; PRIs; PWD	Recurring/ Regular <ul style="list-style-type: none"> • Ensure that key administrative and lifeline buildings are brought back to regular operation quickly.
		Revenue &DM; ASDMA; PWD; H&UA; PRIs; ULBs; DTCP; F&ES and Line Departments	Recurring/ Regular <ul style="list-style-type: none"> • Ensure coordination among state agencies • Implement revised/ updated rules, norms. • Ensure adoption of new/updated standards. • Enact/amend laws, regulations and adopt/ review policies. • Implement rules, laws, bye laws, NBC 2016, Bureau of Indian Standard (BIS) codes

3.2.1.3 INVESTING IN DRR STRUCTURAL MEASURES

Earthquake		Investing in Structural Measures	
S. N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Social Housing Schemes	Housing departments/agencies; Assam State Housing Board; PWD; H&UA and Line Departments; Department/Directorate of Social Justice & Empowerment; Department/Directorate of Tribal Affairs (Plain)	Recurring/ Regular <ul style="list-style-type: none"> • Ensure that earthquake resistant features are incorporated in Planning and Execution of Social Housing Schemes. • Ensure compliance with relevant building codes by adopting earthquake resistant features in Social Housing Schemes. • Ensure compliance with relevant Building Codes. • Identify and adopt suitable method of retrofitting in existing structures.
2	Strengthening and seismic retrofitting of prioritized lifeline structures and buildings	PWD; H&UA; DTCP; PRIs; ULBs and Line Departments	<ul style="list-style-type: none"> • Strengthen seismic retrofitting as per recommendations of safety audits in all Govt. Departments, Agencies, Public Utilities, Schools, Colleges, Community Halls, etc. • Prioritize life line structures for retrofitting. • Ensure seismic retrofit of existing buildings should be formally included in the Bye-laws. • Provide clear qualitative and quantitative guidance regarding the provisions related to Seismic Retrofitting. • Archive documents relating to planning, designing and implementing seismic retrofit of each building or structure for all future reference by municipal bodies and Panchayats. • Inclusion of good practices in Bye-laws by frequently revising them as per emerging demands. • Ensure strengthening and Seismic Retrofitting as per recommendations of Safety Audits.
3	Hazard resistant construction,	PWD; H&UA; PRIs; ULBs and Line Departments	Recurring/ Regular <ul style="list-style-type: none"> • Ensure collaboration with technical agencies

strengthening, and retrofitting of all lifeline structures and critical infrastructure	<ul style="list-style-type: none"> • Ensure implementation of building by-laws. • Verification of structural designs. • Ensure that lifeline structures and critical infrastructure are seismic resistant.
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3.2.1.4 INVESTING IN DRR NON-STRUCTURAL MEASURES

Earthquake		Investing in Non-Structural Measures	
S. N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Regulations and model codes for town planning, civil works and public infrastructure	DTCP; PWD; Country and Town Planning; H&UA; PRIs; ULBs	<ul style="list-style-type: none"> • Adopt suitable byelaws for Rural and Urban areas, put model codes into practice and ensure proper compliance. • Ensure Micro-zonation for Seismic Risk Reduction. • Ensure strict compliance with code. • Ensure implementation through relevant Departments and agencies.
2	Structural safety audit of lifeline structures and buildings, Prioritization of lifeline structures and buildings for strengthening and seismic retrofitting	PWD; H&UA; PRIs; ULBs; DTCP and Line Departments	Recurring/ Regular <ul style="list-style-type: none"> • Carry out safety audit of lifeline buildings and Critical Infrastructure. • Prioritize life line structures and Critical Infrastructure for safety audit. • Ensure Implementation, Monitoring, Enforcement and Proper Compliance Within State by Public, Private and Individuals.
3	Licensing and certification of professionals	PWD; H&UA; PRIs; ULBs and Line Departments; State Technical University	<ul style="list-style-type: none"> • Ensure Implementation of licensing of engineers through appropriate Legal Frame work and Institutional Mechanism.
4	Public Private Partnerships	Revenue & DM Department and Corporate bodies	Recurring/ Regular <ul style="list-style-type: none"> • Promote private participation in DRR.

3.2.1.5 CAPACITY DEVELOPMENT

Earthquake		Capacity Development	
S.N.	Sub-Thematic	State Agencies and their Responsibilities	

Area for DRR		State Agencies	Responsibility
1	Training	Assam Administrative Staff College (AASC)	Recurring/ Regular <ul style="list-style-type: none"> • Conduct and coordinate training for all government officials involved in the Planning and Implementation of Preparedness, Mitigation Response and Relief Work.
		SIRD	<ul style="list-style-type: none"> • Conduct Training Programmes for the Elected Representatives, Officers, Staff of Panchayat Raj Institutions and NGOs.
		Police Training Academies	<ul style="list-style-type: none"> • Conduct training to Police Officers in Disaster Management- Crowd Management, Evacuation, Rescue and Relief Operations. • Conduct search and rescue training to local volunteers.
		F&ES	<ul style="list-style-type: none"> • Conduct training for fire officers in disaster management-evacuation and rescue operations.
		SDRF; NDRF	<ul style="list-style-type: none"> • Conduct training for SDRF and NDRF personnel in disaster management- evacuation and rescue operations. • Organize community training programs to prepare volunteers for rescue, relief, first aid and response. • Identify and prepare a list of Ex-servicemen, Swimmers & Divers in the local community to be engaged during the Flood event.
2	Curriculum Development	Department of Technical Education; Guwahati University/ Silcher University	<ul style="list-style-type: none"> • Facilitate the introduction of subjects related to DM, in the undergraduate and professional courses. • Develop curriculum and implement courses by the Engineering and technical institutions. • Start Specialized Training, Education and Research Programs on Seismic Retrofit Technologies, such as <ol style="list-style-type: none"> a) One-Semester Programs for Teachers and Practicing Engineers. b) Post-graduate Diploma in Earthquake-Resistant Construction and Retrofitting. c) Technologies and Earthquake Engineering Research Fellowships.

3	Awareness Generation	ASDMA; AASC; SDRF	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • 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 use of Insurance/ Risk Transfer. • Promote Community Radio. • Strengthen Network of Civil Society Organizations for awareness generation about DRR and DM Information on care and protection of Disaster-Affected Animals.
4	Mock Drills/ Exercises	SDRF; F&ES; Civil defense; Police; NDRF; SDRF and all other departments	<ul style="list-style-type: none"> • Ensure Joint planning and execution of emergency drills.
5	Documentation and Dissemination	ASDMA; AASC	<ul style="list-style-type: none"> • Ensure popularization and distribution of documentation in local languages.
6	Empowering women, marginalized, and persons with disabilities	Department/ Directorate of Women and Child Development; Department/Directorate of Social Justice & Empowerment; Department/Directorate of Tribal Affairs (Plain)	<ul style="list-style-type: none"> • Adopt gender sensitive and equitable approaches in capacity development covering all aspects of Disaster Management at the State levels
7	Community-Based Disaster Management	ASDMA, AASC; SDRF; Civil defense; ASF & ES; Police; NDRF	<ul style="list-style-type: none"> • Strengthen ability of communities to manage and cope with disasters based on a multi-hazard approach. • Organize training for panchayat, SHG, NCC, NSS, Youth, Local Community Organizations

3.2.2 FLOODS

3.2.2.1 UNDERSTANDING DISASTER RISK

Floods		Understanding Disaster Risk	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Observation Networks, Information Systems, Monitoring, Forecasting, Early Warning	ASDMA	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> ASDMA will coordinate with National & State level Agencies towards Monitoring, Forecasting, and Early Warning. The Flood Early Warning System (FLEWS) has been established in Assam to strengthen flood monitoring and flood forecasting mechanism in the state. The WRD data and the ground level Weather data will enable ASDMA to generate Flood / Inundation forecast, Early Warning for a given location. A Weather Research Forecast (WRF) – Hydrological model has been developed to generate the forecast & early warning towards flood /inundation
		India Meteorological Department (IMD)	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> In co-ordination with state agencies, IMD will issue warning against severe weather phenomena like tropical cyclones, heavy rains and cloud burst which cause destruction of life and property. To provide meteorological statistics required for agriculture, water resource management, industries, oil exploration and other nation-building activities. IMD shall issue rainfall forecast and warning. Issue rainfall and flood warning report in this regard through print, electronic and social media
		North East Space Application Centre (NESAC)	<p>Recurring/Regular</p> <ul style="list-style-type: none"> Hydro-meteorological data collection and analysis Monitoring of embankment and breaches Issue of flood warning alerts during flood season

		Water Resource Department	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> Monitoring water level (inflow and outflow level) in different rives and dissemination of the field data and Reservoir monitoring.
2	Zoning, mapping, and classification of flood prone areas	Central Water Commission	Disseminate information on daily water level in major rivers of Assam
3	Zoning, mapping, and classification of flood prone areas	ASDMA	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> ASDMA in collaboration with concerned departments / agencies to carry out survey of flood prone areas and to generate flood zonation maps. The Survey being carried out in river courses of Brahmaputra & Barak Rivers to generate high resolution images to demarcate the flood prone areas.
		North East Space Application Centre (NESAC) & Assam Remote Sensing Application Centre (ARSAC)	<ul style="list-style-type: none"> Prepare flood plain zone mapping using Remote Sensing, GIS and GPS Tools Provide support in Remote Sensing & GIS Activities in the State as a Nodal Agency Develop Customized Software for Resource Development and Management Acquire and maintain a library of Spatial Database for the Assam State Prepare vulnerability maps Identify and classify flood prone areas Continuous monitoring of river bank line with the help of satellite imagery
4	Studies and monitoring of rivers flowing from neighboring states	Central Water Commission (CWC)	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> A Co-ordination mechanism to be setup with the neighboring States and CWC to monitor, coordinate and advise the release of water from the Reservoirs to avert any possible floods in the State.
		Water Resource Department	<ul style="list-style-type: none"> Keep information updates on rivers and reservoir levels Use river studies for flood management
5	Research and Development	ASDMA	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> Undertake research studies on flood prone areas, flood plain zoning and bye-laws. Advise Government on legal, policy, organizational and procedural changes; organize demonstrations in collaboration with other organizations, conducts special studies and brings out publications To take up and coordinate R&D Projects towards Flood mitigation and Management in collaboration with Universities/ Knowledge centers.

			<ul style="list-style-type: none"> • Specific research on impact, vulnerability and coping capacity of people living in char areas, hilly areas, tea garden areas, tribal areas etc. • Continuous research on impact of disasters and indigenous community's coping mechanism, along with specific social groups such as children, women, elderly and PWD • Research on model-based projections to analyze and project impact trends, validity of specific strategies and coping practices
6	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	ASDMA	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Carry out HRVCA and generate micro and macro level flood hazard vulnerability maps for different river basins in the State. • Carry out capacity assessment including sector and community specific dimensions of capacity • Undertake HRVCA as part of preparing State and District DM plans and their periodic revision • Undertake and maintain flood Damage and Loss database.
		Water Resources Department (WRD)	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Undertake HRVCA in association with CWC and other agencies • Undertake HRVCA along all the flood plains of rivers in the state and produce Flood Inundation Models
7	Monitoring, Forecasting and Warning Systems	IMD	<p>Recurring/Regular</p> <ul style="list-style-type: none"> • Support and provide cooperation for data collection and updates
		ASDMA	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Ensure information dissemination among the departments and agencies responsible for managing flood situations.
		CWC	<p>Recurring /Regular</p> <ul style="list-style-type: none"> • Associate with the IMD (to know the rainfall pattern and short-term forecasts) and CWC (flood information, to know the flood level) • Maintain Flood Bulletin Chart in all stations. • Maintain Embankment Maintenance Manual • Watch flood protection work at all times, with support of locals • Observe and collect local data to determine flash floods
8	Dissemination of warnings, data, and information	ASDMA	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Develop a Network between ASDMA, SEOC & DEOC for dissemination of information and early warning. • Establish Early Warning Dissemination System with last mile connectivity in flood

			<p>prone areas.</p> <ul style="list-style-type: none"> Engage Community radio and HAM Radio operators for the dissemination of Early Warning forecast and related advisories for Flood risk mitigation.
		SEOC	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> Co-ordination to be setup between SEOC, DEOC and all government line departments and Gram Panchayat and NGOs SEOC & DEOC will pursue SOPs towards flood management. Inter-state data and information sharing where applicable Coordination and cooperation with the central agencies Dissemination of warnings to all, down to the last mile-remote rural or urban areas; regular updates to people in areas at risk Warnings using all types of options, types of technologies, and media Monitoring compliance by various network operators and service providers Strengthening the SEOC infrastructure and manpower. Ensure facilities and infrastructure for the implementation of adequate access to communities at risk.
<p>9.5 Note: Every ministry, department or agency of the government – central, state, district municipal/Panchayat – not specifically mentioned will also have both direct and indirect supporting role depending on the disaster, location and context.</p>			

3.2.2.2 INTER-AGENCY COORDINATION

Floods		Inter-Agency Coordination	
S. N .	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Overall disaster governance	Revenue and Disaster Management Department (Revenue & DM)	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> Co-ordinate all aspects of disaster risk management and mainstreaming DRR Ensure coherence and mutual reinforcement of DRR, CCA and development through synergy with Department of Environment & Forest and Centre for Sustainable Development Goals and the Transformation and Development department Work in coordination with all line departments in overall DM Maintain IDRN and SDRN information base for

			<p>resource identification and deployment.</p> <ul style="list-style-type: none"> Periodically review and upgrade plans, resources and build capacities for all stakeholders
		ASDMA	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> Ensure preparation and implementation of DM plans and ensure the functioning of agencies with DM tasks. Coordinate and ensure the periodical upgradation of DM plans at State / Department / District level and mainstreaming the DRR into the departmental programmes and schemes.
2	Response	Revenue & Disaster Management Department (Revenue & DM)	<p>Recurring/Regular</p> <ul style="list-style-type: none"> Activate Incident Response Teams at all level Provide necessary resources in terms of material, manpower and monetary support Coordinate with central agencies for the necessary support process, mobilization of necessary resources during and after the Flood.
		State Crisis Management Committee	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> Organize and coordinate the immediate response towards rescue, relief and rehabilitation.
		ASDMA	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> ASDMA in consultation with Revenue and Disaster Management Department to coordinate, guide and command the Rescue, Relief & Rehabilitation.
		North East Space Application Centre (NESAC) & ARSAC	<ul style="list-style-type: none"> Prepare flood plain zone mapping using Remote Sensing, GIS and GPS Tools Provide support in Remote Sensing & GIS Activities in the State as a Nodal Agency Ensure development of Customized Software for Resource Development and Management Acquire and maintain a library of Spatial Database for the Assam State Prepare vulnerability maps Identify and classify flood prone areas
3	Warnings, Information, Data	SEOC	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> Coordinate the dissemination of warnings to all, down to the last mile –remote, rural or urban; regular updates to people in areas at Risk.
4	Non-structural measures	Revenue & DM	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> Ensure among state agencies for updating norms / codes and their implementation, enforcement and monitoring
		WRD	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> WRD in coordination with concerned departments to take up non-structural measures to minimize the flood & its impacts.
<p>Note: Every ministry, department or agency of the government – central, state, district, municipal/Panchayat – not specifically mentioned will also have both direct and indirect supporting role depending on the disaster, location and context.</p>			

3.2.2.3 INVESTING IN DRR – STRUCTURAL MEASURES

Floods		Investing Structural Measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Flood control measures such as construction of embankments and levees	PWD	Recurring/ Regular <ul style="list-style-type: none"> • Identification of suitable sites for temporary shelters for people and livestock evacuated from localities at risk. • Construction of multi-purpose shelters in villages/ habitations prone to floods.
		WRD	Recurring/ Regular <ul style="list-style-type: none"> • WRD to identify suitable sites for construction of check dams / barrages / diversion canals and water harvesting structures. • Drainage control structures like sluices, river training and anti-erosion works to protect river bank line • Raising and strengthening of weak embankments
		Soil Conservation Department	<ul style="list-style-type: none"> • Repair and maintenance of check dam and water harvesting structures • Proper maintenance and repairing of Earthen Guide Bund/periphery Bund
		Panchayat and Rural Development	Recurring/Regular <ul style="list-style-type: none"> • Identify sites for flood resistant constructions through MGNREGA etc. programmes
2	Social Housing Schemes	Department of Housing and Urban Affairs; PWD; Panchayat and Rural Development	Recurring/Regular <ul style="list-style-type: none"> • Promote cost-effective and flood resistant building technologies. • Housing department to identify safe places for implementing the social housing schemes and also to implement suitable building codes. • Ensure that flood-resistant features are incorporated in the planning and execution of social housing schemes in flood prone areas
3	Multi-purpose Flood Shelters	Public Works Department (PWD)	Recurring/Regular <ul style="list-style-type: none"> • Identify safe places for erecting temporary shelters for the affected community and livestock with necessary basic amenities and resources. • Ensure availability of shelters, undertake proper maintenance, and make arrangements to support the people shifted to temporary shelters

