TAMIL NADU STATE DISASTER MANAGEMENT POLICY 2023

Tamil Nadu State Disaster Management Authority
Government of Tamil Nadu

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1. Preamble

1.1 The Context

Disasters, natural or man-made hazards interrupt progress, destroy lives and livelihoods and set back Nations developments by decades. As the frequency and intensity of disasters are growing, the State has to effectively reduce disaster risks by strengthening disaster risk governance and investing in disaster risk reduction. In recent times, comprehensive and effective disaster management has gained much attention both nationally and internationally instead of simply responding to disasters.

A recent Report on "Human Cost of Disasters" of the United Nations Office for Disaster Risk Reduction (UNDRR) (2020), had ranked India third, after China and the United States, in terms of the number of natural disasters reported between 2000 and 2019, resulting in a huge economic and human loss. The report revealed that the global economic losses have been estimated at $3 trillion in the last two decades with respect to global warming and climate related disasters and the frequency of which has increased by more than 60% in the last two decades compared to the previous two. Furthermore, the extreme weather events accounted for 91% of the 7,348 natural disasters in the last 20 years as compared to 4,212 recorded between 1980 and 1999. The study found that disasters have claimed approximately 1.2 million lives, an average of 60,000 per annum and affected over 4.0 billion people over the last two decades.

In a context, where the climate change triggers extreme weather events with exacerbated impacts, the Ministry of Earth Sciences has come out with a scientific study " Assessment of Climate Change over the Indian Region-2020''.The Study has detailed observations for two time periods, near future (2040-2069) and the far future (2070-2099), variations in different types of disasters, including temperature increases, ocean warming, changes in rainfall, droughts, rising sea levels, and cyclones, etc. The research study is based on hydro-meteorological disasters and is projected on a regional level.

1.2. Disaster Risk in Tamil Nadu

Tamil Nadu (TN), located in the southernmost part of the Indian subcontinent, is vulnerable to multi-hazards. The length of the coastline is 1,076 km which covers 14 coastal districts out of 38 districts, accounting for 18% of the

country's coastline. It is India's second largest coast, and it borders the Bay of Bengal, the Indian Ocean, and the Arabian Sea. Over the past century, over 50 cyclones have battered the TN coast at various locations, posing a constant threat to people living in the coastal districts. Apart from the Cyclones, other frequent disasters in the state are Floods, Landslides, Droughts, Sea Erosion and Sea Water Incursion, Heat waves, Thunderstorm and Lightning, Industrial & Chemical disasters, Fire Accidents, Forest Fires etc. Tsunami 2004 was a major disaster that adversely affected people in many ways (7,995 deaths). Few pockets of the State are vulnerable to earthquake and fall in Zone II and III. In addition to these the State is also vulnerable to health-related hazards, epidemic and pandemic prone diseases such as Chikunguniya, Dengue, COVID-19 and a host of other vector and waterborne diseases.

The Tamil Nadu government is aware of these challenges and recognizes the importance of devising a disaster management policy that takes into account the present and emerging challenges with a long-term value based Vision. This policy reflects the priority of the State in protecting human and animal lives, livelihoods, public and private properties by addressing disaster risk reduction and transforming risks to resilience.

2. Vision and Mission

2.1 Vision

To build a safe and disaster resilient Tamil Nadu through inclusive development and mainstreaming disaster risk reduction into the sustainable development ethos of the State.

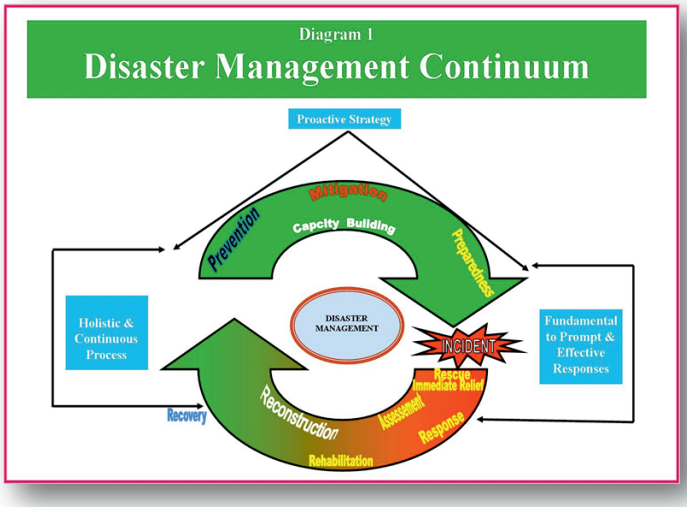
2.2 Disaster Management (DM)

The Disaster Management Act 2005 defines Disaster as a catastrophe, mishap, calamity or grave occurrence from natural or man- made causes, which is beyond the coping capacity of the affected community. DM involves a continuous and integrated process of planning, organizing, coordinating and implementing measures which are necessary for:

- Prevention of danger or threat of any disaster.
- Mitigation or reduction of risk of any disaster or its severity or consequences.
- Capacity building including research and knowledge management.
- Preparedness to deal with any disaster.
- Prompt response to any threatening disaster situation or disaster.
- Assessing the severity or magnitude of effects of any disaster.
- Evacuation, rescue and relief.
- Rehabilitation and reconstruction.

A typical DM continuum contains six elements: prevention, mitigation and preparedness in the pre-disaster phase and response, rehabilitation, reconstruction and recovery in the post-disaster phase. All of these elements are interlinked by a legal and institutional framework (Diagram I).

Four Phases of Disaster Management		
1	Mitigation	Prevention
		Mitigation
2	Preparedness	
3	Response	Relief
		Rescue
4	Recovery	Reconstruction
		Rehabilitation



Source: National Disaster Management Policy 2009

2.3 Missions

A holistic and integrated approach to disaster management will be developed, with a focus on disaster risk reduction, through constructing collaborative partnerships at various levels, with multiple stakeholders and appropriate technologies. The policy is based on the following themes:

- ❍ Community based Disaster Management, including last mile integration of the policy, plans and execution.
- ❍ Capacity development in all phases of Disaster Management cycle (Evacuation, Relief, Response, Recovery, Rehabilitation, Re-construction and Recovery).
- ❍ Consolidation of past initiatives and best practices for realistic implementation for the benefit of at-risk population.
- ❍ Cooperation with agencies at National and International levels.
- ❍ All of Society engagement and Multi-Sectoral Partnership.

2.4 Aim

The goal of the Tamil Nadu Disaster Management Policy is to reduce the negative impact of all types of disasters with the help of strong disaster management machinery, so that loss of life, property, and damage to critical infrastructure is minimized, and economic and development benefits achieved by the State are not lost during such calamities / disasters.

2.5 Objectives

The objectives of the TN State Policy on Disaster Management are:

- ❖ To replace the existing approach of reactive relief by a proactive approach of mitigation and risk reduction.
- ❖ To develop a new culture of prevention, preparedness and quick response for management of disasters.
- ❖ To reduce the vulnerability of the community through proper risk assessment and essential measures of risk mitigation
- ❖ To put institutions and structures in place for efficient and effective management of disasters.
- ❖ To establish a clear chain of command with well-defined authority and responsibility of various stakeholders.
- ❖ To Identify and utilize the available resources efficiently.

- To ensure transparent, consistent and equitable relief to the victims.
- To make risk informed planning an integral part of development planning.
- To design appropriate disaster prevention and mitigation strategies for different hazards.
- To enhance the capacities of various players including the community in disaster management and mitigation
- To create databases about the policies, resources and strategies for disaster management.
- To ensure better coordination among various departments in the State, national/international agencies and other stakeholders connected with disaster management.
- To create awareness among all sections of society especially students to develop expertise in the disaster management discipline.

Goals:

The TNSDMA will focus on

Substantially Increasing

1. Availability and access to Multi Hazard Early Warning Systems
2. Hazard Vulnerability Risk Assessment and Risk Mapping
3. Mitigation measures for Disaster Risk Reduction
4. Mainstreaming of Disaster Risk reduction into Development Plans
5. Multi Stakeholder Participation

Substantially Decreasing

1. Disaster Mortality
2. Number of affected people
3. Vulnerability of Weaker Sections
4. Disaster damages to critical infrastructures and disruption of basic services
5. Reduce Direct Economic Loss

Necessary policy thrust will be provided to enhance the level of Preparedness & Capacity building, Relief & Response and Mitigation of Disaster impacts.

3. Institutional and Legal Arrangements

Institutional Framework under the Act

3.1 Tamil Nadu State Disaster Management Authority (TNSDMA)

Tamil Nadu State Disaster Management Authority has been constituted under the chairmanship of the Hon'ble Chief Minister with the following members:

- Hon'ble Minister for Revenue and Disaster Management
- Chief Secretary to Government, Ex-Officio
- Secretary, Revenue and Disaster Management Department
- Secretary, Finance Department
- Secretary, Home Department
- Secretary, Higher Education
- Secretary, School Education
- Commissioner of Revenue Administration and State Relief Commissioner.
- Director, Centre for Disaster Management & Mitigation, Anna University, Chennai.
- Head of Department of Civil Engineering, Indian Institute of Technology, Madras.

Tamil Nadu State Disaster Management Authority provides guidance for policy formulation, approval of state disaster management plan as per DM Act 2005 and monitoring all functions of Disaster Management.

3.1.1 District Disaster Management Authority (DDMA)

DDMAs have been formed in all districts under the chairmanship of the respective District Collectors. The DDMA will operate as the district planning, coordinating, and implementing body for disaster management and will take all actions for disaster management in the district in accordance with the guidelines laid out by the SDMA and NDMA.

3.1.2 State Executive Committee (SEC)

The State Executive Committee functions under the Chairmanship of the Chief Secretary with Secretaries of Revenue Department, Public Works Department, Highways Department and Home Department as members and State Relief Commissioner, Secretaries of Finance Department, Health and Family Welfare Department and Water Resources Department as special invitees. The State Executive Committee is responsible for implementing the State Plan and to advise the State Government on all financial matters regarding Disaster Management. It ensures immediate release of funds for carrying rescue and relief operations during the event of disasters.

3.1.3 TNDRRA (Tamil Nadu Disaster Risk Reduction Agency)

The Tamil Nadu State Disaster Management Agency formed on 09.01.2014, and was registered under the Tamil Nadu Societies Registration Act. This was renamed as Tamil Nadu Disaster Risk Reduction Agency in 2019. (TNDRRA). The Agency is governed by a Governing Council and an Executive Council, with the Hon'ble Minister for Revenue serving as Chairperson of the Governing Council and the Chief Secretary to Government serving as Vice-Chairperson. The General Council consists of secretaries of 14 departments, with the Convener being the Commissioner of Revenue Administration / State Relief Commissioner.

The Commissioner of Revenue Administration and State Relief Commissioner is the Chairman of the Executive Council of the Agency and the Director (DM) is the Member Secretary of the Executive Council.

The functions of TNDRRA are:

1. To act as the executive agency for the State Disaster Management Authority for coordinating the various Disaster Management related activities in the State at all levels.
2. To guide and assist the District Administration in the rescue and relief measures.
3. To act as a resource centre for information, trained manpower, experts, NGOs and community based organizations.

4. To undertake Capacity building, training and awareness relating to Disaster Management and Mitigation.

5. To provide technical assistance and consultancy services to the Government.

6. To undertake research and development processes regarding causes for losses on account of natural disasters and to suggest remedial measures for minimizing the same.

7. To develop approach, philosophy, policy guidelines, management and action plans for managing disaster of any kind.

8. To formulate and implement externally aided projects on disaster management.

9. To achieve the objects of the Society and to obtain funds for mitigation, risk reduction activities rehabilitation and settlement and to ensure optimum utilization of these funds obtained in the form of grant, aid, assistance or loan from Government of Tamil Nadu, Government of India, World Bank, ADB, USAID, DFID, IFRC, Donors, NGOs and from financial institutions, public and private trusts or any other organization.

10. Management, Administration, Investment & Re-investment of funds out of sale proceeds received from the sale of land, buildings, equipment's, furniture, fixtures, debris or any other things or articles or infrastructure.

3.1.4 State Emergency Operation Centre (SEOC)

The SEOC / Control Room is a 24-hour communication Centre that disseminates all early warnings and alerts received from IMD, CWC, INCOIS, and other authorities to state Authorities, District Administration and line Departments. People in emergency can contact the SEOC by dialing the toll-free number 1070. The SEOC has been equipped with modern technology, communication infrastructure, adequate manpower and material resources and it functions in close collaboration with Districts, the National Emergency Operations Center (NEOC), District Administration, other Disaster Warning agencies (National & State), Armed Forces, NDRF, TNDRF and Line Departments.

3.1.5 District Emergency Operation Centre (DEOC)

The DEOC / Control Room is a 24-hour communication centre headed by the District Collector that disseminates all early warnings and alerts received from SEOC to taluks and villages. In respect of Greater Chennai Corporation (GCC) the Commissioner will disseminate all early warnings, alerts and coordinates the disaster management activities in the entire GCC area. People in emergency can contact the DEOC by dialing the toll-free number 1077. The DEOC is equipped with modern technology, communication infrastructure, and adequate manpower and material resources. DEOC collects information on search, rescue, relief, and rehabilitation operations from various sources and reports it to the SEOC.

3.1.6 Local Authorities

Local authorities for the purposes of this policy would comprise Panchayati Raj Institutions (PRI), Town Panchayats, Municipalities, Corporations and District and Cantonment Boards, which control and coordinate civic services. These authorities will ensure that their officers and employees are prepared to manage disasters, carry out rescue and relief operations, and execute rehabilitation and reconstruction activities in disaster affected regions. They must also ensure the capacity of staff and officers to operationalize disaster management plans in accordance with the guidelines of the NDMA, SDMA, and DDMAs. There will be a specific institutional framework in place to respond to the disaster management challenges in megacities.

3.1.7 State Disaster Management Cell (Anna Administrative Staff College)

The State Disaster Management Cell (SDMC) was established in 1995 at the Anna Administrative Staff College in Chennai. The SDM Cell serves as a nodal agency for disaster-related training at the state level, conducting research studies, documenting and developing state-level database information, and actively collaborating with the Commissioner of Revenue Administration and State Relief Commissioner, i.e. Revenue and Disaster Management Department. The SDMC at AASC will establish itself as a "Centre of Excellence" in the field of disaster management by imbibing and customizing the bet modules and global curriculum on Disaster Management.

3.1.8 Frameworks for Disaster Risk Reduction on a Global and National Level

The Sendai Framework for Disaster Risk Reduction (2015-2030), the Paris Agreement on Climate Change (2015), the Sustainable Development Goals (2015-2030), the Prime Minister's 10 Point Agenda for Disaster Risk Reduction and the National Disaster Management Plan 2019 defined the framework for disaster risk reduction. Applying the principles of these frameworks, the Tamil Nadu State Disaster Management Policy is formulated. To realise the vision of "Resilient Tamil Nadu" these relevant global and national concepts will be translated into local actions.

This will be accomplished by implementing the following priorities of the Sendai Framework:

1. Understanding disaster risk,
2. Improving disaster risk governance,
3. Investing in disaster risk reduction (through structural and non structural measures) and
4. Disaster preparedness, early warning and building back better in the aftermath of a disaster.