4	Waterways and drainage systems for roads, highways, and expressway	Public Works Department	Recurring/ Regular <ul style="list-style-type: none"> • PWD, H&UA & Panchayat and Rural Development to assess the vulnerability and take up necessary action for strengthening the roads, highways, and expressways by implementing the DRR measures as per the DM plan. • Ensure trouble free road communication.
		Public Works Department	Recurring/ Regular <ul style="list-style-type: none"> • To ensure appropriate designs of structures in areas of operation such as roads, bridges and buildings • Primary agency for maintenance of public infrastructure identifies safer places, assesses physical damage, identifies a fair route, and provides necessary reconstruction and rehabilitation support.
		H&UA	Recurring/ Regular <ul style="list-style-type: none"> • H&UA is the main agency to ensure repair and maintenance in the urban areas. Implementing disaster resistant building codes and designs
5	Enhancing the safety of dams and reservoirs	Irrigation Department, NEEPCO; NHPC; APGCL	Recurring/ Regular <ul style="list-style-type: none"> • Carry out measures to increase safety, reduce risks from flooding • Undertake pre- and post-monsoon inspections of dams and reservoirs. • WRD to co-ordinate periodical review & updation of structural & non-structural measures towards the Dam safety. • Monitor the implementation of safety enhancements in accordance with norms
6	De-silting/ dredging of rivers to improve flow; drainage improvement; floodwater diversion through existing or new channels	WRD	Recurring/ Regular <ul style="list-style-type: none"> • Assess the carrying capacities of the drainage system and also to take necessary measures to de-silt the drainages periodically.
		H&UA	Recurring/ Regular <ul style="list-style-type: none"> • De-silting of storm water drains, raj kaluve and tanks periodically • Clear the encroachments to minimize the flood events
7	Hazard resistant construction, strengthening, and	PWD	Recurring/ Regular <ul style="list-style-type: none"> • Formulate guidelines for safe construction of public works • Take precautionary steps for the protection of lifeline structures against possible loss and damage during flood

retrofitting of all lifeline structures and critical infrastructure		<ul style="list-style-type: none"> Assess the high flood levels, flood frequency and accordingly design the critical infrastructure (school buildings/Anganwadi Kendras) and also while strengthening the existing critical infrastructure through retrofitting.
	WRD	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> Procure/ prepare HRV analysis for water resource management and flood protection. Based on HRV analysis department specific contingency action plan.
	Panchayat & Rural Development Department	<ul style="list-style-type: none"> Undertake rural development construction works, design and strengthen critical infrastructures by retrofitting.
<p>Note: Every ministry, department or agency of the government – central, state, district, municipal/Panchayat, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.</p>		

3.2.2.4 INVESTING IN NON-STRUCTURAL MEASURES

Floods		Investing in Non-Structural measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Regulation and enforcement of laws, norms, regulations, guidelines including: regulation for reservoir management; Integrated Water Resources Management (IWRM); Risk Transfer	Revenue and Disaster Management Department	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> Revenue and Disaster Management Department to propose providing incentives in the form of Insurance premiums for implementing DRR measures by adopting building codes / by laws for construction activities by the agencies and community in hazard prone areas as a risk transfer mechanism. Implementing land-use regulation for low lying areas as per flood control norms. Regulation of inhabitation of low-lying areas along the rivers, nallas and drains.
		WRD	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> Adoption of revised reservoir operation manuals. Implementing flood management action plan. Review and modification of operation manuals for all major dams/reservoirs. Prevention and removal of encroachment into the waterways and natural drainage systems. Promote institutional mechanisms for

			<p>sharing forecasts, warnings, data, and information.</p> <ul style="list-style-type: none"> • Regulatory framework for flood plain zoning and flood inundation management.
		ASDMA	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • ASDMA to propose policy plans for clearing encroachments, buffer zone demarcation and implementation, catchment and backwater management.
2	Regulations to promote flood resilient buildings and infrastructure	ASDMA	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Develop regulation mechanism based on the policy plans to ensure the implementation of building codes.
		PWD	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Formulate guidelines for safe construction of public works in flood affected areas.
		WRD	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Revise and implement the relevant rules in flood prone areas.
3	Wetland conservation and restoration, Catchment Area Treatment/Afforestation	Environment and Forests Department	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Take up measures to protect the ‘Wetlands’ from being encroached by people • To ensure store of flood water etc. to maintain as a wildlife habitat • Take up special drive for afforestation along the river course for the breach / erosion of river banks. • To take up special drive for afforestation in the outer periphery and on raised areas of the wetland.
		Soil Conservation & Environment and Forest Department	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Discourage reclamation of wetland which are the Hotspot for biodiversity and wetlands which are created by natural hazards may be reclaimed for agricultural productivity. • The treatment of catchment area which are prone to high degree of erosion are to be maintained with different Afforestation programme/vegetation etc.
4	Public Private Partnerships	Revenue Dept. (DM) and Corporate Bodies	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Promote private participation in disaster management projects. • Implementation of flood warning system

3.2.2.5 CAPACITY DEVELOPMENT

Floods		Capacity Development	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Training	Centre for Disaster Management; AASC	Recurring/Regular <ul style="list-style-type: none"> • Conducting and coordinating training for all government officials involved in the planning and implementation of preparedness, mitigation response and relief work.
		SIRD	<ul style="list-style-type: none"> • Conduct Training Programmes for the Elected Representatives, Officers, Staff of Panchayat Raj Institutions and NGOs.
		Police Training Academy	<ul style="list-style-type: none"> • Conduct training to police officers in disaster management, crowd management, evacuation, rescue and relief operations. • Conduct search and rescue training to local volunteers.
		F&ES	<ul style="list-style-type: none"> • Conduct training for fire officers in disaster management evacuation and rescue operations.
		SDRF; NDRF	<ul style="list-style-type: none"> • Conduct training for SDRF and NDRF personnel in disaster management, evacuation and rescue operations. • Community training programmes to prepare volunteers for rescue, relief, first aid response. • To identify and prepare a list of Ex-servicemen, Swimmers and Divers in the local community to be engaged during the flood event.
		Animal Husbandry & Veterinary	<ul style="list-style-type: none"> • Training and orientation programs for State Govt. staff, professionals for veterinary care and support to disaster-affected animals.
		Health Dept.	<ul style="list-style-type: none"> • Conduct training and awareness camps to Health officials and community personnel in disaster management. • Training volunteers on emergency preparedness programs such as first aid and preventive measure against diseases in disaster prone areas.
2	Curriculum Development	SDMA; AASC; Engineering Training	<ul style="list-style-type: none"> • Update curriculum for undergraduate engineering courses to include topic relevant for Flood

		Institutes; Education Dept. Universities; Research institutes; State Boards of Education; Professional Bodies/ Councils; Medical Education Dept.	Risk Management. <ul style="list-style-type: none"> • Introduction of Crisis Management, Emergency Medical Response/Recovery and Trauma Management at Diploma/UG/PG levels for Health Professionals. • Improving curriculum periodically using new technologies. • ASDMA to constitute an Expert Committee to include Flood Risk Management/DRR component in School & College curriculum.
3	Awareness Generation	ASDMA in Co-ordination with Revenue and DM Dept.; SDMA; AASC; IRD; WRD; SDRF; F&ES; Civil defense; Police; P&RD; NGO's	<ul style="list-style-type: none"> • To extensively conduct Community awareness programmes in Flood prone areas towards Flood DRR through mass media (print & electronic, FM, community radio) audio visual jingles, street plays, pamphlets/booklets. • 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 use of Insurance/Risk Transfer • Promote Community Radio • Strengthening network of Civil Society Organizations for awareness generation about DRR and DM • Information on care and protection of disaster-affected animals
4	Mock Drills/ Exercises	ASDMA in coordination with P&RD; SDRF; SLSDA; F&ES; Police; Home Guards & Civil Defense	Joint planning and execution of emergency drills
5	Vocational Training /Skill Development	ASDMA	Recurring/Regular <ul style="list-style-type: none"> • Conduct training programmes • Develop a team of Trainer-of-Trainers for different trades relevant to flood-resistant construction. • ASDMA in co-ordination with Emergency and Fire Services, P&RD, SDRF, Police, Home Guards & Civil Defense, to periodically conduct sector specific mock drills/capacity building programmes for

			<p>ficersandcommunityvolunteersinfloodproneareas.</p> <ul style="list-style-type: none"> • Ex-service men, Swimmers & Divers in the local community to be engaged in the mock drill during the Flood event.
6	Empowering women, marginalized, and persons with disabilities	Department/ Directorate of Women and Child Development; Department/ Directorate of Social Justice & Empowerment	<p>Recurring/Regular</p> <ul style="list-style-type: none"> • Incorporating gender sensitive and equitable approaches in capacity development covering all aspects of disaster management at the state, district, and local levels. • ASDMA in co-ordination with Concerned Departments / Agencies to incorporate Gender / Community specific DRR measures in planning and implementing the Programmes /Schemes. • SHG's/NGO's to be engaged in creating awareness about Gender/Community specific DRR measures
7	Community-Based Disaster Management	AASC; ASDMA	<p>Recurring/Regular</p> <ul style="list-style-type: none"> • Strengthen ability of communities to manage and cope with disasters based on a multi-hazard approach • Strengthen ability of communities to manage and cope with disasters based on a multi-hazard approach • Training for panchayat, SHG, NCC, NSS, Youth, local community organizations. • NCC, NSSC cadets at local level, SHG's/NGO's to be engaged for DRR/DM measures. • P&RD in co-ordination with ASDMA to conduct DM/DRR based activities at local level.

Note: Every ministry, department or agency of the government – central and state – not specifically mentioned will also have both direct and indirect supporting role depending on the disaster, location and context.

3.2.2.6 CLIMATE CHANGE RISK MANAGEMENT

Floods		Climate Change Risk Management	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Research, Forecasting/Early Warning, Data Management, Zoning, Mapping	ASDMA; ARSAC; SDC	<p>Recurring/Regular</p> <ul style="list-style-type: none"> • ASDMA Inco-ordination with ARS, Universities/Research Centre stoat up studies on Climate Change Flood Risk. • Support National Risk Reduction efforts

			<p>related to CC</p> <ul style="list-style-type: none"> • Coordination with central agencies • Sponsor and promote state-specific efforts and local efforts for CC mitigation and adaptation • Document state-specific CC impacts and coping mechanisms
		AASC; ARSAC	<ul style="list-style-type: none"> • Promote state-specific studies on enhanced risks (economic, social, etc.) under different CC impact scenarios. • Promote research studies with State specific context on CC and consequent Changes in hazards.
		ASDMA	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • ASDMA to propose policy plans for clearing encroachments, buffer zone demarcation and implementation, catchment and backwater management.
2	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	AASC	<p>Recurring/Regular</p> <ul style="list-style-type: none"> • Under take HRVCA as part of preparing and period revision of DM plans. • Develop strategies for structural and non-structural measures based on HRVCA. • Assess CC risks of vulnerable and marginalized sections.
3	Climate Change Adaptation (CCA)	ASDMA	<ul style="list-style-type: none"> • ASDMA Inco-ordination with Dept. of Environment & Forest, and other concerned Agencies to Take up Sector specific Climate Change Adaption Programmes.
		Department of Environment & Forest	<p>Recurring/Regular</p> <ul style="list-style-type: none"> • Sensitization and awareness creation. • Support national CCA efforts. • Sponsor and promote state-specific efforts and local efforts for CC Mitigation and Adaptation. • Develop local adaptation strategies and pilot projects. • Sponsor and promote state-specific efforts and local efforts. • Implementation of CC adaptation programs. • Promote appropriate combinations of Green and Blue infrastructure approach. • Integrate adaptive measures in social protection programmes for the vulnerable groups.

3.2.3 SOIL EROSION

3.2.3.1 UNDERSTANDING DISASTER RISK

Soil Erosion		Understanding Disaster Risk	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Observation, tracking and monitoring of Soil Erosion risks	Water Resources Department ASDMA	Recurring/ Regular <ul style="list-style-type: none"> Water Resources Department will coordinate with National viz., Central Water Commission) & State level agencies towards Monitoring, and tracking of soil erosion. The WRD data and the ground level Weather data will enable ASDMA to generate flood / inundation forecast, early warning for a given location. Monitoring water level (inflow and outflow level) in different rivers and dissemination of the field data and Reservoir monitoring.
		North East Space Application Centre (NESAC)	Recurring/Regular <ul style="list-style-type: none"> Issue of flood warning alerts during flood season Monitoring of embankment and breaches
2	Zoning, mapping, and studies on classification of Erosion prone areas	ASDMA, Water Resources Department, North East Space Application Centre (NESAC) & ARSAC	Recurring/ Regular <ul style="list-style-type: none"> ASDMA in collaboration with NESAC to carry out survey of flood prone areas and to generate flood zonation maps. The survey being carried out in river courses of Brahmaputra & Barak Rivers to generate high resolution images to demarcate the erosion prone areas. Prepare vulnerability maps to identify and classify flood and erosion prone areas Continuous monitoring of riverbank line with the help of satellite imagery
3	Research and Development	ASDMA	Recurring/ Regular <ul style="list-style-type: none"> Undertake research studies on Riverbank erosion. Advise Government on legal, policy, special studies and brings out publications To take up and coordinate R&D projects towards erosion mitigation and management in collaboration with

			Universities/ Knowledge centers. <ul style="list-style-type: none"> • Continuous research on impact of soil erosion on indigenous community's coping mechanisms, along with specific social groups such as children, women, elderly and PWD • Study validity of specific strategies and coping practices
4	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	ASDMA, CWC, Water Resources Department (WRD)	Recurring/ Regular <ul style="list-style-type: none"> • Carry out HRVCA along with CWC and WRD and generate micro and macro level erosion hazard vulnerability maps for different river basins in the State. • Carry out capacity assessment including sector and community specific dimensions of capacity • Undertake and maintain soil erosion Damage and Loss database.
Note: Every ministry, department or agency of the government – central, state, district municipal/Panchayat – not specifically mentioned will also have both direct and indirect supporting role depending on the disaster, location and context.			

3.2.3.2 INTER-AGENCY COORDINATION

Soil Erosion		Inter-Agency Coordination	
S. N	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Overall disaster governance	Revenue and Disaster Management Department (Revenue & DM) & ASDMA	Recurring/ Regular <ul style="list-style-type: none"> • Periodically review and upgrade plans, resources and build capacities for all stakeholders • Ensure preparation and implementation of DM plans and ensure the functioning of agencies with DM tasks. • Coordinate and ensure the periodical upgradation of DM plans at State / Department / District level and mainstreaming the DRR into the departmental programmes and schemes.
2		North East Space Application Centre (NESAC) & ARSAC	<ul style="list-style-type: none"> • Prepare erosion prone Riverbank zone mapping using Remote Sensing, GIS and GPS Tools • Provide support in Remote Sensing & GIS activities in the State as a nodal Agency.
3	Non-structural measures	Revenue & DM	Recurring/ Regular <ul style="list-style-type: none"> • Ensure among state agencies for updating norms /

			and their implementation, enforcement and monitoring
		WRD	Recurring/ Regular <ul style="list-style-type: none"> • WRD in coordination with concerned departments to take up non-structural measures to minimize the flood & its impacts.
Note: Every ministry, department or agency of the government – central, state, district, municipal/Panchayat – not specifically mentioned will also have both direct and indirect supporting role depending on the disaster, location and context.			

3.2.3.3 INVESTING IN DRR – STRUCTURAL MEASURES

Soil Erosion		Investing in Structural Measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Flood control measures such as construction of embankments and levees	PWD	Recurring/ Regular <ul style="list-style-type: none"> • Identification of suitable sites for temporary shelters for people and livestock evacuated from localities at risk. • Construction of multi-purpose shelters in villages/habitations prone to floods.
		WRD	Recurring/ Regular <ul style="list-style-type: none"> • WRD to identify suitable sites for construction of check dams / barrages / diversion canals and water harvesting structures. • Drainage control structures like sluices, river training and anti-erosion works to protect riverbank line • Raising and strengthening of weak embankments
		Soil Conservation Department	<ul style="list-style-type: none"> • Repair and maintenance of check dam and water harvesting structures • Proper maintenance and repairing of earthen guide bund/periphery bund
2	De-silting/dredging of rivers to improve flow; drainage improvement; floodwater diversion through existing or	WRD	Recurring/ Regular <ul style="list-style-type: none"> • Assess the carrying capacities of the drainage system and also to take necessary measures to de-silt the drainages periodically.
		Soil Conservation Department	Recurring/ Regular <ul style="list-style-type: none"> • De-silting of storm water drains, and tanks periodically • Gully control structures like drop spill way, check dams, boulder check dams with hexagonal wares, brush wood check dam etc. are constructed to stop further advancement of the gully heads and fingers and to improve the moisture regime in the

	new channels		command areas. • Construct boulder spurs, bank revetment, loop cutting works to tackle the erosion problems.
Note: Every ministry, department or agency of the government – central, state, district, municipal/Panchayat, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.			

3.2.3.4 INVESTING IN NON-STRUCTURAL MEASURES

Soil Erosion		Investing in Non-Structural measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Regulation and guidelines including: integrated flood and Riverbank Erosion Management	Water Resource Department	Recurring/ Regular <ul style="list-style-type: none"> Water Resource Department to develop guidelines for integrated flood and bank erosion risk management Policy and regulations to be developed by Revenue & DM on rehabilitation and resettlement of people who lost their home, land, and livelihood to riverbank erosion Taking up alternative measures such as community flood proofing in selected localities
		Revenue & DM and ASDMA	
		Soil Conservation Department	Recurring/ Regular <ul style="list-style-type: none"> Take up protective afforestation works along river/stream banks in denuded catchments and hills land /jhum land with steep slope to prevent the process of soil loss due to erosion.

3.2.3.5 CAPACITY DEVELOPMENT

Soil Erosion		Capacity Development	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Training	Centre for Disaster Management; AASC	Recurring/Regular <ul style="list-style-type: none"> Conducting and coordinating training for all government officials involved in the planning and implementation of rehabilitation and resettlement programmes

			<p>for those who lost their land to river erosion.</p> <ul style="list-style-type: none"> • Community capacity building of rehabilitated people on alternative livelihood such as silk spinning and weaving and improved vegetable cultivation and marketing.
2	Awareness Generation	ASDMA in Co-ordination with Revenue and DM Dept.; SDMA; AASC; IRD; WRD; SDRF; F&ES; Civil Defence; P&RD; NGOs	<ul style="list-style-type: none"> • To extensively conduct community awareness programmes in flood and erosion affected villages towards Flood DRR through mass media (print & electronic, FM, community radio) audio visual jingles, street plays, pamphlets/booklets. • Carry out mass media campaigns • Promote culture of Disaster Risk prevention, mitigation, and better risk management • Promote attitude and behaviour change in the awareness campaigns/IEC • Promote use of Insurance/Risk Transfer • Promote Community Radio • Strengthening network of NGOs for awareness generation about DRR and DM • Information on care and protection of disaster-affected animals
3	Empowering women, marginalized, and persons with disabilities	ASDMA; WRD, Department of Social Welfare	<p>Recurring/Regular</p> <ul style="list-style-type: none"> • Incorporating gender sensitive and equitable approaches in capacity development covering all aspects of disaster management at the state, district, and local levels. • ASDMA in co-ordination with concerned departments / agencies to incorporate gender / community specific DRR measures in planning and implementing the programmes /schemes. • SHG's/NGO's to be engaged in creating awareness about gender/community specific soil erosion risk mitigation measures

Note: Every ministry, department or agency of the government – central and state – not specifically mentioned will also have both direct and indirect supporting role depending on the disaster, location and context.

3.2.3.6 CLIMATE CHANGE RISK MANAGEMENT

Soil Erosion		Climate Change Risk Management	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Research, Data Management, Zoning, Mapping	ASDMA; ARSAC	Recurring/Regular <ul style="list-style-type: none"> • ASDMA in co-ordination with ARSAC, universities/research centres to take up studies on Climate Change, Flood Risk and Riverbank Erosion. • Document state-specific riverbank erosion impacts and coping mechanisms
2	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	AASC & ASDMA	Recurring/Regular <ul style="list-style-type: none"> • Undertake HRVCA as part of preparing and periodic revision of DM plans. • Develop strategies for erosion centric structural and non-structural measures based on HRVCA.
3	Climate Change Adaptation (CCA)	ASDMA	Recurring/Regular <ul style="list-style-type: none"> • ASDMA in co-ordination with Water Resources and Environment and Forest Department and other concerned agencies to take up erosion-specific adaption programmes.

3.2.4 URBAN FLOODS

3.2.4.1 UNDERSTANDING DISASTER RISK

Urban Floods		Understanding Disaster Risk	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Mapping/ Zoning	ASDMA; Assam Remote Sensing Application Centre (ARSAC); ULBs	Recurring/ Regular <ul style="list-style-type: none"> • Prepare and update urban flood hazard maps in all ULBs. • Flood hazard assessment will be made on the basis of rainfall intensities and duration and land use changes. • Control and supervision of land use in flood plain. • Develop city wide and WARD level flood plain vulnerability map. • Coordinate with the state agencies and implement recommendations. • Prepare and update urban flood hazard maps in all ULBs.
2	Estimation of Possible Inundation levels	ASDMA; ARSAC; ULBs	<ul style="list-style-type: none"> • The magnitudes of inundation levels will be simulated on GIS based inundation model. • Incorporating drainage capacities to estimate depth, duration and extent of inundation by using an integrated city specific framework. • Convert the real time data or forecasted information into flood hazard maps. • Develop land use planning based on multi-hazard disaster risk assessment.
3	Estimation of Flood Damages	ARSAC; ULBs	<ul style="list-style-type: none"> • Information system will have to be developed using high resolution satellite images. • Prepare data base on flood vulnerable population. • Prepare resource information for urban flood management
4	WARD level Risk Reduction and Vulnerability Assessment	ASDMA; ARSAC; City Corporations and Municipalities	Recurring/ Regular <ul style="list-style-type: none"> • Develop city wide and WARD level flood plain vulnerability map. • Prepare and update urban flood hazard maps in all WARDS. • WARD level information system will have to be developed using high resolution satellite images.
5	Maximize real-time hydro-	ASDMA; ULBs	Recurring/ Regular <ul style="list-style-type: none"> • Coordinate with the concerned departments and agencies and implement the flood mitigation measures.

	meteorologic al network to cover all urban centers		<ul style="list-style-type: none"> • State Urban Flood Disaster Management Information System.
		ULBs	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Place land-use planning maps in public domain. • Undertake studies, evaluations, and planning, taking into account land use constraints to prevent flooding.
		ARSAC; ASDMA	<ul style="list-style-type: none"> • The magnitudes of inundation levels due to various scenarios and causes will be simulated on GIS-based inundation model.
6	Establish Automatic Rain Gauge Stations, Automatic Weather Stations for 24X7 weather monitoring	ASDMA	<ul style="list-style-type: none"> • ASDMA to install and maintain the Automatic Weather Monitoring Stations Network. • Set up EOCs by the ULBs connected to ASDMA & SEOC. • Install rain gauge stations as per norms. • Disseminate rainfall and urban flood information to all urban local bodies and other concerned officials for flood mitigation.
7	Establishment of local networks for real-time rainfall data	ASDMA; ULBs	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Coordinate with ASDMA MOES (IMD) in setting up and maintenance of local networks at identified places.
8	Establishment of WRD network	ASDMA	<ul style="list-style-type: none"> • ASDMA to co-ordinate and establish WRD network
9	Information Systems, Monitoring, Forecasting, Early Warning	ASDMA	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Assist ULBs to setup Monitoring, Forecasting and Early Warning Systems.
		ULBs	<ul style="list-style-type: none"> • Setup Monitoring, Forecasting and Early Warning Systems • Facilities, exclusively setup by the ULBs, will be operated and maintained by them.
10	Marking of HFL and Documentation	AWRD; ULBs	<ul style="list-style-type: none"> • Marking of High Flood Level (HFL) / Full Tank Level (FTL)
11	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	ASDMA; ULBs;	<p>Recurring/Regular</p> <ul style="list-style-type: none"> • Undertake HRVCA as part of preparing and periodic revision of state and district DM plans • Constitute/ strengthen the mechanisms for consultation with experts and stakeholders • Promote studies, documentation and research.
<p>Note: Every Ministry, Department or agency of the Government – central, state, municipality/panchayat, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.</p>			

3.2.4.2 INTER AGENCY COORDINATION

Urban Floods		Inter-Agency Coordination	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Overall disaster governance	ASDMA; ULBs	Recurring/ Regular <ul style="list-style-type: none"> • Co-ordinate all aspects of Disaster Risk Management and mainstreaming DRR. • Ensure preparation and implementation of DM plans and ensure the functioning of agencies with DM tasks. • Maintain IDRN information base for resource identification and deployment. • Ensure coherence and mutual reinforcement of DRR, CCA and development. • Work in coordination with all the line departments in overall DM.
2	Response	Revenue & DM Dept.; ASDMA	<ul style="list-style-type: none"> • Organize and coordinate immediate response. • Coordinate with central agencies. • ASDMA in consultation with Revenue and Disaster Management Department to coordinate, guide and command the Rescue, Relief & Rehabilitation.
		ULBs	To create Task Force on Urban Flood Management in respective ULBs.
3	Warnings, Information, Data	Revenue & DM Dept; ASDMA; SEOC	<ul style="list-style-type: none"> • Effective coordination and seamless communication among State and District agencies to ensure quick, clear, and effective dissemination of Warnings, Information and Data. • Dissemination of Warnings to the last mile
4	Non-structural measures	Revenue & DM Dept; ASDMA; ULBs; PWD	Recurring/ Regular <ul style="list-style-type: none"> • Coordination among District / Urban agencies for ensuring updated norms / codes and their implementation, enforcement and monitoring. • Coordination among State and District/Urban agencies for: <ul style="list-style-type: none"> a) revised/ updated rules, norms b) adoption of new/updated standards, c) enact/amend laws, regulations and d) adopt/ review policies

3.2.4.3 INVESTING IN DRR –STRUCTURAL MEASURES

Urban Floods		Investing in Structural Measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Civil Works	PWD; Water Resources department; ULBs	<ul style="list-style-type: none"> • All road re-leveling works or strengthening/overlay works to be carried out by milling the existing layers of the road so that the road levels will not be allowed to increase. • Ensure protection of Water Bodies and its restoration/revival. • Ensure scientific Solid Waste Management. • Remove encroachments and take strict action. • Upgrade and manage the existing Drainage and Storm Water Systems • Protection of Water Bodies. • Drain inlet points along the roads to be positioned and cleaned regularly.
	Civil Works	PWD; Dept of Transport; Railways; NHAI; ULBs	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Bus and Metro Terminals, Railway stations and Airports to be made flood- proof by providing efficient drainage for a much higher rain fall intensity.
2	Establishment of Emergency Operation Centres	SEOC; DEOCs; ULBs	<ul style="list-style-type: none"> • Ensure round the clock operations of SEOCs during the Flood season with adequate manpower/resources. • Respective ULBs to set up EOCs and ensure round the clock operations.
3	Hazard resistant construction, strengthening, and retrofitting of all lifeline structures and critical infrastructure	ULBs; PWD; H&UA and other concerned depts.	<ul style="list-style-type: none"> • Regulate and implement building bye-laws and flood plain zoning regulations • Retrofit lifeline buildings and critical infrastructure • Collaboration with technical agencies and implementation • Construct Flood Resistant Housing
<p>9.6 Note: Every Department or agency of the Government – central and state, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.</p>			

3.2.4.4 INVESTMENT IN DRR NON- STRUCTURAL MEASURES

Urban Floods		Investing in Non-Structural Measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Preparation of comprehensive Urban Storm Drainage Design Manual, Assam Urban Water Supply & Sewerage Board (AUWSSB)	ASDMA	Recurring/ Regular • State will consider current standard practices and specific location rainfall.
		ULBs	• Take initiatives and collaborate with State agencies to prepare and implement the USDDM in all ULBs.
2	Preparation of Storm Water Drainage System Inventory	H &UA ARSAC	<ul style="list-style-type: none"> • Promote storm water drainage information system based on best technologies available integrating spatial and non-spatial data. • Coordinate with ULBs in preparing the inventory.
3	Operation and Maintenance of Drainage Systems	H&UA	Recurring/ Regular • Provide guidelines and carry out monitoring and evaluation.
4	Environmental Impact Assessment	Assam State Pollution Control Board (ASPCB) Dept. of Environment & Forest	<ul style="list-style-type: none"> • Issue guidelines for making storm water drainage and solid waste concerns a part of all EIA norms in all ULBs. • Minimize loss of ecologically important areas and natural wetlands.
		ULBs	• Ensure strict compliance with the guidelines and land-use planning consistent with proper storm water and solid waste management.
5	<ul style="list-style-type: none"> • Techno-Legal Regime • Land use planning • City/Town Planning • Risk Transfer 	Dept of Revenue & DM; ASDMA; H&UA; ULBs Directorate of Town & Country Planning	<ul style="list-style-type: none"> • Coordinate for compliance with Techno-Legal Regime by all the ULBs. • Protect natural water tanks from encroachment in all ULBs. • Promote and implement Rain Water Harvesting in Towns and Cities. • Provide technical guidance and support to strengthen Land-use and Flood Plain planning. • Incorporate the topography and specific terrain elements such as hilly, coastal, etc. in the land use plan to minimize flooding allowing free flow of storm water along the natural contours.

		(DTCP) AUWSD	<ul style="list-style-type: none"> • Incorporate Water Sensitive Urban Design (WSUD) considerations into land use and flood plain planning. • Construct detention ponds to retain storm water.
6	Constitution of Urban Flooding Cell for Integrated UFDM	ASDMA; ULBs; SDMA	<ul style="list-style-type: none"> • Lead role in the establishment of the technical umbrella at the state level. • Constitute Urban Flooding Cell at district level and a DM Cell to be constituted at the ULB level for managing urban flooding at local level.
7	Public Private Partnerships	Revenue Dept. (DM); Corporate Bodies	<ul style="list-style-type: none"> • Revenue Dept. (DM) to support and implement regulations. • Design and implement jointly prepared PPP based urban flood management projects • Promote private participation in disaster management facilities.
<p>Note: Every department or agency of the state government, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.</p>			

3.2.4.5 CAPACITY DEVELOPMENT

Urban Floods		Capacity Development	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Education and Training	AASC	<ul style="list-style-type: none"> • Conduct and coordinate training to all levels of Government officials involved in DM. • Upgrade skills of stakeholders to identify and meet continuous challenges arising in urban development and management. • Provide guidance in planning and designing cities and its infrastructure through knowledge-based skill set specific to their regional needs.
		SIRD	<ul style="list-style-type: none"> • Conduct training programmes for the elected representatives, officers, staff of Panchayat Raj Institutions and NGOs.
		Police Training Academies	<ul style="list-style-type: none"> • Conduct training for police officers in Disaster Management – Crowd Management, Evacuation, Rescue and Relief Operations. • Conduct Search and Rescue training to local volunteers
		SDRF; NDRF	<ul style="list-style-type: none"> • Conduct training for SDRF and NDRF personnel: Search, rescue, evacuation etc. • Community training programs to prepare volunteers for DM. • Identify and prepare a list of Ex-Service men, swimmers and divers in the local community

			to be engaged during the Flood event.
		Health Department	<ul style="list-style-type: none"> • Conduct training and awareness camps for Health officials and community people in Disaster Management. • Training volunteers on emergency preparedness programs such as first aid and preventive measure against diseases.
		Animal Husbandry & Veterinary services	<ul style="list-style-type: none"> • Enlist professionals for veterinary care and support to disaster-affected animals • Train volunteers, Shepherds, Cowherds etc., for assisting the veterinary professionals during the disaster.
		Education Department	<ul style="list-style-type: none"> • Introduce UFDM modules in school curricula. • State Government will encourage their school boards to develop similar content in their school curriculum. • Orientation on urban disasters in schools.
2	Awareness Generation	Revenue and Disaster Management Department; SDMA; AASC; SDRF; Civil Defense; Police; Home Guards; Directorate of Information & Public Relations	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Carry out mass media campaigns in all ULBs • Promote Culture of Disaster Risk Prevention, Mitigation, and Better Risk Management • Promote Attitude and Behavioral Change Communication through awareness campaigns/IEC • Promote use of Insurance/ Risk Transfer • Promote Community Radio • Strengthen network of Civil Society Organizations for awareness generation about DRR and DM • Encourage narrowcasting and broadcasting
3	Documentation	ASDMA; ULBs and all Line Departments	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Ensure accurate documentation of all aspects of disaster events for creating good historical records and data base for future research and Risk Management planning.
4	Empowering women, marginalized and persons with disabilities	Department/ Directorate of Women and Child Development; Department/Directorate of Social Justice & Empowerment;	<ul style="list-style-type: none"> • Incorporate gender sensitive and equitable approaches in capacity development covering all aspects of disaster management.
5	Mock Drills/ Exercises	SDRF; F&ES; Civil Defense, Police; Home Guards; Directorate of Information & Public Relations;	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Promote planning and execution of emergency drills and simulation

		Directorate of Sports and Youth Welfare (DSYW)	
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3.2.4.6 CLIMATE CHANGE RISK MANAGEMENT

Urban Floods		Climate Change Risk Management	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Research, Forecasting / Early Warning, Data Management, Zoning, Mapping	ASDMA; ARSA	Recurring/ Regular <ul style="list-style-type: none"> • ASDMA in co-ordination with ARSAC, Universities / Research Centers to take up studies on Climate Change & Flood Risk. • Promote state-specific studies on enhanced risks (economic, social, etc.) under different impact scenarios. • Promote research studies with State specific hazard contexts and consequent changes in hazards.
2	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	ASDMA	Recurring/ Regular <ul style="list-style-type: none"> • Undertake HRVCA as part of preparation and periodic revision of DM plans. • Develop strategies for structural and non-structural measures based on HRVCA. • Assess hazard risks of vulnerable and marginalized sections.
3	Climate Change Adaptation (CCA)	ASDMA Dept. of Environment & Forest	ASDMA in co-ordination with, Dept. Environment and Forest and other concerned Agencies to take up Sector specific Climate Change Adaption Programs Recurring/ Regular <ul style="list-style-type: none"> • Sensitization and awareness creation. • Support national CCA efforts. • Sponsor & promote state-specific local efforts for CC Mitigation & Adaptation. • Develop local adaptation strategies and pilot projects. • Sponsor and promote state-specific efforts and local efforts. • Implementation of CC adaptation programs. • Promote appropriate combinations of green and blue infrastructure Approach. • Integrate adaptive measures in social protection programs for the vulnerable groups.
<p>Note: Every department or agency of the state government, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.</p>			

3.2.5 LANDSLIDES

3.2.5.1 UNDERSTANDING DISASTER RISK

Landslides Risk		Understanding Disaster	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Hazard Zoning, mapping, geological, and geotechnical Investigations in regions prone to landslides	ASDMA	<ul style="list-style-type: none"> • Preparation of landslide hazard vulnerable zone maps. • Studies and monitoring of risk prone areas on site and using Remote sensing products. • Studies to classify Hazard Vulnerable areas. • Develop the Landslide hazard mapping for the Landslide prone areas.
2	Research and Development	ASDMA	<ul style="list-style-type: none"> • Scientific assessment of the triggering factors of landslides.
3	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	ASDMA	<p><u>Recurring/ Regular (RR)</u></p> <ul style="list-style-type: none"> • Comprehensive research studies and documentation on vulnerabilities and capacities covering Social, Physical, Economic, Ecological, Gender, Social inclusion and equity aspects. • Provide technical support and guidance for comprehensive HRVCA. <p><u>Recurring/ Regular</u></p> <ul style="list-style-type: none"> • Undertake HRVCA as part of preparing and periodic revision of DM plans. • Constitute/ strengthen the mechanisms for consultation with experts and stakeholders
4	Dissemination of warnings	ASDMA; SEOC	<p><u>Recurring/ Regular (RR)</u></p> <ul style="list-style-type: none"> • Coordinate with central agencies for quick, clear, and effective dissemination of information. • Development of a model on landslide forecasting and dissemination of warnings. • Ensure facilities and infrastructure for the implementation of adequate access to communities at risk. • Ensure dissemination of early warnings to last mile.
5	Monitoring, Warning Systems, and Dissemination	ASDMA, SEOC	<ul style="list-style-type: none"> • Deploy reliable monitoring and warning systems. • Establish a mechanism for monitoring and evaluation.