3.2 Other important Institutions:

3.2.1 Tamil Nadu Disaster Response Force (TNDRF)

Government of Tamil Nadu have been strengthening its response mechanisms over a period of time, in order to ensure that people in vulnerable areas are evacuated to safer places based on forecast and search and rescue operations are carried out swiftly as and when the disaster strikes. The Tamil Nadu Disaster Response Force (TNDRF) was formed by re- designating the TSP XIII Battalion to tackle natural & man-made disasters and is placed under the operational control of the ADGP (Operations) during Monsoon period to conduct rescue & relief operations.

The TNDRF were trained by the National Disaster Response Force. They have been equipped with state of art equipment. The State will continue to enhance the capacity of TNDRF.This will go a long way in the disaster preparedness of the State.

3.2.2 State Police Forces and Fire& Rescue Services Department

The State Police Forces and Fire and rescue services are crucial immediate responders to disasters. The State Police with their strong communication network organize themselves to respond to all disaster situations to keep the community safe from possible looting, destruction of property, and theft that may occur, evacuate the people to safe areas. Their assistance in regulating the road traffic, crowd management, and confidence building of the affected people are noteworthy.

The Fire and Rescue Services Department is a multidisciplinary unit, which has diverse roles in emergency situations. The Fire and Rescue Services Department undertakes rescue operations during natural calamities, responds to emergency calls for rescuing humans and animals from hard to inaccessible locations. Extrication from vehicle wrecks, retrieval of mortal remains of humans, removal of animal carcasses from water bodies and deployment of the sniffer dog squad to locate missing humans are some other emergency services rendered by the Fire and Rescue Services Department. They work hand-in-hand with other departments such as the Police, Revenue and the Medical Services at times of threats of terrorist attacks, caste and communal clashes and for bandobust arrangements during fairs and festivals.

In order to undertake rescue activities very effectively during emergency situations such as Floods and Cyclones, Landslides, Building collapse, Earthquakes, Industrial Explosions and Road / Rail Accidents, this Department has been provided with Fire and Rescue vehicles to undertake rescue activities.

3.2.3 Armed Forces (AF)

The armed forces are a key part of the government's response, acting as immediate responders in all serious disaster situations and assisting civil administration when the crisis exceeds their ability to cope. The armed forces main responsibility is to aid in emergency support duties such as search and rescue operations, health and medical facilities, and transportation - particularly in the early aftermath of a disaster.

3.2.4 Home Guards (HG)

The Tamil Nadu Home Guards Organization came into existence in the year 1963 as per Tamil Nadu Home Guards Rules 1963 as a voluntary Citizen's force to assist the Police in the maintenance of Law and Order and to meet emergencies like floods, fires, cyclones, etc. The Home Guards Organization renders valuable assistance in regulation of traffic, crowd control, maintenance of internal security, promotion of communal harmony, to create awareness on health, hygiene and road safety. In order to assign effective role in disaster management, the mandate of home guard is redefined. They will be used for generating awareness and preparing the community for disaster management. In the event of disasters there will be a cadre of volunteer reporting to the local stations to participate in rescue and relief.

3.2.5 Community First Responders:

One of the top most priorities of the Government is to develop the capacity and the skills of the volunteers at habitation level so as to equip the community to responsibly handle the disasters by themselves. This approach provides an opportunity to the local community to evaluate their preparedness based on their experiences and it becomes part of preparing their Disaster Risk Reduction Plan. In this context, the process of identifying at least two first responders at every habitation level in 14 Coastal Districts and the Nilgiris District for imparting training to form a Community Disaster Response Force has been initiated. Based on the interest level and skill sets of the individuals, the volunteers will be trained in providing support for Evacuation Search & Rescue, First Aid to help Children, Women, Differently Abled People and Aged, Shelter Management, Organize Community Kitchens, Electrical & Plumbing services, Tree Cutting, Psycho Social Support, etc. The Government will continue to build the capacity of Community First responders in the entire State so that each habitation will have Community First Responders to render necessary assistance to the community and also to the response forces and the administration.

3.2.6 National Cadet Corps (NCC), National Service Scheme (NSS), and Nehru Yuva Kendra Sanghatan (NYKS)

The National Cadet Corps (NCC), the National Service Scheme (NSS), Nehru Yuva Kendra Sangathan (NYKS), and others including Bharath Scouts, Indian Red Cross, Youth Red Cross and local youth clubs are active in community-based disaster management activities. The government of Tamil Nadu will encourage programmes aimed at preparing young people to manage disasters in their communities.

4. Financial Arrangements

4.1 Approach

To achieve a paradigm shift from a relief-centric approach to one that includes preventive, preparedness and mitigation, efforts would be undertaken to include preventative and mitigation measures into development plans and programmes by engaging the participation of all stakeholders.

4.2 Source of Funds

The funds for Mitigation Measures will be sourced mainly from the State Disaster Mitigation Fund and National Disaster Mitigation Fund and Special purpose funds created by Government of India

4.3 Status of Financing Disaster Management post 15th Finance Recommendations

As per the recommendations of the 15th Finance Commission, mitigation funds have been created separately at the national and state levels, in the form of a National Disaster Mitigation fund (NDMF) and State Disaster Mitigation Fund (SDMF). The Mitigation funds aim to support those local level and community-based interventions, which reduce disaster risks and promote environmental-friendly settlements and livelihood practices, and not large-scale infrastructure interventions.

4.4 State Disaster Risk Management Fund (SDRMF)

State Disaster Risk Management Fund (SDRMF) has been set up as per the recommendation of 15th Finance Commission (FC). SDRMF comprises of the State Disaster Mitigation Fund (SDMF) and State Disaster Response Fund (SDRF). The Government of Tamil Nadu has constituted the State Disaster Mitigation Fund. Out of the total SDRMF, the share of SDRF shall be 80 percent and the share of SDMF 20 percent.

Within the SDRF allocation of 80 percent, there would be three sub-allocations as listed below.

- Response and Relief (40 percent),
- Recovery and Reconstruction (30 percent) and
- Preparedness and Capacity-building (10 percent).

While the funding windows of SDRF and SDMF are not inter-changeable, there could be flexibility re-allocation within the three sub-windows of the respective Funds and such re-allocation shall not exceed 10 percent of the allotted amount of that sub-window. SDMF shall be used for those local level and community-based interventions which reduce the risks and promote environment-friendly settlements and livelihood practices. However, large-scale mitigation interventions such as construction of coastal walls, flood embankments, support for drought resilience etc. should be pursued through regular development schemes and not from the mitigation fund. The detailed guidelines for the constitution and utilization of these funds shall be issued by the Ministry of Home Affairs.

4.5 Earmarked allocations from NDRF/NDMF

4.5.1 Reducing the Risk of Urban Flooding in Chennai from NDMF

The 15th Finance Commission has provided Rs.2,500/- Crores for Reducing the Risk of Urban Flooding in Seven most populous Cities. An allocation of Rs.500 Crore is to be provided to Chennai at the rate of Rs.100 Crore per year in five years.

4.5.2 Catalytic Assistance to Twelve Most Drought-prone States from NDMF

In order to take up drought mitigation programmes Tamil Nadu has been provided with Rs.100 crores. This will be provided at the rate of Rs.20 Crore over a period of 5 Years.

4.5.3 Managing Seismic and Landslide Risks in Ten Hill States from NDMF

An allocation of Rs.750 Crore has been provided for Managing Seismic and Landslide Risks in Ten Hill States. In view of the recurring landslides in The Nilgris District and emerging landslide related risks in the hill areas of Theni,

Dindigul, Salem, Thirupatthur districts. The Government of India will be approached to provide allocations to Tamil Nadu.

4.5.4 Expansion and Modernization of Fire Services (NDRF - Capacity Building)

An allocation of Rs.5,000 Crore has been provided under NDRF – Capacity Building Component for Modernizing the Fire Services of the Country. The State will prepare a perspective plan for modernization of fire services to avail funding support from Government of India.

4.5.5 Beyond 2026

While the recommendation of 15th Finance Commissions are applicable for the period from 2021-2026, the Government will urge the Government of India to continue to provide special support for disaster management more particularly to disaster mitigation.

5. Disaster Prevention, Mitigation and Preparedness

5.1.1 Disaster Prevention and Mitigation

The prevention and mitigation measures include structural and non-structural measures described in the table below:

Disaster Prevention & Mitigation

Structural Measures	Non Structural Measures
Housing (MPES, Multi Hazard Resistant Houses, Green Houses)	**Economic Measures** (Subsidies, Credit Waiver, Risk Cover)
Water Resources Management (Restoration of River Drainage Systems, River Grading, Flood Routing, Stream Training, Improving Inflow Channels)	**Social Measures** (Public Information Campaigns, Non-formal Education, Community Participation)
Infrastructures (Roads,Bridges,Drinking Water, Power, Communication,Education,Heritage Tourism)	**Physical Planning Measures** (Land Use Planning, Safe Designs, Retrofitting)
Ecosystem Restoration (Shelterbelts along the Coast, Afforestation, Restoring fragile interface Ecosystems,Creeks,Marshlands, Wetlands etc., Enhance Ecosystems Health)	**Safety Audit** (Schools, Hospitals, Disaster Resilient Public infrastructure, Buildings, Roads, Bridges, Reservoirs & Water Bodies, Industries)
	Management & Institutional Measures (Educational Training, School/College Disaster Research, Strengthening Technical Expertise, Strengthening of Local Authorities)

5.1.2 Structural Measures:

Structural measures are any physical construction to reduce or avoid possible impacts of hazards arising due to flood cyclone, landslides and earthquakes, or the application of engineering techniques or technology to achieve hazard resistance and resilience. The structural measures will form part of the strategy to address the risk concerns of new projects, ongoing projects and existing infrastructures. To ensure that all new critical infrastructure projects like power, irrigation, roads and bridges, hospitals, schools etc., compulsorily comply with the safety standards all new projects / programmes will undergo a review to see whether Disaster management concerns have been incorporated.

Nature-based solutions

Nature-based solutions include a wide range of methods which help to regenerate the deteriorating ecosystems to its pristine purity. The coastal ecosystems, Wetland ecosystems, Forest ecosystems can help communities prepare for, cope with, and recover from disasters, including slow-onset events such as drought. The Flood Mitigation, Coastal protection from sea erosion, sea water incursion, storm surges are better managed with a mix of structural and Nature based solutions. The Govt will explore and integrate nature based solutions, Blue Green infrastructures, Sponge Cities, Bio Shields, Shelter Belts, Oxygen Parks coupled with structural measures to address urban flooding Heat Wave hot spots, Drought and Coastal problems.

5.1.3 Non-Structural Measures:

Flood Plain Zonation & Land Use Regulations

Flood Plain Zonation is considered an effective non – structural measure for flood management. The basic concept of Flood Plain Zonation is to regulate the land use in the flood plains of a river to restrict the damage caused by floods which occur from time to time. Flood Plain Zonation will aim at defining the locations and the extent of areas likely to be affected by floods of different magnitudes or frequencies and to develop those areas in such a manner that the damages are reduced to the minimum. This in effect is expected to bring restrictions on indiscriminate development and encroachment of flood plains of a river. Flood plain zoning is considered not only necessary in the case of management of floods by rivers it is also useful in reducing the damage cost by drainage congestion, particularly in urban areas. The above approach of structural and non-structural intervention is expected to result in sustainable flood management.

The TNSDMA & NDMA have jointly taken up a Technical Co-operation Project in collaboration with Japan International Co-operation Agency (JICA). The objective is to formulate a Comprehensive Flood Control Master Plan for the targeted river basins in Chennai Metropolitan Area. The Comprehensive Plan will become a core part of the Chennai City Master Plan III.

Strengthening the Techno-Legal Regime

The Nonstructural measures include, strengthening the techno-legal regime like the implementation of provisions of BIS code, Town and Country Planning Act and building bye-laws. The Govt will continue to strengthen the techno-legal regime for achieving disaster resilience.

a) Amendment of Building bye-laws and master plans for earthquake-proofing/ flood management, etc.

b) Amendment to incorporate Land Use and Flood Plain zoning regulations and strengthening the enforcement mechanisms. Adopting a sectoral approach and identification of key sectors for mainstreaming.

c) Risk sensitive land-use planning which is consistent with non-negotiable principles in respect of flood plains along river corridors, water bodies, wetland ecosystems, estuaries and river creeks

d) Building regulations with provisions for structural safety against natural hazards, Reconstruction of hazard resistant Critical infrastructures including Housing, Climate Resilient Power, Irrigation and Flood Control infrastructures.

e) A mechanism for Disaster Risk Audit similar to Environment and Social Audit to pre-empt the damages that would be inflicted by the new development proposed.

f) Introducing new Risk Transfer Policy and introduce Risk Coverage to reduce the burden of government in line with the paradigm shift from relief centric disaster management to resilience focused disaster risk reduction.

Economic Measures

Tamil Nadu, which is a multi-hazard risk prone State is highly vulnerable to the cyclonic storms, down pours during Northeast Monsoon on the one hand and the vagaries of the monsoon impacting the fortunes of the farming community on the other. In addition, the deficit rainfall adversely affects the drinking water resources impacting essential supplies to the community

particularly those in the drought prone districts of the State. In order to mitigate these risks, Government of Tamil Nadu invokes economic incentives and alternate strategies to enhance the resilience of the highly vulnerable sections of the society.

Fishermen bear the highest brunt of the disaster risks which threaten their lives, housing as well as economic wellbeing. In order to reduce the impact of these risks, the Government of Tamil Nadu has decided to provide multi hazard resistant houses at no cost, and provide grants during lean season and prohibited periods of fishing. In addition, the Government has been taking several measures to enhance their livelihood opportunities comprising of skill up gradation and value addition to their existing fishing centric income generating activities and imparting skills for diversification of livelihood opportunities.

Agriculture is the other main sector which bears the brunt of the risks due to vagaries of monsoon and its consequent risks of floods and drought. The problem of the farmers is accentuated in the areas irrigated from the rivers that originate outside the State due to issues involved in timely releases of water from the upper riparian States and the seasonal rivers of the State being at the mercy of the monsoonal rains.

In order to mitigate the plight of the farmers Government is providing incentives to the farmers of Cauvery delta during Kuruvai & Samba Seasons to shift from water intensive crops to less water consuming crops and extends 100 percent financial assistance for installation of Micro Irrigation Systems throughout the State in order to conserve water and minimize the resources judicially to protect the interests of the farmers.

5.2. Societal Measures

5.2.1 Public Awareness and Mass Campaigns

Imparting Disaster Risk Knowledge and bringing attitudinal and behavioral changes to the early warning messages play a significant role in Risk Reduction especially in minimizing loss of lives. Considering the importance of the need for enhancing the knowledge levels of different stakeholders, to tackle different disaster situations GoTN have been according very high priority

in building the capacities of the community and other stakeholders. In order to spread the awareness at various levels, all possible channels of communication such as print, electronic, social and traditional media are being used by GoTN.

In order to prepare the future generation to face the disasters in a more confident and resilient manner and also make them part of disaster management the curriculum of classes 7th to 10th have been modified and lessons on Disaster Management have been incorporated. Special campaigns are being organized for different disasters to involve communities particularly children and other vulnerable sections. Schools, Colleges, NCC, and NSS, Social defence, SHGs, NGOs, CBOs, traders associations, Builders associations, contractors, masons, local body representatives, religious and social organisations, academic institutions and professionals are being involved to make Tamil Nadu a disaster resilient State. In addition, the farming community is being encouraged to diversify their crops to minimize the water requirement and is also being encouraged to adopt Micro Irrigation Practices to conserve water and enhance resilience to face drought.