9.7 **Note:** Every ministry, department or agency of the government – central, state and district, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.

3.2.5.2 INTER-AGENCY COORDINATION

Landslides		Inter-Agency Coordination	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Protection of Human Settlements	Revenue; Revenue (DM); PWD; H&UA; ULBs; PRIs	Recurring/ Regular <ul style="list-style-type: none"> • Ensuring landslide resistant infrastructure, roads, and land stabilization work.
2	Protection of Heritage Structures	Directorate of Archeology; Culture Department	<ul style="list-style-type: none"> • Prepare lists of structures/sites at risk due to landslides/slope stability problems and prioritize them for hazard mitigation.
3	Multi-Hazard Shelters	PWD; H&UA; Panchayat & Rural Development dept.; ULBs; Municipalities/PRI s	<ul style="list-style-type: none"> • Identification of safe buildings and sites to serve as temporary shelters for people and livestock evacuated from localities at risk. • Construction of multipurpose shelters in high risk areas as at safe sites away from hazard-prone locations. • Proper maintenance of roads in risk-prone areas.
<p>9.8 Note: Every ministry, department or agency of the government – central, state and district, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.</p>			

3.2.5.3 INVESTING IN DRR-STRUCTURAL MEASURES

Landslides		Investing in Structural Measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Site selection for Human Settlements in Landslide Prone Areas	PWD; H&UA; P&RD (Housing department); ULBs;	<ul style="list-style-type: none"> • Complete detailed land-use zonation incorporating land slide risks as applicable. • Adopt suitable byelaws for rural and urban areas. • Enforce model codes into practice. • Ensure proper compliance.
2	Regulations and building codes	PWD; H&UA; ULBs; P&RD; (Housing department)	Recurring/ Regular <ul style="list-style-type: none"> • Ensure implementation and adherence to codes and guidelines. • Adopt the techno-legal framework for ensuring compliance with land use zoning and landslide avalanche safety issues. • Adopt land use zoning, building bye-laws and model legislation with suitable modification for reducing risk
3	Licensing and certification of professionals	H&UA; ULBs; P&RD	<ul style="list-style-type: none"> • Evolve an Appropriate Techno-Legal Framework for mandatory licensing of professionals.
4	Public Private Partnerships	Revenue and Disaster Management Department and corporate Sectors	Recurring/ Regular <ul style="list-style-type: none"> • Promote private participation in DRR.
<p>9.9 Note: Every ministry, department or agency of the government – central, state and district, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.</p>			

3.2.5.4 INVESTING IN DRR NON- STRUCTURAL MEASURES

Landslides		Investing in DRR Non-Structural Measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Site selection for Human Settlements in Landslide Prone Areas	PWD; H&UA; ULBs; P&RD; Housing department	<ul style="list-style-type: none"> • Complete detailed land-use zonation incorporating landslide risks as applicable. • Adopt suitable byelaws for rural and urban areas. • Enforce model codes into

			practice. • Ensure proper compliance.
2	Regulations and building codes	PWD; H&UA; ULBs; P&RD; Housing department	<ul style="list-style-type: none"> • Recurring/ Regular • Ensure implementation and adherence to codes and guidelines. • Adopt the techno-legal framework for ensuring compliance with land use zoning and landslide avalanche safety issues. • Adopt land use zoning, building bye-laws and model legislation with suitable modification for reducing risk
3	Licensing and certification of professionals	H&UA; ULBs; P&RD	<ul style="list-style-type: none"> • Evolve an Appropriate Techno-Legal Framework for mandatory licensing of professionals.
4	Public Private Partnerships	Revenue and Disaster Management Department and corporate Sectors	<ul style="list-style-type: none"> • Recurring/ Regular • Promote private participation in DRR.
9.10 Note: Every ministry, department or agency of the government – central, state and district, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.			

3.2.5.5 CAPACITY DEVELOPMENT

Landslides		Capacity Development	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Training	PWD; Directorate of Geology & Mines (DMG); ASDMA	Recurring/ Regular <ul style="list-style-type: none"> • Train professionals on how to handle slope failures and their remediation and landslide emergencies by promoting observational method of design and construction with training on the development of contingency plans • Provide support to and collaboration with National Agencies.
		AASC	Recurring/ Regular <ul style="list-style-type: none"> • Conduct and coordinate training to all government officials involved in the planning and implementation of Preparedness, Mitigation Response and Relief Work.

		SIRD	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Conduct Training Programmes for the Elected Representatives, officers, staff of Panchayat Raj Institutions and NGOs. <p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Conduct Training Programmes for the Elected Representatives, Officers, Staff of Housing and Urban Affairs Department.
		Police Training Academies	<ul style="list-style-type: none"> • Conduct training of police officers in Disaster Management- Crowd Management, Evacuation, Rescue and Relief Operations. • Conduct search and rescue training for local volunteers.
		SDRF; NDRF	<ul style="list-style-type: none"> • Conduct training for SDRF and NDRF personals in Disaster Management- Evacuation and Rescue Operations. • Organize community training programs to prepare volunteers for Rescue, Relief, First Aid and Response. • Identify and prepare a list of Ex-service men, Swimmers & Divers in the local community to be engaged during the Flood event
		Department of Animal Husbandry & Veterinary	<ul style="list-style-type: none"> • Organize training and orientation programs for professionals of Veterinary care and Volunteers to support the Search, Rescue, Evacuation and Cattle and Animal Management of Landslide affected areas.
		Health and Family Welfare Department	<ul style="list-style-type: none"> • Organize training and orientation programs for professionals and volunteers on Disaster Management with specific reference to high altitude Landslide affected areas
2	Curriculum Development	Education department	<ul style="list-style-type: none"> • Ensure scientific knowledge on landslides in the curriculum
3	Awareness Generation	Revenue & DM Department; AASC; Directorate of Geology & Mines (DGM); Directorate of Information and Public Relations (DIPR); Civil Defense; Police; SDRF; P&RD;	<ul style="list-style-type: none"> • 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 use of insurance/ risk transfer. • Promote Community Radio. • Inform people about care and protection of Disaster-Affected Animals.

		NGO's	
4	Mock Drills/ Exercises	SDRF; Police	<ul style="list-style-type: none"> • Carry out joint planning and execution of emergency drills.
5	Documentation	Revenue and Disaster Management Department; DMG; Geological Survey of India (GSI); ASDMA	<ul style="list-style-type: none"> • Constitute Multi-Institutional and Multi-Disciplinary Teams for carrying out post landslide field investigations, and document the lessons learnt
6	Empowering women, marginalized, and persons with disabilities	Department/ Directorate of Women and Child Development; Department/Dire ctorate of Social Justice & Empowerment	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Adopt gender sensitive and equitable approaches in capacity development covering all aspects of Disaster Management at the state level.
7	Community-Based Disaster Management	ASDMA; AASC	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Strengthen ability of communities to manage and cope with disasters based on a multi-Hazard approach. • Strengthen ability of communities to manage and cope with disasters based on a multi-Hazard approach. • Organize training for panchayat members, SHGs, NCC, NSS, Youth, local community organizations.
<p>Note: Every ministry, department or agency of the government – central, state and district, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.</p>			

3.2.5.6 CLIMATE CHANGE RISK MANAGEMENT

Landslides		Climate Change Risk Management	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Research, Forecasting/Early Warning, Data Management, Zoning, Mapping	GSI; ASDMA	<p>Recurring/ Continuous</p> <ul style="list-style-type: none"> • Sponsor and promote State and Local specific efforts for CC Mitigation and Adaptation. • Document state-specific CC impacts and coping mechanisms.

			<ul style="list-style-type: none"> • Promote local weather-based insurance mechanisms and agricultural practices. • Promote state-specific studies on enhanced risks (Economic, Social, etc.) under different CC impact scenarios. • Promote research studies with State specific contexts on CC and consequent changes in hazards.
2	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	ASDMA; Department/ Directorate of Women and Child Development; Department/Dire ctorate of Social Justice & Empowerment; Department/Dire ctorate of Tribal Affairs (Plain)	<ul style="list-style-type: none"> • Undertake HRVCA as part of preparation and periodic revision of DM plans • Develop state specific strategies • Assess CC risks of Vulnerable and Marginalized sections • Improve the understanding of the enhanced vulnerabilities of LSA-communities.
3	Climate Change Adaptation (CCA)	Revenue Department & DM; ASDMA; Environment & Forest	<p>Recurring/ Continuous</p> <ul style="list-style-type: none"> • Carry out sensitization and awareness creation. • Provide support to national CCA efforts. • Ensure coordination with central agencies. • Sponsor and promote state-specific efforts for CC Mitigation and Adaptation • Develop local adaptation strategies and pilot projects. • Sponsor and promote state-specific efforts and local efforts. • Implementation of CC adaptation programs. • Promote appropriate combinations of green and blue infrastructure approach • Integrate adaptive measures in social protection programs for the vulnerable groups.

3.2.6 DROUGHT

3.2.6.1 UNDERSTANDING DISASTER RISK

Drought		Understanding Disaster Risk	
S. N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Vulnerability Maps	ASDMA Depts. of Water Resources; P&RD; Department/ Directorate of Women and Child Development; Department/Directorate of Social Justice & Empowerment; Department/Directorate of Tribal Affairs (Plain); Agriculture and Horticulture; Animal Husbandry and Veterinary; ULB's	Recurring/ Regular <ul style="list-style-type: none"> Annually, after the end of the South-West monsoon season, carry out comprehensive assessment of water availability for drinking and irrigation in all the dryland farming/drought-prone areas in the state to demarcate blocks and preferably villages. Undertake village-wise assessment of water storage in the vulnerable blocks Prepare maps of areas likely to face water deficit before onset of next monsoon (demarcate blocks and preferably villages). Prepare the Socio- Economic vulnerability maps.
		ASDMA	Recurring/ Regular <ul style="list-style-type: none"> Prepare drought vulnerability map using GIS and Remote Sensing
		P&RD; Agriculture	Recurring/Regular <ul style="list-style-type: none"> Prepare maps of areas likely to face water deficit before onset of next monsoon (demarcate blocks and preferably villages). Undertake village-wise assessment of water storage in the vulnerable blocks.
2	Assessment, Monitoring, Forecasting, Early Warning	ASDMA; IMD; Agriculture and Horticulture; WRD; P&RD	<ul style="list-style-type: none"> ASDMA to coordinate with central agencies and provide Weather related Forecast & Early Warning. Agriculture/Horticulture Departments to analyze drought condition, water deficiency and crop condition. Separately, at the end of SW and NE monsoon, as applicable, the concerned Departments to prepare and update a robust database of micro-level detail on rainfall, reservoir/lake water levels, surface

			<p>water/ground water, soil moisture, sowing/crop conditions and socio-economic factors.</p> <ul style="list-style-type: none"> • Separately, at the end of SW and NE monsoon, Agriculture/Horticulture Departments to prepare crop advisory for blocks that are likely to face water deficit.
			<ul style="list-style-type: none"> • Separately, at the end of SW and NE monsoons, AWRD and P&RD to prepare comprehensive water conservation, re-distribution and management plan for the areas in the state that are likely to experience water deficit.
3	Drought Declaration	Revenue & DM Dept.; ASDMA; Dept of Agriculture and Horticulture; Irrigation; Animal Husbandry & Veterinary; Panchayat and Rural Development; WRD; ARSAC	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • ASDMA to monitor key indicators for drought declaration with the support of relevant Central/ State agencies/Depts. • State Government to issue a formal declaration of drought affected talukas to initiate drought response measures. • Notify drought – Kharif by 30th October; Rabi by 31st March. • Early season drought: In the end of July as per recommended criteria. • Mid-Season drought in the end of August. • Assessment and notification of Drought by the state for the districts/Blocks where pre-monsoon (early sowing areas) crops are grown.
4	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	ASDMA	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • ASDMA to provide technical support and guidance for comprehensive HRVCA to promote studies, documentation and research on vulnerabilities and capacities covering social, physical, economic, ecological, gender, social inclusion and equity aspects.
5	Research	ASDMA/Centre for Disaster Management	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • ASDMA in collaboration with concerned Institutions & Knowledge Centers to conduct research through the university system to cope with water deficit, to manage crops with less water, improve water conservation programs, enhance the productivity of dry land/ rain fed farming.
6	Disaster Data collection and Management	Departments of Revenue (DM); P&RD; Agriculture and Horticulture; Animal Husbandry & Veterinary; ASDMA	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Systematic management of data on disaster damage and loss assessments. • Disaster Damage and Losses in the previous decade(baseline).

3.2.6.2 INTER-AGENCY COORDINATION

Drought		Inter-Agency Coordination	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Over-all disaster governance	ASDMA; DDMA's; Depts. of Water Resources; Irrigation; Department/ Directorate of Women and Child Development; Department/Directorate of Social Justice & Empowerment; Department/Directorate of Tribal Affairs (Plain); Agriculture and Horticulture; Animal Husbandry and Veterinary; PRIs; ULBs	Recurring/ Regular <ul style="list-style-type: none"> Ensuring preparation and implementation of all DM plans and ensure the functioning of agencies with DM tasks. All aspects of Disaster risk Management and mainstreaming DRR Ensuring and coherence and mutual re-enforcement of DRR, CCA and Development
2	Response	ASDMA; DDMA's; Depts. Of Water Resources; Irrigation; Agriculture & Horticulture; Animal Husbandry & Veterinary; PRIs; ULBs	Recurring/ Regular <ul style="list-style-type: none"> Organizing and coordinating the immediate response Coordinate with Central agencies
3	Warning, Information & Data	ASDMA; DDMA's; Dept. Of Water Resources; Panchayat & Rural Development (RD); Agriculture & Horticulture Dept.; PRIs; ULBs	Recurring/ Regular Coordinating the dissemination of warning to all down to the last mile-remote, rural, urban; regular updates to people living in areas at risk
4	Non-Structural Measures	ASDMA; DDMA's; Agriculture dept; Irrigation PRIs; ULBs	Recurring/ Regular Coordinating among state agencies for ensuring updated norms/codes and their implementation, enforcement and monitoring

3.2.6.3 INVESTING IN DRR - STRUCTURAL MEASURES

Drought		Investing in Structural Measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility

1	Storage facilities	ASDMA; DDMA; Panchayat & RD; Irrigation; PRIs; ULBs	Recurring/ Regular <ul style="list-style-type: none"> • Drinking water storage and distribution facilities • Fodder storage facilities • Rainwater harvesting systems – both individual and community
2	Water Conservation structures	ASDMA; DDMA; Panchayat & RD; Irrigation; PRIs; ULBs	Recurring/ Regular <ul style="list-style-type: none"> • Water harvesting and storage structures • Check dams and reservoirs with excess capacity • Ground water recharge augmentation systems

3.2.6.4 INVESTING IN DRR NON-STRUCTURAL MEASURES

Drought		Investing in Non-Structural Measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Mitigation measures	ASDMA; DDMA; Panchayat & RD; Agriculture & Horticulture; Irrigation; Soil Conservation; PRIs; ULBs	Coordinate the efforts of the central agencies in implementing the mitigation measures Short Term (0-1 yr.)¹⁰ <ul style="list-style-type: none"> • Promote private participation in disaster management facilities • Improve the implementation of watershed development programmes • Enhancing the safety of irrigation canals and related structures Medium Term (1-3 yr.) <ul style="list-style-type: none"> • Risk management for dry land and /rainfed farmers through agriculture extension based on assessments of monsoons (South West or North East as appropriate) • Drought proofing
2	Promote Water conservation, harvesting, efficient irrigation, afforestation	ASDMA; DDMA; Panchayat & RD; Agriculture & Horticulture; Irrigation; Assam Agricultural University; PRIs; ULBs; Environment and Forests	<ul style="list-style-type: none"> • Promote water efficient irrigation • Promote protective irrigation through micro irrigation systems • Provide advice to farmers to cope with drought, crop management under drought conditions and efficient water management

¹⁰ Short Term (T1) – 0-1-year, Medium Term(T2) – 1-3-year, Long Term – (T3) – 3-5 year

			<ul style="list-style-type: none"> • Training in water and soil moisture conservation • Promote village level information system for natural resource management
3	Agricultural credit, agricultural inputs, finance, marketing and crop insurance	ASDMA; State Rural Cooperative Banks; Rural Banks; NABARD; DDMA	Recurring/ Regular <ul style="list-style-type: none"> • Need-based credit • Promote financial inclusion • Monitor the availability of credit and other financial support from banks and other financial institutions to farmers in drought prone areas • Ensure the insurance program reach the target farmers (especially dryland/rainfed farmers) and dependent agricultural laborer • Marketing support • Ensuring availability of quality agricultural inputs
4	Risk Transfer	Department of Finance; Agriculture & Horticulture; Panchayat & Rural Development ASDMA; DDMA	Recurring/ Regular <ul style="list-style-type: none"> • Implementation of Risk Transfer arrangements including multi-hazard insurance for life and property

3.2.6.5 CAPACITY DEVELOPMENT

Drought		Capacity Development	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Training and Capacity Building	ASDMA; NIDM; ATI; State Institute of Panchayat and Rural Development (SIPRD); WRD; SDRF; DDMA; PRIs; ULB	Short Term (0-1 yr.) <ul style="list-style-type: none"> • Policy framework • Formulate and implement training and capacity building programmes on drought management, better water conservation, integrated water management, cropping systems • Implement different training programmes for officials at various levels, elected representatives, community leaders, civil society organizations and animal welfare organizations