5.2.2 Social Safety Nets

Various social protection nets are provided by Government of Tamil Nadu under both State Government schemes and externally aided special Projects (with World Bank, ADB and IFAD funding) like Emergency Tsunami Reconstruction Project (ETRP), Tsunami Emergency Assistance Programme (TEAP), Rajiv Gandhi Rehabilitation Programme (RGRP), Post Tsunami Sustainable Livelihood Project (PTSLP) and Coastal Disaster Risk Reduction Project (CDRRP) which have been implemented in response to the Tsunami 2004.

5.2.3 Social Security Schemes

The following schemes provide social security protection to the vulnerable groups

- ❖ Old Age Pension Scheme
- ❖ Widow Pension Scheme
- ❖ Destitute Widow Pension Scheme
- ❖ Disability Pension Scheme

- ❖ Differently Abled Pension Scheme
- ❖ Destitute / Deserted Wives Pension Scheme (DDWP)
- ❖ Pension to Un-married, Poor, Incapacitated Women of age 50 years and above (UWP).
- ❖ Accident Relief Scheme
- ❖ Chief Minister's Uzhavar Pathukappu Thittam.
- ❖ Mahatma Gandhi National Rural Employment guarantee scheme
- ❖ Deendayal Anthodia Yojana – National Urban Livelihood Mission (DAY-NULM)
- ❖ Tamil Nadu Pudhu Vaazhvu Project (Funded jointly by World Bank and GoTN).
- ❖ Self Help Groups (Micro Credit & Livelihood)
- ❖ Priceless kits to pregnant women and lactating mothers.

5.3. Disaster Preparedness

5.3.1 Risk Assessment and Mapping

Hazard Vulnerability Risk Assessment

Understanding Disaster Risks in all its dimensions, and its inter connectedness implications is fundamental. The Multi Hazard Vulnerability Risk Assessment at State, District level/ River Basins/Watershed level will be prepared with Risk Mapping. The Multi Criteria – Geo Spatial Analysis of risks, vulnerable populations, likely impacts, will bring out the need to address the risks through systems approach or location specific strategies. These studies relating to Floods of various types (Flash floods, Coastal floods, Urban floods, River (or fluvial) floods, inundation (or pluvial flooding), Drought, Analysis of Cyclones of the past, Storm Surge Modelling, Landslides, Seismic Micro Zonation of Earthquakes, Heat Waves, Thunderstorm & Lightning, Crop inundation, Sea Erosion, Sea Water Incursion, Chemical, Biological Radiological and Nuclear consequences will be taken up and updated periodically. The mapping will be done at required scale to enable micro level analysis. Wherever it is necessary, Aerial Mapping employing LiDAR or Drones will be employed.

The studies will be carried out through National/State level Scientific, Research and Academic institutions.

5.3.2 Increasing Trend of Disasters in Urban Areas

Disasters are distinct & frequent in urban areas and the extent of damage is very high. The Action plans for planned urbanization with appropriate land use planning and flood plain regulations confirming a safer human habitat in the event of all forms of disasters will be prioritized. Resilience Cities that have the ability to absorb, recover and prepare for emerging disasters will be put in place with an appropriate mix of structural and nature based solutions consisting of creating sponge landscapes, Blue & Grey water management.

5.3.3 Climate Resilient Critical Infrastructure

It is extremely important that critical infrastructure, Hospitals, Air Ports, dams, roads, bridges, flyovers, railway lines, power stations, telecommunication, irrigation canals, delta water distribution networks, river and coastal embankments, ports, and other civic utilities are made climate resilient. The building standards for critical infrastructure will be linked with safety norms, and the institutions responsible will be empowered to enforce the regulations. The local wisdom and traditional knowledge coupled with best practices from across the world will be put into practice

5.3.4 Protection, Restoration and Revival of Ecosystem Services

Preservation of Ecosystems and revival of ecosystem services will be taken up as one of the most pivotal priorities. . For the restoration of ecological balances and sustainable development, the ecosystems of forests, islands, coastal regions, rivers, and the agricultural, urban and industrial environments will be taken up. Establishment of Bio Shields and stabilization of sand dunes along the coast, shelter belts/wind breaks in cyclone prone areas, Green Buildings, Cool roofs to combat heat waves Oxygen parks will be explored.

5.3.5 Climate Change Adaptation

There is a need to manage the slow on set of extreme weather events, frequency and intensity of natural disasters such as cyclones, floods and droughts. Climate Change Adaptation in the form of water saving crop husbandry, increasing the green cover that results in carbon sequestration will

be up scaled. The State Climate Action Plan will also focus on mainstreaming disaster risk reduction and climate adaptation into developmental plans.

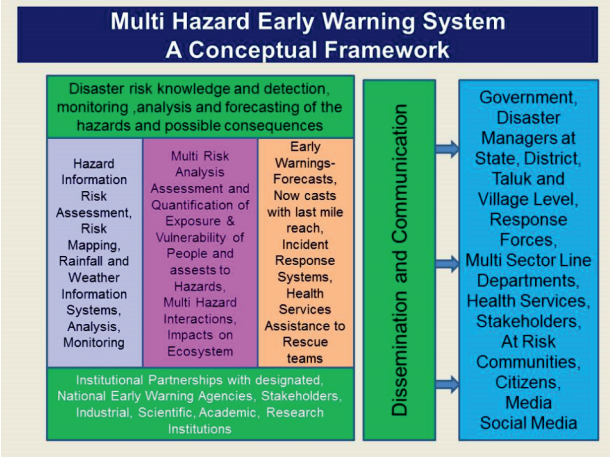
5.3.6 People Centric Multi Hazard Early Warning System

The complexity of disasters today requires a proactive and multi-pronged approach. In this context a "Multi Hazard Early Warning Centre", backed up by science and technology and decision support systems has been conceptualized as per World Meteorological guidelines.

5.3.7 Transforming Risks to Resilience

The Sendai Framework for Disaster Risk Reduction 2015-2030 recognizes the role of early warning systems in building resilience and their potential for mitigating the impact of disasters. It emphasizes to enhance the development and dissemination of science-based methodologies and tools to record and share disaster losses and relevant disaggregated data and statistics, as well as to strengthen disaster risk modelling, assessment, mapping, and monitoring and multi hazard early warning systems. The Seventh Global Target of the Sendai Frame Work is to "Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030".

In this direction, the State Emergency Operation Centre at Chennai will be upgraded state of art Multi Hazard Early Warning Centre and relocated in a new Green Building.



(Adopted and Modified from Multi-hazard Early Warning Systems- A Check List WMO 2018)

The Multi Hazard Early Warning Centre will be based on the WMO framework and Check list and customized to the contextual requirements of the State to respond to the needs of the community at risk and their response capabilities with the below stated elements.

1. Disaster risk knowledge based on the systematic collection of data and disaster risk assessments
2. Detection, monitoring, analysis and forecasting of the hazards and possible consequences; Preparedness and response capabilities at all levels to respond Plus checks for cross–cutting issues and key actors
3. Warning Dissemination and communication, by an official source, authoritative, timely, accurate and actionable warnings and associated information on likelihood and impact

5.3.8 Expert Team:

The Multi Hazard Early Warning Centre will engage experts in the fields of Meteorology, Climate Science, Atmospheric Science, Hydrological Modelling, Emergency Analysis, Data Science, Information and Communications Technology Remote Sensing and GIS and Web GIS Development.

5.3.9 Strengthening Early Warning Systems

The State has taken path breaking initiatives to strengthen the existing infrastructure with Hydro meteorological Systems consisting of Automatic Rain Gauges, Automatic Weather Stations, and Doppler radar observations, Upper Weather observations with Weather Balloons Lightning Detection Network, Landslide Detection Sensor Network, Seismic Observation Network, etc. will be established with Real-time data acquisition platforms. Real time Flood Forecasting with Hydro Modelling control rooms similar to the Chennai Basin will be established for flood prone/ high rainfall basins. The Multi Hazard Early Warning Centre will be equipped with Dash Boards for continuous monitoring of various risks. The various decision support systems will aid the authorities to take decisions in time.

5.3.10 End to End Early Warning with last mile Connectivity

The Multi Hazard Early Warning Centre at state and District Emergency Operation Centre with state of art equipment and ICT technologies communication facilities and their periodic upgradation, will be accorded priority. For last mile connectivity and mobilization of the operations in the disaster hit areas, the Integrated Common Alert Protocol Platform with dedicated SMS gateway will be utilized. Its potential capability to send location based alerts for a specified geo spatial area through mobile service providers, SMS alerts, push Warnings and alerts through AIR, TV Media, and Public video displays will be put to maximum use as it evolves. The Emergency Response Support System will be leveraged to address distress calls and to gather crowd source information. The TNSMART Web GIS Portal and Risk communication system with dedicated Mobile App with impact based forecasts will be upgraded to reach out to common public. The Disaster Warning Announcement system will be expanded. The habitation level Community First Responders will be educated and encouraged to serve the community at risk.

5.3.11 Simulation Trainings and Mock Drills

Efficacy of plans and SOPs will be tested and developed through training, seminars and mocking exercises. The TNSDMA will provide assistance to the districts in these areas and will also conduct mock drills around the state. The development of a culture of preparedness and quick response will be encouraged by district authorities. A series of exercises for various types of disasters in collaboration with the NDMA will be evolved to enhance the response level of various stakeholders.

5.3.12 Safety Audits

The Guidelines issued by NDMA for Safety Audits of Schools, Hospitals, and Museums, National Building Codes, Dam Safety Emergency Management Protocols evolved under the Dam Rehabilitation and Improvement Project apart from standard Electrical Safety Fire Safety will be strictly adhered to. The DDMAs Urban & Rural Local bodies will be responsible for monitoring safety audits before & after monsoon and disaster events.

5.3.13 Medical Preparedness and Mass Casualty Management

One of the most critical and immediate response components in any disaster response situation is health and medical care.DM plans for hospitals will include the development and training of medical teams and paramedics, as well as the development of critical infrastructure. The state and district authorities would work out and record the surge and casualty handling capacity of all hospitals during disasters through a consultative process in the pre-disaster phase. The state and district authorities would be encouraged to develop adequate procedures for treating casualties in private hospitals during disasters. These plans will also cover post-disaster disease surveillance systems, networking with hospitals and referral institutions, and getting access to services and facilities such as ambulances and blood. Mobile Medical Units will be trained to reach the unreached for delivering emergency health service delivery.

5.3.14 Community Based Disaster Preparedness

Communities are not only the first to be affected by a disaster, but they are also the first responders. Participation in the community provides local ownership, addresses local needs, and promotes volunteering and mutual support in order to prevent and reduce damage. Hence, the districts administration will be encouraged actively promote community participation in disaster preparedness and response.

Special attention will be paid to the requirements of the elderly, women, pregnant women, lactating mothers, children, adolescent girls and differently abled persons. Women and youth will be encouraged to participate in action groups and decision-making committees of disaster management. As the first response to a disaster, communities are trained in many areas of response including first aid, evacuation search and rescue, shelter management, psycho-social counseling, distribution of relief and access to government/agency support and so on. Community plans will be incorporated into Panchayat, Block and District plans.

5.3.15 Multi Stakeholder Participation

The partnership with multi stake holders through consultative process for understanding their needs and reciprocation will be continued. Builders

Associations, CREDAI, Residential Welfare Association Mobile service Providers, Oil Companies Industrial Associations, IT Companies will be strengthened. NGO –CSO Co-ordination Centers at the District and State Level will continue to promote better co-ordination.

5.3.16 Corporate Social Responsibility (CSR) & Public-Private Partnership (PPP)

The corporate sector has been proactive to lend support for disaster relief and recovery activities. However, there is scope for improving the involvement of corporate sector in disaster risk reduction activities. The Corporate Sector will be encouraged to adopt Villages, Towns and Cities in and around their geography to improve their resilience and ensure business continuity even during disasters.

5.3.17 Media Partnership

In all phases of DM, media plays a major role in the dissemination of information and knowledge. Services of both electronic and print media will be utilized to their respective full potentials. There will be effective media collaboration in the field of community awareness, early warning and dissemination and disasters education.

5.3.18 Disaster Management Plans & SOPs

Disaster Management Plans will be prepared for the State, Districts, State Departments, as per DM ACT 2005. Cities, Municipal Corporations, Towns and Villages will be guided to prepare the DM plans annually, with Action Plans with outcome indicators and monitored. Standard Operating Procedures will be updated and published in Tamil and English.

5.4 Mainstreaming Disaster Risk Reduction in to Developmental Plans and Climate Change Adaptation

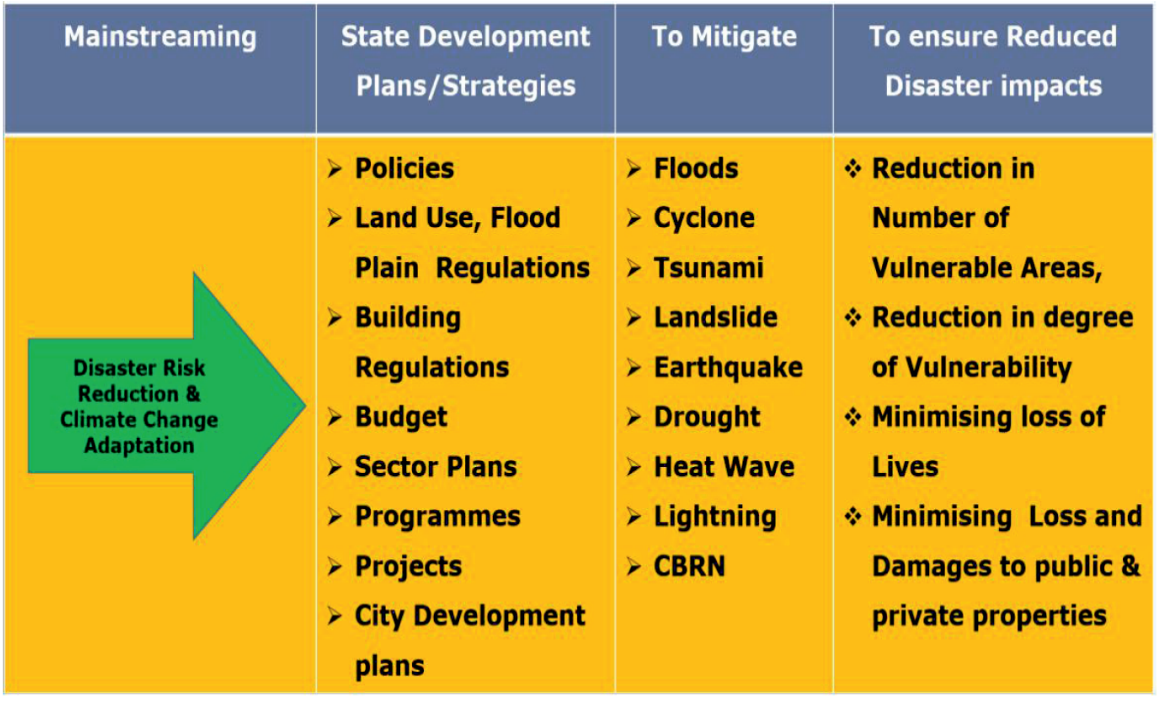
Mainstreaming DRR

The need for mainstreaming disaster risk reduction gains urgency in the context of frequent disasters faced by the State and loss of life of humans and animals and damages to public and private properties and critical infrastructures, vast croplands and livelihood of a significant proportion of population. Mainstreaming disaster risk reduction into the development

planning process essentially means, looking critically at each activity that is being planned, not only from the perspective of reducing the disaster vulnerability of that activity, but also from the perspective of minimizing that activity's potential contribution to hazard-specific vulnerability. To mainstream DRR, appropriate policy interventions and adequate financial allocation will be ensured.