			<p>Medium Term (1-3 yr.)</p> <ul style="list-style-type: none"> • Ensure availability of qualified and experienced trainers conversant with drought mitigation and management techniques (crop, animal care and water resources – both surface and ground water) • Professionals for veterinary care and support to drought affected animals
2	Awareness Generation	ASDMA; ATI; SIPRD; DDMA; PRIs; ULB; NGOs/CBOs	<ul style="list-style-type: none"> • Carry out mass media campaigns • Promote culture of disaster risk prevention and better risk management covering crop and water management • Promote attitude and behavior changes in the awareness campaigns • Promote use of crop insurance • Use community radio • Inform people about care and protection of disaster affected animals
3	Empowering women, marginalized communities and differently abled persons	ASDMA; ATI; Department/ Directorate of Women and Child Development; Department/Directorate of Social Justice & Empowerment; Department/Directorate of Tribal Affairs (Plain); SIPRD; DDMA; PRIs; ULB	<p>Recurrent /Regular</p> <p>Incorporating gender sensitive and equitable approaches in capacity development covering all aspects of disaster risk management at the state, district and local levels.</p>
4	Mainstreaming drought management in developmental plans	ASDMA; Depts. of Panchayat and Rural Development; WRD; Irrigation Department; Agriculture and Horticulture; SIPRD; Animal Husbandry & Veterinary; DDMA; PRIs; ULBs	<p>Recurrent /Regular</p> <p>All state Govt. departments/ agencies will integrate drought management efforts in their departmental plans</p>

3.2.6.6 CLIMATE CHANGE RISK MANAGEMENT

Drought Risk Reduction		Climate Change Risk Management	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Research, Mapping, Forecasting, Zoning, Data Management	Dept. of Agriculture and Horticulture; Environment & Forests; State level Research Institutions; North East Space Application Centre (NESAC); ARSAC; ASDMA; DDMA; PRI; ULBs	<p>Short Term (T1) (0-1 yr.)</p> <ul style="list-style-type: none"> Document CC impacts and coping mechanism Take initiatives to promote drought resistant crops Promote weather-based crop insurance mechanisms and agricultural practices <p>Medium Term(T2) (1-3 yr.) and Long Term(T3) (3-5 yr.)</p> <ul style="list-style-type: none"> Promote state-specific studies on enhanced risks (economic, social etc.) under different CC impact scenarios and changes in hazards
2	Hazard, Risk, Vulnerability and Capacity Assessment (HRVCA)	Dept. Of Agriculture and Horticulture; Environment & Forests; State level Research Institutions; ASDMA; DDMA; PRI; ULBs	<p>Recurring/ Regular Undertake HRVCA as part of preparing and periodic revision of DM plans</p> <p>Short Term (T1) (0-1 yr.)</p> <ul style="list-style-type: none"> Impact assessment, economic and social risk under CC and reporting Assess CC risks of vulnerable and marginalized sections <p>Medium Term (T2) (1-3 yr.)</p> <ul style="list-style-type: none"> Creation of data bank and hazard, risk and vulnerability maps at local level.
3	Climate Change Adaptation	Dept. of Agriculture and Horticulture; Soil Conservation; Irrigation; WRD; Environment & Forests; P&RD; ASDMA; DDMA; PRI; ULBs	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> Sensitization and public awareness Capacity building and use of traditional knowledge to build ecosystem. <p>Short Term (T1)</p> <ul style="list-style-type: none"> Develop local adaptation strategy <p>Medium Term (T2)</p> <ul style="list-style-type: none"> Develop various water and soil conservation programmes consistent with CC impacts Adaptation and mitigation strategies under DM plans for ensuring food security. <p>Long Term (T3)</p> <ul style="list-style-type: none"> Sponsor state specific efforts; support local efforts

			<ul style="list-style-type: none"> • Develop climate resilient infrastructure • Implement efficient water management and monitoring systems as part of CCA in drought affected areas. • Integrate adaptive measures in social protection programmes for the vulnerable groups.
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Note: Every line department or agency of the government – state, district, municipal/Panchayat, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.

The Guidance given in the Drought Management Manual-2016 (<http://agricoop.nic.in/sites/default/files/Manual/Drought/2016.pdf>) and the amendments there after by the Ministry of Agriculture, Cooperation and Farmers Welfare, Government of India to be followed by the concerned departments for the effective Drought Management which include Contingency Crop planning, assessing the drought indicators for the declaration of drought spread and intensity, supply of drinking water, fodder management etc.

3.2.7 CYCLONE AND WIND RISK REDUCTION

3.2.7.1 UNDERSTANDING DISASTER RISK

Cyclone and Wind		Understanding Risk	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Observation Networks, Information Systems, Research, Forecasting, Early Warning	ASDMA; IMD; ARSAC; NESAC	Recurring/ Regular <ul style="list-style-type: none"> •Promote research and studies – both in-house and Extra-Mural by providing research grants to researchers and institutions. •Promote availability of Cyclone Database and Forecasts in public domain. •Create and enhance the performance of Observational Network Stations (ONS). •Establish and maintain Rainfall / Weather Monitoring Stations Network. •Ensure modernization of Observation Network, Equipment, Systems and technology.
2	Zoning/ Mapping	ASDMA; ARSAC	Recurring/ Regular <ul style="list-style-type: none"> •Carry out the Cyclone Risk Zone Mapping and Related Studies. •Support the preparation of detailed maps to delineate coastal wetlands, mangroves and shelter belts and tracts for coastal bio-shields

			using best tools, field studies, and remote sensing data.
3	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	ASDMA	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Promote studies, documentation and research. • Undertake HRVCA as part of preparation and periodic revision of DM plans, and for development planning. • Take up regular vulnerability assessment along the coastline. • Prepare seasonality and impact charts indicating the occurrence of cyclone and wind.
		Department/ Directorate of Women and Child Development; Department/Directorate of Social Justice & Empowerment; Department/Directorate of Tribal Affairs (Plain)	<p>Recurring/</p> <p>Undertake studies on vulnerabilities and capacities covering Social, Physical, Economic, Ecological, Gender, Social Inclusion and Equity aspects.</p>
4	Dissemination of warnings, Data and information	ASDMA; SEOC; IMD	<p>Recurring/ Regular</p> <p>Ensure quick, clear, and effective dissemination among state agencies and communities with last mile connectivity</p>
		ASDMA; Information & Public Relations; Police	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Ensure deployment of communication equipment. Warnings using all types of options, types of ICTs and media. • Facilitate last-mile connectivity and access to Disaster Risk Information through State Wide Area Networks (KSWAN). • Establish seamless interface between center and state networks.
		ASDMA; SEOC; Information & Public relations	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Provide weather information online and offline and interface with mobile network services • Provide warnings on mass media, social media, Mobile Phones, Community Radios & HAM radios.
<p>Note: Every ministry, department or agency of the government – central, state and district, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.</p>			

3.2.7.2 INTER-AGENCY COORDINATION

Cyclone and Wind		Inter-Agency Coordination	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Overall disaster governance	Department of Revenue and DM in coordination with ASDMA	Recurring/ Regular <ul style="list-style-type: none"> •Ensure preparation and implementation of State and Department DM plans and ensure the functioning of agencies with DM tasks. •Cover all aspects of disaster risk management and mainstreaming DRR. •Ensure coherence and mutual reinforcement of DRR, CCA and development.
2	Response	SEOC	Recurring/ Regular <ul style="list-style-type: none"> • Activate state incident response system and SEOC.
		Department of Home; SDRF; NDRF;	<ul style="list-style-type: none"> • Initiate search and rescue operations. • Provide shelter to the evacuated community in Multi-Purpose Flood Shelters/ Community Centers etc.,
		Dept's of Revenue & DM; Fisheries; Agriculture and Horticulture; Health & Family Welfare SDMA	<ul style="list-style-type: none"> • Assess all needs for immediate relief measures and compensation. • Organize and coordinate the immediate response. • Coordinate with central/ state agencies
		Revenue & DM Dept. ASDMA; PWD; ULBs; PRIs	<ul style="list-style-type: none"> • Take up rehabilitation measures with the help of Center, State, NGOs and others.
3	Warnings, Information, Data	ASDMA in coordination with IMD; NESAC; MoES; GoI	<ul style="list-style-type: none"> • Ensure effective coordination and seamless communication among central and state agencies to ensure quick, clear, effective dissemination of Warnings, Information and Data to all the Stakeholders. • Establish a fail proof early Warning Dissemination System to the last mile on the lines of NCRMP.
		DTCP; PWD; AWRD; H&UA	<ul style="list-style-type: none"> • Ensure coordination among state agencies for ensuring updated norms/ codes and their Implementation, Enforcement and Monitoring

3.2.7.3 INVESTING IN DRR-STRUCTURAL MEASURES

Cyclone and Wind		Investing In Structural Measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Multi-Purpose Cyclone Shelters	Revenue and Disaster Management Department; PWD	<ul style="list-style-type: none"> • Identification of safe buildings and sites to serve as temporary shelters for people and livestock evacuated from localities at risk • Construction of multi-purpose shelters in coastal villages/habitations prone to frequent cyclones
2	Social Housing Schemes	Revenue & DM Department; PWD; and H&UA; State Housing Board and other agencies involved in housing projects	<ul style="list-style-type: none"> • Ensure that multi-Hazard, especially Cyclone- Resistant Features are incorporated in Planning and Execution of Social Housing Schemes. • Ensure compliance with relevant building codes. • Carry out Retrofitting of Social Housing, Especially Cyclone- Resistant Features
3	Hazard resistant construction, strengthening, and retrofitting of all lifeline structures and critical infrastructure	PWD; AWRD; ULBs; PRIs; H&UA	Recurring/ Regular <ul style="list-style-type: none"> • Collaboration with technical agencies and implementation.

3.2.7.4 INVESTING IN NON- STRUCTURAL MEASURES

Cyclone and Wind		Investing in Non-Structural Measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Laws, Regulations Enforcement mechanisms. Techno-Legal regimes, Institutional Arrangements, Codes for disaster risk reduction, Compliance monitoring, Risk Transfer	Department of Housing and Urban Affairs	<ul style="list-style-type: none"> • Ensure ecologically sound land-use zonation; regulate aquaculture and groundwater extraction; strengthen land-use planning. • Constitute task teams jointly with central agencies for implementing land-use regulation as per zoning guidelines. • Consider shoreline erosion, risk to structures, monitoring shoreline changes paying attention to the preservation of natural barriers. • Ensure the spread, preservation and restoration/regeneration of bio-shields. • Total banning of any construction on natural drains
2	Public Private Partnerships	Revenue & DM Department in coordination with Industries association and corporate bodies	<ul style="list-style-type: none"> • Promote private participation for Cyclone Risk Mitigation

3.2.7.5 CAPACITY DEVELOPMENT

Cyclone and Wind		Capacity Development	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Training	AASC	Recurring/ Regular <ul style="list-style-type: none"> • Conduct and coordinate training for all government officials involved in the Planning and Implementation of Preparedness, Mitigation Response and Relief work.
		SIRD	<ul style="list-style-type: none"> • Conduct Training Programmes for the Elected Representatives, Officers, Staff of Panchayat Raj Institutions and NGOs in the coastal districts.

		ATI	<ul style="list-style-type: none"> • Conduct Training Programmes for the Elected Representatives, officers, staff of Urban Local Bodies and Urban Development Authorities
		Police Training Academies	<ul style="list-style-type: none"> • Conduct training for police officers in disaster Management-Crowd Management, Evacuation, Rescue and Relief Operations. • Conduct search and rescue training for local volunteers of the coastal community and coastal police
		SDRF; NDRF	<ul style="list-style-type: none"> • Conduct training for SDRF and NDRF personnel in Evacuation and Rescue Operations. • Design and conduct community training programs to prepare volunteers For Rescue, Relief, First Aid Response. • Identify and prepare a list of Ex-service men, Swimmers and Divers in the local community to be engaged during the Cyclone / Flood event.
		Department of Animal Husbandry & Veterinary Department	<ul style="list-style-type: none"> • Conduct training and orientation programs for professionals in the Veterinary Care and Support to Disaster Affected Animals.
		Health and Family Welfare department	<ul style="list-style-type: none"> • Conduct training and orientation programs for professionals in Health and Family Welfare Department.
2	Curriculum Development	Department of Education	<ul style="list-style-type: none"> • Incorporate inputs on Disaster Response, Search and Rescue in the training programs of youth such as Village Volunteers, • Take measures for protection of Disaster-Affected Animals • Introduce scientific knowledge on Cyclones and Storm surge and basic concepts in DM in the curriculum
		Technical Education Department	<ul style="list-style-type: none"> • Update curriculum for undergraduate engineering courses to include topics relevant for Cyclone Risk Management.
		Health Dept.; Medical Education Dept.	<ul style="list-style-type: none"> • Introduce Crisis Management, Emergency Medical Response/Recovery and Trauma Management at Diploma/UG/PG levels for Health Professionals.
3	Awareness Generation	Revenue Department & DM	<ul style="list-style-type: none"> • Promote Culture of Disaster Risk Prevention, Mitigation, and Better Risk Management. • Promote use of Insurance/ Risk

			Transfer.
		SEOC; SDRF; Civil Defense; Police	<ul style="list-style-type: none"> • Promote Community Radio. • Strengthen network of Civil Society Organizations for awareness generation about DRR and DM. • Provide Information on care and protection of Disaster Affected Animals.
4	Mock Drills/ Exercises	NDRF; SDRF; F&ES; Civil Defense; Police and other relevant departments	<ul style="list-style-type: none"> • Ensure joint planning and Execution of Emergency Drills. • Conduct training programs.
		AASC; NDRF; SDRF; Civil Defense; Police and other relevant departments	<ul style="list-style-type: none"> • Create ToT teams for different aspects relevant to Cyclone-Resistant Construction.
5	Empowering women, marginalized communities, and persons with disabilities	Department/ Directorate of Women and Child Development; Department/Directorate of Social Justice & Empowerment; Department/Directorate of Tribal Affairs (Plain); ICDS;	<ul style="list-style-type: none"> • Adopt gender sensitive and equitable approaches in capacity development covering all aspects of disaster management at the state, district, and at local levels.
6	Community-Based Disaster Management	Health and Family Welfare Department; Animal Husbandry & Veterinary; Police and other relevant departments	<ul style="list-style-type: none"> • Strengthen ability of communities to manage and cope with disasters based on a multi-Hazard approach. • Organize training for panchayat members, SHG, NCC, NSS, youth, Local Community Organizations.

3.2.7.6 CLIMATE CHANGE RISK MANAGEMENT

Cyclone and Wind		Climate Change Risk Management	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Research, Forecasting, Data Management, Zoning, Mapping	ASDMA Department of Environment & Forest; NESAC; Assam State Remote Sensing Centre	Recurring/ Continuous <ul style="list-style-type: none"> • Support national risk reduction efforts related to CC. • Ensure coordination with Central Agencies. • Sponsor and promote state-specific efforts and local efforts for CC

			<p>Mitigation and Adaptation.</p> <ul style="list-style-type: none"> • Document state-specific CC impacts and coping mechanisms. • Promote state-specific studies on enhanced risks (Economic, Social, etc.) under different CC impact scenarios. • Promote research studies with State specific contexts on CC and consequent changes in hazards.
2	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	Depts. of Revenue & DM; Agriculture and Horticulture; SDMA; Fisheries; Environment & Forest	<ul style="list-style-type: none"> • Promote state-specific studies on Vulnerabilities, Capacities and Risks under CC impact scenarios. • Assess CC risks of vulnerable and marginalized sections.
3	Climate Change Adaptation (CCA)	Revenue & DM Department; SDMA; Agriculture and Horticulture dept; Water resources dept; Fisheries dept; Environment & Forest; Soil Conservation; Department/ Directorate of Women and Child Development; Department/Directorate of Social Justice & Empowerment; Department/Directorate of Tribal Affairs (Plain)	<p>Recurring/ Continuous</p> <ul style="list-style-type: none"> • Focus on sensitization and awareness creation. • Support national CCA efforts. • Ensure coordination with Central Agencies. • Sponsor and promote State-Specific efforts and local efforts for Mitigation and Adaptation. • Develop local adaptation strategies and pilot projects. • Sponsor and promote State-Specific efforts and local efforts. • Promote appropriate combinations of green and blue infrastructure approach. • Ensure implementation of Climate Change (CC) adaptation programs. • Integrate adaptive measures in Social Protection Programmes for the vulnerable groups. • Efforts on restoration of fertile top soil
<p>Note: Every ministry, department or agency of the government – central, state and district, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.</p>			

3.2.8 HEAT WAVE

3.2.8.1 UNDERSTANDING DISASTER RISK

Heat Wave		Understanding Disaster Risk	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Observation Networks, Info. Systems, Monitoring, Research, Forecasting, Early Warning and Zoning/ Mapping	ASDMA in Collaboration with IMD	Recurring/ Regular (RR) <ul style="list-style-type: none"> • Provide support for organizing training. • Undertake preventive measures as per National and State Heatwave action plan. • Undertake vulnerability assessment and establish Heat-Health Threshold Temperatures. • Strengthen and maintain monitoring and data logging systems for Temperature, Humidity, etc. required for threshold for heat wave alerts. • Establish and maintain Community-Based network for sharing alerts.
2	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	ASDMA; P&RD; PRIs; Directorate of Municipal Administration (DMA)-ULBs Universities & Technical Institutions	<ul style="list-style-type: none"> • Promote studies, Documentation and Research. • Provide Training & Technical support. • Undertake studies on vulnerabilities and capacities Covering Social, Physical, Economic, Ecological, Gender, Social Inclusion and Equity Aspects. • Update HRVCA. • Ensure identification and listing of vulnerable Population/Communities/Settlements. • Ensure identification of groups requiring special attention. • Develop guidelines. • Constitute/ strengthen the mechanisms for consultation with experts and stakeholders. • Conduct audit of Equipment and Human Resource Requirements.
3	Dissemination of warnings, data, and information	ASDMA in Collaboration with IMD	<ul style="list-style-type: none"> • Support for organizing training. • Extend technical support. • Create awareness about preventive measures. • Extensive IEC campaigns to create awareness through media. • Design and disseminate specific messages for highly vulnerable groups such as Elderly, Young Children, Outdoor Workers and Slum residents.

4	Disaster Data Collection and Management	Dept. of Transformation and Development ; ASDMA	Recurring/ Regular (RR) <ul style="list-style-type: none"> •Ensure systematic Data Management of Data on Disaster Damage and Loss Assessments •Create a Disaster Damage and Losses baseline.
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3.2.8.2 INTER-AGENCY COORDINATION

Heat waves		Inter-Agency Coordination	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Overall disaster governance	ASDMA in Collaboration with concerned departments; P & RD; PRIs; Directorate of Municipal Administration (DMA); ULBs	Recurring/ Regular (RR) <ul style="list-style-type: none"> •Create/ strengthen the institutional framework including assigning nodal agency and nodal officials at different levels. •Prepare state/region-specific Heat Action Plan. •Build Teams for streamlining coordination mechanisms. •Provide technical inputs for implementation based on experience from different locations. •Ensure Collaboration with NGOs/CSOs. •Ensure that the Local Administration (City/District) can understand and meaningfully use all the heat wave-related information from various agencies and health authorities – Central and State. •Ensure team preparation and coordination – officials and agencies are well prepared for the Heat Wave Season. •Coordinate with IMD regarding Forecasts, Early Warning and Alert System Based on Drought Severity. •Appoint a State Nodal Agency and Officer. •Prepare Adapt Heat Wave Action Plan. •Ensure implementation as per specific conditions in the state. •Develop a clearly defined Interagency Emergency Response Plan with roles and information flows clearly marked out. •Ensure coherence and mutual reinforcement of DRR, CCA and development. •Partner both with local and national institutions and experts. •Adapt HAPs developed in other Countries /Cities, Monitoring and Evaluating Implementation and Impact on Mortality and Morbidity.

2	Preparation and Response	ASDMA in Collaboration with concerned Departments; P & RD; PRIs; DMA; ULBs	<ul style="list-style-type: none"> • Issue Directives/ Advisory on shelters, on creating awareness, managing resources, organizing Medical Support, and strengthening Hospital Preparedness. • Organize and coordinate immediate response. • Coordinate with Central agencies. • Implement heat action plan. • Establish First Aid/ Medical Aid facilities in key locations. • Identify vulnerable places and provide safe drinking water points at those places and worksites; also, provide ORS. • Develop a system to provide safe drinking water in public transports, especially in the drought and heat wave prone districts. • Avoiding outdoor games/sports activities. • Ensure Livestock preparedness during hot weather - ensuring that the livestock has sufficient shade and water on hot days. • Open heat treatment wings in hospitals. • Establish medical assistance facilities at places of mass gathering. • Implement a system of heat alerts to trigger early morning shifts for schools and offices/ Rescheduling school and office timings during heat-wave season. • Construct cool shelters, bus stand, etc. that offer shelter from Heat Wave. • Promote creation of green roofs to mitigate the impact of Heat waves.
3	Warnings, Information, Data	ASDMA in Collaboration with IMD State & District Disaster Management Authorities P&RD; PRIs DMA; ULBs	<ul style="list-style-type: none"> • Issue Heat wave alerts, bulletins and weather forecasts on Short / Medium / Long range duration. • Ensure periodic review and updating heat wave action plans. • Focus on public awareness and community outreach. • Coordinate the dissemination of warnings to all, down to the last mile– remote, Rural or Urban; Regular updates to people in areas at risk. • Ensure follow up on the alerts/warning. • “Do's-and-Don'ts” during a heat wave should be available in local languages and disseminated through media. • Ensure proper documentation. • Ensure collection of data from States. • Maintain national-level database. • Ensure collection of data/Information necessary for review/update of the plan.

3.2.8.3 INVESTING IN DRR – STRUCTURAL MEASURES

Heat Waves		Investing in Structural Measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Heat wave shelters and other measures	P&RD; PRIs; DMA; ULBs; F&ES; Directorate of Town and Country Planning (DTCP); H&UA	<ul style="list-style-type: none"> • Issue directives to promote cool roofs and heat reducing integrated development. • Strengthen/mainstream the network of medical assistance facilities. • Temperature forecasts and heat alerts to be sent as bulk messages on Mobile Phones, Local Electronic Media, Electronic Screens at Busy Traffic Intersections and Market Places. • Ensure effective transportation. • ULBs to facilitate the public to take shelter in public parks and gardens during a Heat Wave condition.
2	Social Housing Schemes		<ul style="list-style-type: none"> • Guidelines and technical support for incorporation of protection from Heat Wave in multi-hazard resistant housing schemes. • Ensure incorporation of protection from Heat Wave in multi-hazard resistant features in the planning and execution of social housing schemes in Heat Wave prone areas.
3	Hazard resistant construction, strengthening, and retrofitting of all lifeline and critical infrastructure		<ul style="list-style-type: none"> • Ensure Collaboration with technical agencies and implementation. • Take up measures to provide or upgrade the existing buildings to heat resistant structures.
<p>Note: Every ministry, department or agency of the government – central and state, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.</p>			

3.2.8.4 INVESTING IN DRR NON- STRUCTURAL MEASURES

Heat Waves		Investing in Non-Structural Measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Techno-Legal regimes	P&RD; PRIs; ULBs; Directorate of Town and Country Planning (DTCP); H&UA	<ul style="list-style-type: none"> • Implement Guidelines to prevent people from heat related hazards. • Improve the forest coverage and green Areas. • Promote use of building materials that provide protection from heat. • Promote designs to reduce heat island effects in urban areas. • Facilitate integrated development plans that can cope better with Heat Wave conditions
2	Risk Transfer		<p>Recurring/ Regular (RR)</p> <ul style="list-style-type: none"> • Ensure implementation of Risk Transfer Arrangements including multi-hazard insurance for life and property. • Devise Policy Framework.

3.2.8.5 CAPACITY DEVELOPMENT

Heat Waves		Capacity Development	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Training	AASC; State Universities & Technical Institutions	<p>Recurring/ Regular (RR)</p> <ul style="list-style-type: none"> • Organize training and orientation programs for Central Govt Staff, other direct Stakeholders. • Provide training support for youth through NCC, NYKS, Scouts and Guides and NSS, SDRF, CDEF, community, and volunteers. • Train key officials regarding pre, during and post Heat-Wave season activities. • Organize training for CDEF, Community, and Volunteers. • Organize Training for deployment of Rapid Medical Response Teams. • Organize training on heat-wave specific Health Care for vulnerable groups.
2	Curriculum Development	AASC; State Universities & Tech. Institutions,	<ul style="list-style-type: none"> • Ensure inclusion of Heat Wave and similar issues in various curriculum

		Central & State Education Boards	
3	Awareness Generation	ASDMA; ULBs; P&RD; Dept. of Health & Family Welfare; AASC; State Universities & Tech. Institutions; Central & State Education Boards	<ul style="list-style-type: none"> • Support awareness campaigns/IEC. • Support network of Civil Society Organizations for awareness generation about coping with Heat Wave. • Promote awareness, alertness and preparedness. • Organize training programs for public, PRIs/ULBs. • Carry out Mass Media Campaigns in Heat-Wave prone areas. • Create awareness of coping with Heat Wave and HAP. • Generate and distribute awareness material to the public.
4	Mock Drills/ Exercises	Department of Health & Family Welfare; ASDMA, AASC.	<p>Recurring/ Regular (RR)</p> <ul style="list-style-type: none"> • Promote the planning and execution of emergency drills. • Identify and resolve communication gaps between participating departments, partners and the public. • Ensure joint execution of emergency drills with local bodies to address Heat Wave Emergencies in relevant areas.
5	Vocational Training/ Skill development	Department of Health & Family Welfare; ASDMA, AASC; Directorate of Medical Education (DME)	<p>Recurring/ Regular (RR)</p> <ul style="list-style-type: none"> • Conduct training programmes. • Promote skill development for –hazard resistant construction with emphasis on protection from heat in Heat-Wave prone areas for different types of housing and infrastructure. • Create ToT teams for different aspects relevant to Heat-Wave protection in the construction of different types of housing and infrastructure. • Train the volunteers to assist the public in Heat Wave conditions.
6	Empowering women, marginalized communities, SC/ST, and persons with disabilities	Department/ Directorate of Women and Child Development; Department/Directorate of Social Justice & Empowerment; Department/Directorate of Tribal Affairs (Plain); PRIs & ULBs;	<p>Recurring/ Regular (RR)</p> <ul style="list-style-type: none"> • Provide guidance for addressing Heat Wave emergencies in relevant areas. • Promote gender sensitive and equitable approaches for awareness raising. • Adopt gender sensitive and equitable approaches in Capacity Development for coping with Heat Wave emergencies.

3.2.8.6 CLIMATE CHANGE RISK MANAGEMENT

Heat Waves		Climate Change Risk Management	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Research, Forecasting, Early Warning, Data Management, Zoning, Mapping	ASDMA in Collaboration with NESAC & IMD; Dept. of Environment and Forests	Recurring/ Regular (RR) <ul style="list-style-type: none"> • Undertake research on local threshold and Climate Change Adaptation. • Improve the dissemination information on of CC and adaptation. • Develop CC impact scenarios relevant for occurrence of Heat Wave. • Improve the forecasting of intensity, severity of extreme weather events. • Improve the assessment and monitoring of Intensity, Severity of Extreme Weather Events & Forecasting. • Develop Database Management System relating to Heat Wave & Climate Change.
2	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	ASDMA in Collaboration with IMD; Dept of Environment and Forests; P&RD; PRIs; DMA; ULBs	Recurring/ Continuous (RR) <ul style="list-style-type: none"> • Undertake impact assessment, periodic review and evaluation. • Incorporate updated info on CC in HRVCA while preparing or periodic revision of DM plans. • Creation of data bank and hazards risk & vulnerable mapping. • Assess Heat Wave risk and vulnerability due to CC. • Update Heat-Wave vulnerability maps based on projected CC impacts. • Assess the trends of Heat Wave risk under CC scenarios. • Assess CC risks of vulnerable and marginalized sections. • Provide technical support and guidance for comprehensive HRVCA considering CC impacts.
3	Climate Change Adaptation (CCA)	ASDMA in Collaboration with NESAC; DMA; ULBs H&UA; Directorate of Municipal Administra	<ul style="list-style-type: none"> • Focus on sensitization and awareness creation. • Support national CCA efforts. • Prepare Action Plans for CCA. • Ensure coordination with Central Agencies. • Sponsor & promote state and local specific efforts for CC Mitigation and Adaptation. • Develop understanding of CCA needs. • Study CC coping mechanisms. • Develop CCA mechanisms. • Develop local adaptation strategies and pilot projects. • Sponsor and promote state-specific efforts and local efforts.

	tion; P&RD; PRIs; All department s	<ul style="list-style-type: none"> • Formulate strategy under CC like Cool-Roof, Green Energy, and Reduction in Emission of CO2. • Promote solar energy at roof top at every house or retrofitting. • Implement adaptation programs. • Promote appropriate combinations of green and blue infrastructure approach. • Promote adaptive measures in social protection programmes for the vulnerable groups. • Ensure implementation of CC adaptation programs • Integrate adaptive measures in social protection programmes for the vulnerable groups.
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3.2.9 THUNDERSTORM, LIGHTNING

Thunderstorm, Lightning		Understanding Disaster Risk	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Understanding Disaster Risk	ASDMA IMD	<ul style="list-style-type: none"> • Ensure the preparation of State Action Plan and its implementation. • Prepare detailed departmental SoPs by concerned department.
2	Inter-Agency Coordination	ASDMA	<ul style="list-style-type: none"> • Disseminate the information received from IMD to public at large in real time. • Promote installations of lightning arresters and Doppler Radars. • Ensure Information, Alerts and Early Warnings, Reports, Weather forecast and related Advisories are being made available through SMS to the mobile phones, e-mail, social media and Web Portal to all the DC's, CEO's, HQA's, AC's, Tahsildars, JD's (Agri), AD's (Agri), Agri Officers, Agriculture Universities, Civil Defense, Home Guards, Print and Electronic Media.
		Information & Public relations	<ul style="list-style-type: none"> • Ensure specific message and information, dissemination to public at large through print/electronic/social and other mass media at all level. • Create a network of community based early warning systems. • Ensure power cuts and restoration of power supply and also provide emergency power supply to critical facilities. • Activate all concerned ESCOM office/officers.

		Education department	<ul style="list-style-type: none"> • Ensure institutionalized multi-agency coordination with clear role and responsibility.
		SDRF	<ul style="list-style-type: none"> • Ensure rescue and evacuation operations in coordination with the administration, NGOs and volunteers.
3	Investing in DRR – Non-structural measures	PWD	<ul style="list-style-type: none"> • Ensure road connectivity and access to vulnerable areas. • Ensure functional state of all electrical equipment and maintain the service or replace equipment from time to time. • Carry out assessment of damage and loss due to extreme weather events.
		Department of Animal Husbandry & Veterinary	<ul style="list-style-type: none"> • Ensure proper treatment of animals. • Ensure provision of required vaccination. • Ensure proper disposal of dead animals. • Arrange for timely care and treatment of animals during thunderstorm.
4	Capacity Development	AASC and SIRD Assam	<ul style="list-style-type: none"> • Organize training programme for all concerned department officials/volunteers. • Conduct training programmes and drills on usage of various protection equipment and preventive systems.
		Information and Public Relations	<ul style="list-style-type: none"> • Focus on creation of public awareness. • Design and carry out extensive IEC campaigns to generate public awareness through Print, Electronic and social media. • Ensure Push SMS by various telecom service operators to all active mobile connections.
5	Climate Change Risk Management	ASDMA; Environment & Forests	<p>Recurring/ Continuous</p> <ul style="list-style-type: none"> • Focus on sensitization and awareness creation. • Provide support to national CCA efforts. • Ensure coordination with central agencies. • Sponsor and promote state-specific efforts and local efforts for CC mitigation and adaptation. <p>Short –Term (T1)</p> <ul style="list-style-type: none"> • Develop local adaptation strategies and pilot projects. <p>Medium -Term (T2)</p> <ul style="list-style-type: none"> • Sponsor and promote state-specific efforts and local efforts. • Ensure implementation of CC adaptation programs. • Integrate adaptive measures in social protection programmes for the vulnerable groups.

3.2.10 FOREST FIRE RISK REDUCTION

3.2.10.1 UNDERSTANDING DISASTER RISK

Forest Fire		Understanding Disaster Risk	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Observation Networks, Information Systems, Research, Forecasting, Early Warning and Zoning/ Mapping	Department of Environment and Forests ARSAC	Recurring/ Regular <ul style="list-style-type: none"> • Carry out mapping of human settlements in fire- prone forest areas • Ensure monitoring of fire-prone forest areas closely in the months when fires usually occur. • Develop Forest-fire alert system.
		Department/Directorate of Tribal Affairs (Plain)	<ul style="list-style-type: none"> • Establish and maintain Community Based Network for early detection and reporting of forest fire to the Forest Department. • Promote Community-Based Forest Monitoring System.
		Fire & Emergency Services (F&ES)	<ul style="list-style-type: none"> • Establish communication mechanisms to effectively communicate the alert to the people living in and around forests. • Establish and maintain a system of mutual aid among nearby fire services and Forest offices for sharing/ pooling of resources.
2	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	ASDMA	<ul style="list-style-type: none"> • Promote studies, documentation and research on Forest Fire Management and Mitigation. • Provide Training and Technical support on Forest Fire Management.
		Department of Environment and Forests	<ul style="list-style-type: none"> • Update HRVCA. • Carry out identification and listing of population clusters prone to Forest Fire Risk. • Carry out identification of population clusters within forests requiring urgent attention. • Mandatory update of HRVCA in the Contingency Plan to be carried out by every DFO of Assam.

		Department/Directorate of Tribal Affairs (Plain)	<ul style="list-style-type: none"> • Undertake studies on vulnerabilities and capacities covering Social, Physical, Economic, Ecological, Gender, Social Inclusion and Equity aspects. • Carry out identification and listing of population clusters prone to Forest Fire Risk.
		F&ES	<ul style="list-style-type: none"> • Conduct audit of equipment and manpower requirements to manage Forest Fire and Mitigate the Impact.
		ARSAC	<ul style="list-style-type: none"> • Carry out mapping of human settlements in Fire- Prone Forest areas. • Ensure monitoring of Fire-Prone Forest areas closely in the months when fires usually occur.
3	Dissemination of warnings, data, and information	Department of Environment and Forests; Department/Directorate of Tribal Affairs (Plain)	<ul style="list-style-type: none"> • Create awareness for Forest Fire Prevention as most fires are caused by humans, deliberately or in advertently. • Mandatory awareness programmes among the masses on prevention of forest fire. • Regular surveillance by forest staff and JFMC / EDC members over the vulnerable areas. • Establish reliable system to pass on the correct information on fire situation to communities and responders. • Establish effective communication mechanisms for Information and Alert Dissemination. • Establish radio communications with State Emergency Operations Centre. • Install adequate road signs to guide and assist the drivers. • Mobilize community assistance for road clearing by contacting organizations.