5.4.1 Role of State Executive Committee in Mainstreaming DRR

The State Disaster Management Authority (TNSDMA) has directed that "the State Executive Committee shall prescribe the methods and approaches by which the "Mitigation Projects" proposed by the departments have to be prioritized, and funded from the respective department's budget and monitored. The thrust of mainstreaming will focus on the structural and non-structural interventions under prevention & mitigation for reducing the degree of vulnerability and improve the resilience of vulnerable areas



Mainstreaming Disaster Risk Reduction & Climate Change Adaptation Framework

5.4.2 Disaster Mitigation - Scope for Mainstreaming and DRR & CCA:

An analysis of the ongoing projects/programmes implemented by various line departments, revealed that there is good scope to take up the following disaster risk reduction measures in respective project / programme areas and reduce the degree of vulnerability.

Scope

Mitigation Measures

- Flood protection
- Drainage channels
- Construction of Instream Reservoirs
- Check Dams
- Tail end Regulators
- Measures to minimize the inundation of croplands in Cauvery Delta
- Periodical maintenance of River Mouths
- Prevention of Sea erosion
- Prevention of Sea Water Incursion
- Augmenting Drinking Water
- Establishing Bio shields, Shelter Belts to diffuse the intensify of Cyclone winds and its impacts
- Mitigation of Drought through Technology Demonstrations.
- Land use Regulations, Flood Plain regulations, regulation for coastal ecosystem
- Building Regulations, Retrofitting
- Retaining walls to prevent landslides
- Storm Water drains to channelize rainwater into canals and rivers

The projects & programmes of the following Departments and the regulatory authorities have the scope to reduce the Disaster Risks.

Identified Departments

- Water Resources Department
- Public Works Department
- Highways & Minor Ports Department
- Agriculture & Farmers Welfare Department
- Agricultural Engineering Department
- Horticultural and Plantation Crops Department
- Animal Husbandry Fisheries and Fishermen Welfare Department
- Commissioner of Municipal Administration
- Director of Town Panchayats
- Rural Development and Panchayat Raj Department
- Environment, Climate Change and Forest Department
- Director of Environment
- Housing and Urban Development Department (Housing Board, Slum Clearance Board)
- Chennai Metropolitan Development Authority
- Director of Town and Country Planning

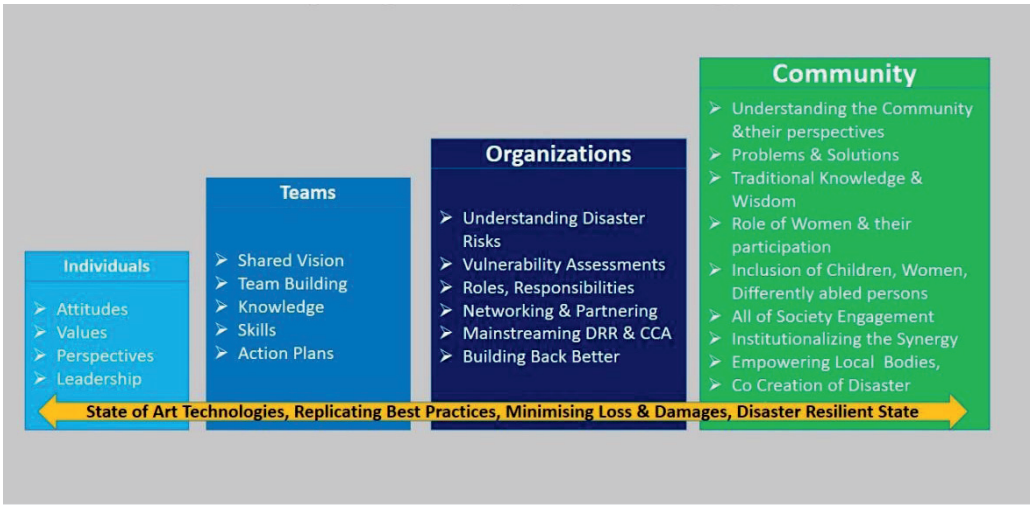
5.5 Capacity Building for Mainstreaming DRR and CCA

There is a strong need for building the capacity of departments and local bodies on the need for mainstreaming disaster risk reduction and climate change adaptation, methodologies to bring in a better understanding and effective compliance, up to the implementation level. Exclusive Capacity Building programmes will be designed and imparted to line departments to ensure that the concept of Mainstreaming DRR becomes a practice without any compromise.

6. Capacity Building

The capacity development for DRR is a continuous process of enhancing the capability of individuals, Teams, Organizations and communities to realize disaster resilience at all levels.

Capacity Building Strategy



The process of capacity building will include elements of human resource Development focused on i.e., individual training, organizational development such as improving the functioning of groups, and the strengthening of organizations. Involving stakeholders through participatory approaches is essential to establish ownership and commitment. The sustainability of capacity building initiatives increases in direct relation to the level of participation and ownership of the participating partners. Mainstreaming of DRR will become incomplete without mainstreaming of capacity building of Revenue and Disaster Management department, various line departments, Urban & Rural local bodies and at Community Based Organizations on DRR...

Changes at one level requires changes at other levels too, as these levels are interdependent. Therefore, the focus on capacity building efforts for DRR will go beyond human resource development while paying enough attention to organizational and institutional concerns. Partnerships and collaborations are integral to institutional capacity building. In institutional capacity development, emphasis will also be on use of state-of the-art technologies to upgrade the existing systems. Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the disaster resilience. Investing in capacity development is the cost-effective way to save lives, prevent or reduce losses and ensure effective recovery and rehabilitation. The capacity development being a continuous process, it will address challenges of staff attrition, transfer and changeovers, task of educating new recruits, keeping pace with technical changes and incorporating the rapid advances in scientific knowledge.

6.1 Institutional Capacity Building

The Capacity Building of Revenue and Disaster Management Department, all line departments, urban and Rural Local Bodies, Community First Responders and Community will be accomplished through the Anna Administrative Staff College (AASC) Chennai, State Institute of Rural Development (SIRD) Chennai, Tamil Nadu Institute of Urban Studies (TNIUS) Coimbatore. The State has established Disaster Management Resource Centres in all the districts for ensuring NGO-CSO co- ordination.

The expertise of NGO-CSO who are willing to partner with capacity development process will be utilized.

6.2 Hybrid Master Trainers

TNSDMA has established a MoU with the Asian Disaster Preparedness Centre (ADPC) Bangkok and Regional Integrated Multi-Hazard Early Warning System Bangkok. Their services will be utilized for providing international exposure. In order to establish a pool of in-house expertise, a set of Hybrid Master Trainers on Incident Response Systems, Emergency response and Crisis Management, Community Based Disaster Risk Management and Post Disaster Need Assessment will be created, who will continuously upgrade the training modules, customize it to various level of audiences, and impart trainings.

6.3 Source of Funds

The Ministry of Home Affairs (DM Division) Government of India have issued the Guidelines for "Preparedness and Capacity Building" post 15th Finance Commission recommendations which entail 10% of the State Disaster Risk Management Fund towards preparedness and Capacity Building.

6.4 Community Volunteers as Local Resource

Community Volunteers at habitation level will be utilized to bridge the gap in the last mile connectivity to take the early warnings and alerts. A well-organized Community First Responder System with divergent skill sets will be developed to lend support to the Village Panchayat and Local bodies, during all phases of Disaster Management and beyond.