3.2.10.2 INTER-AGENCY COORDINATION

Forest Fire Coordination		Inter-Agency
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities

		State Agencies	Responsibility
1	Overall disaster governance	ASDMA, Revenue & DM Department	Recurring/ Regular <ul style="list-style-type: none"> • Provide coordination, technical inputs, and support. • Ensure preparation and implementation of DM plans and ensure the functioning of agencies with DM tasks.
		Department of Environment and Forests; Department/Directorate of Tribal Affairs (Plain); ARSAC	<ul style="list-style-type: none"> • Initiate rescue and firefighting operation with available means. • Ensure that all fire fighters use proper Personnel Protective Equipment while fighting a fire or controlling gas leak. • Ensure coordination among multiple agencies including forest, IMD, NRSC. • Cover all aspects of Disaster Risk Management and mainstreaming DRR w.r.t Forest Fire. • Coordination among multiple agencies like District / Police Administration, Block Heads, Panchayats.
2	Response	Department of Environment and Forest and Department/Directorate of Tribal Affairs (Plain)	<ul style="list-style-type: none"> • Strengthen Incident Command System involving multiple agencies. • Organize and coordinate the immediate response. • Conduct search and rescue operations in Forest Fire affected areas. • Mobilize the services of the Home Guards for Fire-Fighting.
		PWD; P&RD; NHAI	<ul style="list-style-type: none"> • Take steps to clear debris and assist Search and Rescue Teams. • Train the concerned officers/functionaries responsible for mobilizing staff and volunteers to clear the roads in case of any blockage.
		Health & Family Welfare	<ul style="list-style-type: none"> • Mobilize Emergency Medical Teams for the affected areas as a part of the Rapid Assessment and Quick Response. • Provide medical assistance to the affected population. • Carry out technical assessment on Health Infrastructure availability and need. • Non-ambulatory patients should be

			<p>relocated to the safest areas within the hospital.</p> <ul style="list-style-type: none"> Secure Medical Supplies in adequate quantity for dealing with these situations.
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3.2.10.3 INVESTING IN DRR-STRUCTURAL MEASURES

Forest Fire		Investing in Structural measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Strengthening forest-fire fighting systems	SDMA	<ul style="list-style-type: none"> Ensure coordination with Central Agencies for deploying Air Planes, Helicopters, UAV and Equipment as required.
		Department of Environment and Forests and Department/Directorate of Tribal Affairs (Plain)	<ul style="list-style-type: none"> Strengthen various Forest Fire Prevention measures. Provide improved Fire-Resistant clothing. Strengthen the network of watchtowers. Upgrade and expand Fire Detecting Systems. Conduct Eco Development committees meeting and create awareness programs. Ensure Deployment of Fire Engines and Skilled Staff. Provide Fire Fighting Equipment.
2	Social Housing Schemes	ASDMA	<ul style="list-style-type: none"> Provide Guidelines and technical support for incorporation of Fire and Multi-Hazard resistant features in planning and execution of Social Housing Schemes
		Department of Environment and Forest and Department/Directorate of Tribal Affairs (Plain)	<ul style="list-style-type: none"> Ensure incorporation of fire and multi-Hazard resistant features in the planning and execution of Social Housing Schemes in the Settlements in and around the forests
		H&UA; Assam State Housing Board	<ul style="list-style-type: none"> Coordinate with technical institutions for designing and developing Fire Resistant Housing. Ensure effective implementation of guidelines laid down by GoA & maintain quality in construction.

		Environment and Forest Dept.	<ul style="list-style-type: none"> • Prepare mitigation plan for the department building and infrastructure. • Promotions of appropriate combination of Green (Trees, forests, parks, fields etc.) and Blue (Refers to water elements like river, wetlands etc.) infrastructure approach is already done with 24 nos 'Sahitya Manishi Upaban' in different locations and many wetlands particularly inside National Parks and Sanctuaries.
3	Fire resistant construction, strengthening, and retrofitting of all lifeline and critical infrastructure.	Emergency and Fire Services Dept.; PWD	<ul style="list-style-type: none"> • Provide Guidance and implementation support. • Promote collaboration with technical agencies for the implementation. • Provide assistance to the damage assessment teams for survey of damage to buildings and infrastructure. • Preparation of Fire Mitigation Plan for the Departmental buildings at the Headquarter, Zonal, Circle, Divisional and Range level.

3.2.10.4 INVESTING IN NON-STRUCTURAL MEASURES

Forest Fire		Investing in Non-Structural Measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Techno-Legal regimes	Department of Revenue &DM; ASDMA; Environment and Forests Dept.; Department/Directorate of Tribal Affairs (Plain); Fire & Emergency Services; PWD; H&UA; P&RD	<ul style="list-style-type: none"> • Develop Forest Fire Prevention and Management Manual. • Prioritize Forest Fire Management in Forestry Plans. • Review Forest Management Systems and practices. • Observe Laws & Regulations. • Provide Guidance and Support. • Ensure institutional Arrangements. • Promote use of Insurance/ Risk Transfer. • Strengthen the laws and regulations for Forest Fire Prevention and Control. • Improve the Institutional Arrangements for Forest Fire Prevention. • Promote use of Insurance/ Risk Transfer.

3.2.10.5 CAPACITY DEVELOPMENT

Forest Fire		Capacity Development	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Training	Fire and Emergency Services Department	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Design and organize awareness programmes for people and students regarding fire prevention education. • Impart training in Basic Fire Prevention, Firefighting, Rescue Operations, Evacuation Drills etc., • Create public awareness on fire prevention through Mock Drills, Evacuation Drills, Firefighting Demonstrations, Lecture Classes, Seminars, Exhibitions Etc., • Members of Joint Forest Management Committees and Eco Development Committees may be trained up to manage fire during a disaster under the close supervision of Forest Range Officer. They are required to be trained by National Disaster Response Force (NDRF / SDRF) etc. • Incorporate prevention and management of forest fires in the training programs of village volunteers, NCC, NYKS, Scouts and Guides and NSS, NGOs. • Organize training and orientation programs for state govt. staff, and other direct stakeholders such as: Volunteers, Media-Persons, Elected Representatives.
		SDRF	<ul style="list-style-type: none"> • Conduct training and equip the Home Guards, Civil Defense and Fire Services to build fire safety and disaster resilient Societies.
2	Curriculum Development	Department of Environment and Forest	<ul style="list-style-type: none"> • Inclusion of theoretical and practical training on fire prevention in the curriculum of Assam Forest School and Assam Forest Guard School. • Re-design training programs to include topics relevant to Forest Fire Prevention and Control as required. • Undertake Research and

			Development.
		Department of Education	<ul style="list-style-type: none"> • Customize and revise curriculum activities in education.
3	Awareness Generation	Department of Environment and Forest	<ul style="list-style-type: none"> • Promote Awareness, Alertness and Preparedness. • Carry out Mass Media Campaigns in Forest Fire prone areas. • Create awareness of Forest Fire Prevention and Control. • Strengthen network of Community Involvement in Forest Fire Reporting, Prevention and Assistance to Controlling. • Impart training in basic Fire Prevention, Firefighting, Rescue Operations, Evacuation • Create awareness among public and students regarding Fire Prevention Education • Organize training and orientation programs for state govt. staff, and other direct stakeholders such as: volunteers, media-persons, elected representatives.
4	Mock Drills/ Exercises	Department of Environment and Forest	<ul style="list-style-type: none"> • Ensure promotion, support and execution of emergency mock drills.
		Civil Defense, Police & Home Guards	<ul style="list-style-type: none"> • Ensure active involvement of Forest Communities/ Forest Village Committees, JFM committees. • Ensure joint execution of emergency drills with local bodies in Urban and Rural areas prone to Forest Fire.
5	Vocational Training/ Skill development	Department of Environment and Forest; SDMA	<ul style="list-style-type: none"> • Promote skill development for multi-Hazard resistant construction with emphasis on fire safety in Forest Fire prone areas for different types of Housing and Infrastructure
		SDRF; Civil Defense; Police	<ul style="list-style-type: none"> • Conduct training programs. • Create Training of Trainers (ToT) teams for different trades relevant to fire-resistant construction in forest fire prone areas for different types of Housing and Infrastructure. • Organize training and orientation programs for State Government Staff, and other direct stakeholders such as:

			volunteers, media-persons, elected representatives.
6	Empowering women, marginalized communities, and persons with disabilities	Department/ Directorate of Women and Child Development; Department/Directorate of Social Justice & Empowerment; Department/Directorate of Tribal Affairs (Plain)	<ul style="list-style-type: none"> • Provide guidance to address the issues of marginalized communities, SC/ST in forest fire areas. • Promote gender sensitive and equitable approaches relevant in Forest Fire Prone areas. • Provide scholarships, construction of hostels, financial assistance and soon. • Adopt gender sensitive and equitable approaches in capacity development covering all aspects of Disaster Management at the Levels of Governance.
<p>Note: Every ministry, department or agency of the government – central, state and district, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.</p>			

3.2.10.6 CLIMATE CHANGE RISK MANAGEMENT

Forest Fire		Climate Risk Management	
Sl. No.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Research, Forecasting, Early Warning, Data Management, Zoning, Mapping	ASDMA; Department of Environment and Forest	<ul style="list-style-type: none"> • Develop Database management system relating to Biological Disasters & Climate Change. • Undertake studies/assessments of areas prone to Forest Fires, Ecological Aspects, and Wildlife Concerns. • Support and cooperate with Central Agencies. • Disseminate Early warnings / Advisories to the community for taking up necessary Mitigation measures. • Use of Drone Technologies for surveillance of the fire prone areas for the purpose of collection of data, preparation of map, zone etc.
		ARSAC	<ul style="list-style-type: none"> • Ensure dissemination of Satellite based Remote Sensing Information. • Provide support in Remote Sensing & GIS Activities in the State as a Nodal Agency. • Conduct action research, case studies,

			documentation of best practices related to Forest Fire Risk.
2	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	ASDMA	<ul style="list-style-type: none"> • Undertake detailed studies on vulnerability and risk under CC scenarios • Assess CC risks of vulnerable and marginalized sections
		Department of Environment and Forest	<ul style="list-style-type: none"> • Provide technical support and guidance for comprehensive HRVCA considering CC impacts.
<p>Note: Every ministry, department or agency of the government – central and state, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.</p>			

3.2.11 BIOLOGICAL AND PUBLIC HEALTH EMERGENCIES

3.2.11.1 UNDERSTANDING DISASTER RISK

Biological and Public Health Emergencies		Understanding Disaster Risk	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Observation Networks, Information Systems, Research, Forecasting, Early Warning and Zoning/ Mapping	Health and Family Welfare Dept.; Medical Education Dept and AYUSH; PHI and Animal Husbandry & Veterinary Dept. PHI; Agriculture and Horticulture Dept.	<p>All departments will take following steps:</p> <p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Undertake preventive measures as per norms. https://ndma.gov.in/images/guidelines/biological_disasters.pdf <p>Short Term(T1)</p> <ul style="list-style-type: none"> • Strengthen integrated health surveillance systems. <p>Medium Term (T2)</p> <ul style="list-style-type: none"> • Establish and maintain community-based network for sharing alerts • Strengthen IDSP.
2	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	Health and Family Welfare Dept in coordination with dept of medical education; State Institute of Health and Family Welfare; Public Health Engineering Institute; AYUSH; Animal Husbandry & Veterinary Dept. of Agriculture and	<p>All departments will take the following steps:</p> <p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Promote studies, documentation and research. • Provide Training & Technical support. • Undertake studies on vulnerabilities and capacities Covering Social, Physical, Economic, Ecological, Gender, Social Inclusion and Equity Aspects. <p>All departments will take the following steps:</p> <p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Update HRVCA. • Identify the vulnerable population/ communities/settlements. • Identify groups requiring special attention. • Conduct audit of equipment and human resource requirements. <p>Short Term (T1)</p> <ul style="list-style-type: none"> • Constitute/ strengthen the mechanisms for consultation with experts and stakeholders.

		Horticulture	
3	Dissemination of warnings, data, information and monitoring	Health and Family Welfare Dept; Dept. of Animal Husbandry & Veterinary; Agriculture and Horticulture	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Support for organizing training. • Extend technical support. <p>Short Term (T1)</p> <ul style="list-style-type: none"> • Create awareness preventive measures. • Carry out extensive IEC campaigns to create awareness through Print, Electronic and social media. <p>Medium Term (T2)</p> <p>Specific messages for highly vulnerable groups such as Elderly, Young children, Outdoor workers and Slum residents.</p>
4	Strengthening Response	Health and Family Welfare Dept; Dept of Medical; Education; Urban Bodies and AYUSH Supporting Agencies: All relevant Department	<p>Short Term (T1)</p> <ul style="list-style-type: none"> • Establish adequate decontamination systems, Critical Care - Intensive Care Units (ICUs) and isolation WARDS with pressure control and lamellar flow systems • Provide Adequate Personal Protective Equipment (PPE) for all the health workers associated with response to biological emergencies. <p>Medium Term (T2)</p> <ul style="list-style-type: none"> • Strengthen/mainstream the network medical assistance facilities and health mapping. • Equip Medical First Responders (MFRs)/Quick Reaction Medical Teams (QRMTs) with all material logistics and backup support. <p>Long Term (T3)</p> <ul style="list-style-type: none"> • Upgradation of earmarked hospitals to cope with Chemical, Biological, Radiological and Nuclear (CBRN) emergencies. • Communication and networking system with appropriate Intra-Hospital and Inter-Linkages with State Ambulance/Transport Services, State Police Departments and Other Emergency Services. • Mobile Tele-health services and Mobile Hospitals.
5	Upgrading Medical Facilities	Health and Family Welfare Dept.; Medical Education Dept.; Animal Husbandry & Veterinary Dept.; Fisheries Dept.; Drug	<p>Medium Term (T2)</p> <ul style="list-style-type: none"> • Provide Guidelines and technical support. • Create specialized health care and laboratory facilities. <p>Long Term (T3)</p> <p>Create a chain of Public Health Engineering laboratories with at least one such laboratory in each district.</p> <p>Stockpiling of Essential Medical Supplies such as Vaccines and Antibodies, etc.</p>

		Control Dept./Dept. of drugs and logistics.	
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3.2.11.2 INTER-AGENCY COORDINATION

Biological and Public Health Engineering Emergencies		Inter-Agency Coordination	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Strengthening Response	Department of Health and Family Welfare (H&FW); Directorate of Medical education Supporting Agency: All relevant departments	Short Term(T1) <ul style="list-style-type: none"> Establishing adequate decontamination systems, critical care Intensive Care Units (ICUs) and isolation wards with pressure control and lamellar flow systems. Adequate Personal Protective Equipment (PPE) for all the health workers associated with the responding to biological emergencies. Medium Term (T2) <ul style="list-style-type: none"> Strengthening/mainstreaming the network medical assistance facilities and health mapping. Equipping Medical First Responders /Quick Reaction Medical Teams with all material logistics and back up support. Long Term (T3) <ul style="list-style-type: none"> Upgradation of earmarked hospitals to cope with Chemical, Biological, Radiological and Nuclear (CBRN)emergencies. Communication and networking system with appropriate intra-hospital and inter-linkages with State Ambulance/Transport services, State Police Departments and other Emergency Services. Mobile tele-health services and Mobile Hospitals. Guidance for establishing and strengthening quarantine facilities.
2	Upgrading Medical Facilities	Department of Health and Family Welfare; Department of Animal Husbandry &	Medium Term (T2) <ul style="list-style-type: none"> Guidelines and technical support. Specialized health care and laboratory facilities. Long Term (T3) <p>Creating a chain of public health laboratories with at least one such laboratory in each district.</p>

	Veterinary	
	Food and Drug Administration (F&DA); Assam; Department of H & FW	Medium Term (T2) <ul style="list-style-type: none"> Guidelines and technical support. Specialised health care and laboratory facilities. Long Term (T3) <ul style="list-style-type: none"> Creating a chain of public health laboratories with at least one such laboratory in each district. Guidance for establishing and strengthening quarantine facilities.
	Department of Animal Husbandry & Veterinary	
	F&DA; Assam	Stockpiling of Essential Medical Supplies such as Vaccines and Antibiotics, etc.

3.2.11.3 INVESTING IN DRR - STRUCTURAL MEASURES

Biological and Public Health Engineering Emergencies		Investing in Structural Measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Strengthening Response	Department of Health and Family Welfare (H&FW); Supporting Agency: All relevant departments	Short Term(T1) <ul style="list-style-type: none"> Establishing adequate decontamination systems, critical care Intensive Care Units (ICUs) and isolation wards with pressure control and lamellar flow systems. Adequate Personal Protective Equipment (PPE) for all the health workers associated with the responding to biological emergencies. Medium Term (T2) <ul style="list-style-type: none"> Strengthening/mainstreaming the network medical assistance facilities and health mapping. Equipping Medical First Responders (MFRs)/Quick Reaction Medical Teams (QRMTs) with all material logistics and backup support. Long Term (T3) <ul style="list-style-type: none"> Upgradation of earmarked hospitals to cope with Chemical, Biological, Radiological and Nuclear (CBRN) emergencies. Communication and networking system with appropriate intra-hospital and inter-linkages with State Ambulance/Transport

			<p>services, State Police Departments and other Emergency Services.</p> <ul style="list-style-type: none"> • Mobile tele-health services and Mobile Hospitals. • Guidance for establishing and strengthening quarantine facilities.
2	Upgrading Medical Facilities	<p>Department of H & FW; Department of Animal Husbandry & Veterinary</p>	<p>Medium Term (T2)</p> <ul style="list-style-type: none"> • Guidelines and technical support. • Specialized health care and laboratory facilities. <p>Long Term (T3)</p> <p>Creating a chain of public health laboratories with at least one such laboratory in each district.</p>
		F& DA; Assam	Stockpiling of Essential Medical Supplies such as Vaccines and Antibiotics etc.

3.2.11.4 INVESTING IN DRR NON-STRUCTURAL MEASURES

Biological and Public Health Engineering Emergencies Investing in Non-Structural Measures			
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Techno-Legal regimes	<p>Directorate of Health and Family Welfare; dept of medical education Dept. of Environment & Forest</p>	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Strengthen institutional arrangements. <p>Medium Term (T2)</p> <ul style="list-style-type: none"> • Enact/ amend any Act, Rule or Regulation, if necessary, for better implementation of BPHE programmes
		<p>Dept. of Health and Family Welfare & Medical Education in association with Vector-borne Control Research Center; Animal Husbandry & Veterinary; Agriculture and Horticulture; ASPCB</p>	<ul style="list-style-type: none"> • Revamp and strengthen the existing DM plans at various levels to address Biological Disaster Preparedness. • Ensure provisioning of funds for specific DRR interventions. • Carry out Periodic review of Plan, annual updating. • Undertake environmental monitoring to prevent outbreaks. • Ensure strict compliance with Bio-safety and Bio-security provisions. • Ensure Integrated Vector Management for elimination of breeding places. • Design and implement Biological and Chemical interventions for Vector Control.

3.2.11.5 CAPACITY DEVELOPMENT

Biological and Public Health Engineering Emergencies		Capacity Development	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Human Resource Development & Training	Departments of Health and Family Welfare; Medical Education; State Institute for Health and Family Welfare; District Health and Family Welfare Training Institutes	<ul style="list-style-type: none"> • Conduct Training for surveillance and risk communication. • Design and conduct training for deployment of Rapid Medical Response Teams and volunteers. • Design and conduct training for all Health, paramedical and allied healthcare professions, AYUSH doctors and practitioners, community health workers, ASHA, ANM and Anganwadi workers. • Organize community awareness programmes for first aid, general triage, infection control, breaking the chain etc., • Design and conduct trainings on Hospital Disaster Preparedness. • Design and conduct trainings on contingency plan for Pandemics and Endemics. • Design and conduct training programme for all concerned department officials/volunteers. • Design and conduct training programmes and drills on usage of various Biological Diseases Protection and preventive systems.
		Animal Husbandry & Veterinary Dept	<ul style="list-style-type: none"> • Enhance the quality of training being imparted in Poultry keeping, Rabbit rearing, Pig rearing, and Dairying for interested farmers in Training Centres.
		Agriculture and Horticulture	<ul style="list-style-type: none"> • Train government staff and farmers, laying out demonstrations and arranging study tours to farmers. • Create awareness among farmers and input dealers regarding the safe and judicious use of pesticides, training programmes can be conducted with available departmental funds under the relevant scheme/s. • Design and implement Agriculture Extension and Training Programme for Extension Officers & Farmers/ Farm Women.
2	Knowledge management & Curriculum Development	Departments of Health and Family Welfare and Education	<ul style="list-style-type: none"> • Incorporate basic knowledge of BPHE management through the Educational Curricular. • Take up IEC activities. • Ensure proper education and training of personnel. • Conduct continuing Medical Education

			<p>programmes and workshops at regular intervals.</p> <ul style="list-style-type: none"> • Define the role of Public, Private, and Corporate sector for their active participation and their sensitization.
3	Awareness Generation	Departments of Health and Family Welfare and Medical Education	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Promote awareness, alertness and preparedness. • Carry out community awareness programmes on first aid during disasters/emergencies. • Share the Dos and Don'ts to mitigate the effects of medical emergencies caused by biological agents.
		ULBs	<ul style="list-style-type: none"> • Conduct training programs for Public, Panchayats/ULBs.
		P&RD-PRIs	
		Departments of Health and Family Welfare and Medical Education; Animal Husbandry & Veterinary	<ul style="list-style-type: none"> • Create awareness about the importance of personal hygiene. • Promote sensitivity to the Social, Ethnic and Religious issues involved in the disposal of dead bodies during disasters at all levels.
		State Institute of Health & Family Welfare (SIHFW)	<ul style="list-style-type: none"> • Maintain the quality and uniformity in the trainings being imparted. • Develop the curriculum for medical as well as para-medical staff.
		Education Department; AASC	<ul style="list-style-type: none"> • Ensure awareness creation. • Undertake research and documentation
4	Mock Drills/Exercises	Health and Family Welfare dept and dept of Medical Education	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Promote the planning and execution of emergency drills. • Provide technical support for identifying and resolve communication gaps between participating departments, partners and the public. • Test 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. • Ensure joint execution of emergency drills with local bodies.

3.2.12 CHEMICAL (INDUSTRIAL DISASTER)

3.2.12.1 UNDERSTANDING DISASTER RISK

Chemical (Industrial Disaster)		Understanding Disaster Risk	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Information Systems and Research	Inspectorate of Factories; Labour & Welfare Department	<p>Short Term (T1)</p> <ul style="list-style-type: none"> • Devise and put in place a Chemical Accident Information Reporting System. • Provide information on dealing with HAZCHEM. <p>Medium Term (T2)</p> <ul style="list-style-type: none"> • Undertake research on effective management of HAZCHEM. <p>Long Term (T3)</p> <ul style="list-style-type: none"> • Implement research and studies – both in-house and extra-mural by providing research grants to researchers and institutions. • Support R&D for indigenous manufacture of quality Personal Protection Equipment most of which are currently imported. • Undertake Studies on improving Occupational Safety.
2	Zoning/ Mapping	Inspectorate of Factories; Inspectorate of Boilers Labour & Welfare department	<p>Medium Term (T2)</p> <ul style="list-style-type: none"> • Earmark industrial zones on basis of hazard potential and effective Disaster Management for worst case scenarios. • Carry out the mapping and related studies in collaboration with central agencies/ technical organizations.
3	Monitoring	Inspectorate of Factories; Inspectorate of Boilers; Labour & Welfare department	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • Ensure monitoring compliance with safety norms for HAZCHEM and proper disposal of hazardous waste
4	Hazard Risk Vulnerability and Capacity Assessment (HRVCA)	ASPCB, Inspectorate of Factories; Inspectorate of Boilers; Labour & Welfare department, SDMA	<p>Recurring/ Regular</p> <ul style="list-style-type: none"> • 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.
<p>Note: Every ministry, department or agency of the government – central, state and district, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.</p>			

3.2.12.2 INTER- AGENCY COORDINATION

Chemical (Industrial Disaster)		Inter-Agency Coordination	
Sl. No.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Overall disaster governance	ASDMA; Inspectorate of Factories & Boilers; ASPCB in coordination ASDMA	Recurring/ Regular <ul style="list-style-type: none"> • Provide coordination, technical inputs, and support. • Ensure preparation and implementation of state plan for chemical (Industrial) disasters and ensure the functioning of agencies with DM tasks. • Cover all aspects of Disaster Risk Management and mainstreaming DRR.
2	Response	ASPCB; Environment & Forest; Police; NDRF; SDRF; Home Guards; Health & Family Welfare department; Inspectorate of Factories; Labour & Welfare department	Recurring/ Regular <ul style="list-style-type: none"> • Organize and coordinate Central & State assistance. • Pre-identify all agencies including private industries and associations as part of response system for effective Evacuation, Relief and Rehabilitation
3	Warnings, Information, Data	SEOC; ASPCB; Inspectorate of & Boilers; Factories; Labour & Welfare department; Fire & Emergency Services; Information & Public Relations	Recurring/ Regular <ul style="list-style-type: none"> • Ensure effective coordination and seamless communication among central and state agencies to ensure quick, clear, and effective dissemination of Warnings, Information and data.
4	Non-structural measures	Inspectorate of Factories; Labour & Welfare department; Department of Parliamentary Affairs & Legislation	Recurring/ Regular <ul style="list-style-type: none"> • Ensure coordination among State agencies for: <ol style="list-style-type: none"> a) revised/ updated rules, norms b) adoption of new/updated standards, c) enact/amend laws, bye-laws, regulations and d) adopt/ review policies • Conduct regular training and awareness program.
Note: Every ministry, department or agency of the government – central, state and district, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.			

3.2.12.3 INVESTING IN DRR-STRUCTURAL MEASURES

Chemical (Industrial Disaster)		Investing in Structural Measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Shelters, evacuation, support facilities, Multiple routes for reliable access and escape, Decontamination facilities	SDMA; Department of Environment and Forests; Inspectorate of Factories; Labour & Welfare department	Recurring/ Regular Technical support for <ul style="list-style-type: none"> • Identification of shelters with basic facilities like drinking water and first aid for chemical exposure. • Ensuring water storage facilities and sources of water for accident containment and firefighting operations. • Providing wide roads and multiple routes in the industrial area to allow quick access by first responders and to ensure escape pathways. • Establishment of decontamination facilities for off-site emergencies of MAH units.
2	Laws Regulations, Techno- Legal regimes, Enforcement, Compliance and Monitoring, Institutional Arrangements	ASPCB; Environment & Forest; Inspectorate of Factories; Labour & Welfare department	<ul style="list-style-type: none"> • Strengthen rules, regulations, and laws particularly of land use and setting up of hazardous industries. • Formulate/strengthen rules, norms, and laws such as factories' rules consistent with that of ensuring greater safety in hazardous industries and to reduce likelihood of disasters. • Review land use norms for the setting up of hazardous industries. • Amend land use norms to ensure greater safety and to ensure buffer zones without human settlements in close proximity of hazardous industries. • Regulate hazardous Chemical Waste Management as per guidelines. • Ensure formulation of Industrial DM plan inclusive of contingency plan. • Ensure the implementation of the Occupational Safety Norms
3	Public Private Partnerships	Inspectorate of Factories; Labour & Welfare department; Commerce & Industry	<ul style="list-style-type: none"> • Promote private participation in off-site Disaster 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

3.2.12.4 CAPACITY DEVELOPMENT

Chemical (Industrial Disaster)		Capacity Development	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Curriculum Development	Education Department; Technical Institutions; Universities; Research Institutions; Health department; State Education Board	Recurring/ Regular <ul style="list-style-type: none"> Promote inclusion of more specializations and electives on HAZCHEM and Chemical Disaster Management. Review and address gaps in medical educational different levels with respect to Emergency Medical Response. Review the specialization needs in the area of dealing with victims of Chemical Disasters. Review curriculum regarding improving the facilities required to treat victims of chemical disasters. Introduce basic DM concepts and precautions related to HAZCHEM.
2	Awareness Generation	Revenue and Disaster Management Department; SDMA; Factories & Boilers; Civil Defense; SDRF; Police; Directorate of Information & Public Relations	<ul style="list-style-type: none"> 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 use of insurance/ risk transfer. Promote private participation in off-site Disaster 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 Promote Community Radio. Strengthen network of Civil Society Organizations for awareness generation about DRR and DM. Focus on safety and compliance with SOP at workplace for workers.

3	Mock Drills/ Exercises	Inspectorate of Factories; Labour & Welfare department; Civil Defense; SDRF; Police; Home Guards	Recurring/ Regular • Promote the planning and execution of emergency drills in all the departments and hazardous industries
4	Empowering women, marginalized, and persons with disabilities	Department/ Directorate of Women and Child Development; Department/Directorate of Social Justice & Empowerment; Department/Directorate of Tribal Affairs (Plain); DWDSC; Labour department;	Recurring/ Regular • Incorporate gender sensitive and equitable approaches in capacity development covering all aspects of Disaster Management.
5	Community- Based Disaster Management	Environment & Forest; Inspectorate of Factories; Labour & Welfare department	Recurring/ Regular • Provide Guidance and Support. • Strengthen ability of communities to manage and cope with disasters based on a multi-hazard approach. • Ensure community awareness component on the safety and do's and don'ts including preventive measures to be taken by the community around the industries.
9.11 Note: Every ministry, department or agency of the government – central, state and district, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.			

3.2.13 NUCLEAR AND RADIOLOGICAL EMERGENCIES RISK REDUCTION

3.2.13.1 UNDERSTANDING DISASTER RISK

Nuclear and Radiological		Understanding Disaster Risk	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Monitoring and warning network Strengthening Radiation Monitoring	Revenue & DM Department; SDMA in association with Dept of Atomic Energy	<ul style="list-style-type: none"> Follow and support the safety and regulatory requirements.
2	Setting up reliable and dedicated communication network	Revenue & DM; ASDMA; SEOC	<ul style="list-style-type: none"> Extend required logistics support at all levels.
3	Establish monitoring mechanism to prevent illicit movement of radioisotopes	Revenue & DM	<ul style="list-style-type: none"> Ensure coordination with and support to central agencies.

3.2.13.2 INTER-AGENCY COORDINATION

Nuclear and Radiological		Inter-Agency Coordination	
S. N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Overall disaster governance	Revenue & DM; SDMA; Health Dept.	Recurring/ Regular <ul style="list-style-type: none"> Ensure preparation and implementation of DM plans and ensure the functioning of agencies with DM tasks. Cover all aspects of Disaster Risk Management and mainstreaming DRR.
2	Response	Revenue & DM; SDMA; NDRF; SDRF; Police; Home Guard; ASF & ES; Health department	<ul style="list-style-type: none"> Organize immediate response and seek assistance of central agencies as required.
3	Warnings, Information, Data	Revenue & DM; SDMA; SEOC; Police; Home Guard	<ul style="list-style-type: none"> Ensure Dissemination of warnings to last mile.

4	Non-structural measures	Revenue & DM; SDMA	<ul style="list-style-type: none"> • Adapt the Norms/ Codes as per requirement, and ensure their enforcement and monitoring • Coordinate with central agencies for all dos and don'ts.
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3.2.13.3 INVESTING IN DRR – STRUCTURAL MEASURES

Nuclear and Radiological		Investing in Structural Measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Shelters	Revenue & DM; SDMA; PWD	Short Term (T1) <ul style="list-style-type: none"> • Identify safe buildings and sites to serve as temporary shelters near nuclear installations. • Ensure construction of multi-purpose shelters near nuclear installations. • Ensure compliance with relevant Building Codes. • Coordinate with central agencies for all dos and don'ts.
		Housing department; PWD; WRD; H&UA; P&RD	Recurring/ Regular (RR) <ul style="list-style-type: none"> • Provide Guidance to implementing agencies. • Ensure implementation in compliance with relevant Building Codes/ Standards/ Technical Guidance.
2	Decontamination centres, Strengthen protection systems of nuclear facilities	Revenue & DM Department; SDMA	Recurring/ Regular <ul style="list-style-type: none"> • Ensure coordination with and support to central agencies
<p>Note: Every ministry, department or agency of the government – central and state, not specifically mentioned, will also have both direct and indirect supporting role depending on the disaster, location and context.</p>			

3.2.13.4 INVESTING IN DRR NON- STRUCTURAL MEASURES

Nuclear and Radiological		Investing in DRR-Non-Structural Measures	
S.N.	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Setting of safety standards and other safety and regulatory documents	Revenue and Disaster Management Department; SDMA	<ul style="list-style-type: none"> • Strictly follow the legal and statutory requirements.

2	Improve regulatory cover	Revenue & DM Department; SDMA	Recurring/ Regular • Enforce compliance.
3	Public Private Partnerships	Revenue & DM Department; SDMA	Recurring/ Regular • Promote private participation in disaster management facilities

3.2.13.5 CAPACITY DEVELOPMENT

Nuclear and Radiological		Capacity Development	
Sl. No	Sub-Thematic Area for DRR	State Agencies and their Responsibilities	
		State Agencies	Responsibility
1	Training	Civil Defense; Police; NDRF; SDRF	Recurring/ Regular • Design and conduct training of the members of State Police, Civil Defense and Other State Agencies.
		Health & Family Welfare	• Organize training of medical and paramedics on various aspects of Radiological events.
2	Curriculum Development	Education Department	• Inclusion of Scientific information on nuclear and Radiological Disaster in the school/college syllabus.
3	Awareness Generation	ASDMA; SDRF; Civil Defense; Police; Information & Public Relations; Animal Husbandry & Veterinary; Department/ Directorate of Women and Child Development; Department/Directorate of Social Justice & Empowerment; AASC	<ul style="list-style-type: none"> • 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 use of Insurance/ Risk Transfer. • Promote Community Radio. • Strengthen network of NGO's for awareness generation about DRR and DM. • Create awareness on safety, care and protection of Disaster-Affected Animals. • Create awareness about Radiological hazards around the nuclear installations.
4	Mock Drills/ Exercises	SDRF; F&ES; Civil Defense; Police; Information & Public Relations; Health and Family Welfare	• Ensure joint planning and execution of emergency drills.
5	Developing Capability for response	Revenue & DM; SDMA; SDRF; F&ES; Civil Defense; Police; Information & Public Relations; Health and Family Welfare	<ul style="list-style-type: none"> • Prepare a state plan for Nuclear and Radiological Emergencies. • Follow the MHA, DAE guidelines • Acquire detection capabilities. • Prepare own plans in line with the National Plan.

6	Prepare comprehensive plan on medical management	Department of Health & Family Welfare	<ul style="list-style-type: none"> • Establish Tertiary Care Hospitals for treatment of radiation injuries. • Establish Primary and Secondary Care hospitals of adequate capacity at selected cities.
7	Preparedness	SDRF; Health & family; Police; F&ES	<ul style="list-style-type: none"> • Equip the health and police dept. appropriately.
		Revenue & DM; ASF & ES; SDMA; PWD; ULBs; PRIs; Dept. of Food; Civil Supplies & Consumer Affairs; Health & Family Welfare	<ul style="list-style-type: none"> • Identify the places/buildings such as Community Buildings / Schools / Hospitals for use as emergency shelters. • Help identify the locations and ensure that Evacuation plans are in place. • Ensure provision for Food, Water, Medicines and other Relief Materials should be made at the shelters for the affected public. • Provide support for setting up of mobile Radiological Laboratories. • Maintain data of Radiological Safety Officers, Trained Medical Personnel, First Responders, Trained Volunteers, etc.