7. Disaster Response and Relief

7.1 Approach

The Disaster Response of Government of Tamil Nadu has a compassionate approach to meet the special needs of the vulnerable groups. The integrated, synergized and proactive approach of the existing and the new institutional arrangements to deal with any disaster will be continuously upgraded. This will be made possible through contemporary forecasting and early warning systems, fail-safe communication and pre-emptive deployment of specialized response forces. The Govt has been investing in Community Based Disaster Risk Management (CBDRM) with a strong conviction that a risk-informed and well prepared community improves its coping capacity and remains core strength which becomes better after every disaster event.

7.2 Role of the State Executive Committee (SEC)

The DM Act 2005 has empowered the State Executive Committee to evaluate preparedness at all governmental or non-governmental levels to respond to any threatening disasters situation or disaster and give directions, where necessary, for enhancing such preparedness:

a) coordinate response in the event of any threatening disaster situation or disaster;

b) give directions to any Department of the Government of the State or any other authority or body in the State regarding actions to be taken in response to any threatening disaster situation or disaster;

c) promote general education, awareness and capacity building of the community to understand the multi hazard vulnerability and disaster risks in order to improve their preparedness and coping capacity of the community and involve them in community based disaster risk management.

d) advise, assist and coordinate the activities of the Departments of the Government of the State, District Authorities, statutory bodies and other governmental and non-governmental organizations engaged in disaster management;

e) provide necessary technical assistance and give advice to District Authorities and local authorities for carrying out their functions effectively;

f) advise the State Government regarding all financial matters related to Preparedness, Response, Relief, Restoration, Reconstruction Rehabilitation, Prevention & Mitigation, Research and Study related to disaster management;

g) examine the construction, in any local area in the State and, if it is of the opinion that the standards laid for such construction for the prevention of disaster is not being or has not been followed, shall direct the District Authority or the local authority, as the case may be, to take necessary action to secure compliance of such standards;

h) provide information to the National Authority relating to different aspects of disaster management;

i) lay down, review and update State level response plans and guidelines and ensure that the district level plans are prepared, reviewed and updated; and

j) ensure that communication systems are in order and the disaster management table top exercises, mock drills are carried out periodically; perform such other functions that shall be assigned to it by the State Authority.

7.3 Role of the Nodal and Other State Departments

The Revenue and Disaster Management Department headed by the Commissioner of Revenue Administration and Disaster Management (State Nodal Department) will develop detailed response plans for different types of disasters, and these plans would be incorporated into the State Plan. In the event of disaster or disaster threat, the SEC will coordinate response. To cope effectively with crisis and emergency situations, the department coordinates with the designated early warning Agencies, State Departments. The State Departments like Police, Fire & Rescue, Municipal Administration, Town Panchayats, Rural development, Health, Public Works, Water Resources and others will respond to the command of the Commissioner of Revenue Administration and Disaster Management to respond to any disaster threat.

7.4 Role of State, District and Local Authorities

The Revenue Administration and Disaster Management Department is primarily responsible for monitoring and evaluating any disaster situation and informing the State Executive Committee, National Disaster Management Authority and Ministry of Home Affairs. At the district level, the District Collector has the responsibility for the overall management of disasters. The Commissioner of Greater Chennai Corporation will be responsible for the overall management of disasters in Greater Chennai Corporation areas. All departments of the State Government, including the Police, Fire & Rescue, Municipal Administration, and Town Panchayats, Rural development, Health, Public Works, Water Resources and others work in a coordinated manner under the command of the District Collector during disasters.

7.5 Standard Operating Procedures (SOPs)

In accordance with the National Disaster Management Plan 2019 and State Disaster Management Perspective Plan 2018-30, the Tamil Nadu State Disaster Management Authority has put in place a Standard Operating Procedures (SOP) for management of Natural Disasters. The SOP includes guidelines for search and rescue operations, medical assistance, mass casualty management, evacuation, restoration of essential services and disaster communications. Food, drinking water, sanitation, clothes and management of relief camp and other important activities. A responsibility matrix included in the State Disaster Management Plan provides the roles and responsibilities of all departments, local bodies involved in disaster management.

7.6 Incident Response System (IRS)

The management of response in disasters requires the Government, Community, civil society and other stakeholders to carry out a large number of tasks. The activities involved in response management would depend on the nature and type of disaster. The Government of Tamil Nadu is adopting Incident Response System (IRS) in the State to ensure the unification of efforts of all the stakeholders to ensure immediate response during disasters to protect people & their properties. The Incident Response System provides a systematic, proactive approach guiding the concerned departments and agencies at all levels of Government, and Non-Governmental organizations to work seamlessly in disaster situations. The aim is not only to minimize loss of life

and property but also strengthen and standardize the disaster response mechanism in the State. The Chief Secretary to Government is the overall Responsible Officer and is assisted by the Revenue and Disaster Management Department at the secretariat level and by the Commissioner of Revenue Administration / State Relief Commissioner who is the Incident Commander of the Incident Response System at the State level. The Director, Disaster Management is the Deputy Incident Commander. During Disasters, all Line Departments function under the overall guidance of the Incident Commander. The District Collector is the Incident Commander at District level. The State will notify the Incident Response System with roles and responsibilities of the designated officials and different sections of the Incident Response of the System. Designed Table Top Exercises, followed by scenario based Mock Drills will be held to familiarize the IRS System.

7.7 Co-ordination with NDRF, Armed Forces

7.7.1 National Disaster Response Force (NDRF)

For the purpose of a specialized response to a threatening disaster situation or a disaster that's happening, the National Disaster Management Act has mandated the constitution of a National Disaster Response Force (NDRF). These battalions are positioned at different needy locations across the Country. In Tamil Nadu, the NDRF is located at Arakonam, Ranipet District and Chennai, which maintains a close liaison with the designated State Governments and are available in the event of any disaster situation. The services of NDRF can be requested by the District Collector / Commissioner of Revenue Administration in the event of any disaster situation.

7.7.2 Coast Guard

The Indian Coast Guard protects India's maritime interests and enforces maritime law, with jurisdiction over the territorial waters of India, including its contiguous zone and exclusive economic zone. The Coast Guard works in close cooperation with the Indian Navy, the Department of Fisheries, the Department of Revenue (Customs) and the Central and State police forces. There are currently 42 Coast Guard stations, which have been established along the coastline of the country. The state of Tamil Nadu comes under Eastern Region (E) CGHQ Chennai. The Coast Guard is the central co- coordinating Authority for managing Oil Spills as per the Coast Guard Act, 1978.

7.7.3 Armed Forces (AF)

The role of armed forces in disaster management is very important. The Armed forces have historically played a major role in emergency support functions and this includes search and rescue operations, health and medical facilities and transportation - especially in the immediate aftermath of a disaster. Armed Forces are deployed when the State Government need help due to the magnitude of the disaster. The request is made by the Secretary Public Department.

7.8 Community First Responders

The Community first responders are trained to make the communities strong and vibrant in proactively tackling the disasters. Community participation at grass root level is enabled through enrolment of able-bodied volunteers, with skills of swimming and climbing, as first responders. First responder teams are formed in areas of very high and high vulnerability. The first responders are trained by Fire services / TNDRF and Indian Red Cross society. Mobile teams of First Responders and Snake Catchers at Block / Taluk / Sub-Divisional and District levels are formed for deployment based on need.

The Government of Tamil Nadu is keen in raising awareness (about hazards, risks and disaster response) through drills (annual drills for disaster response in the community) equipping the community with minimum resources (first aid kit, extrication equipment, lifejackets, lifebuoys, rope etc. The State Government is keen to build a force of more than 2,00,000 community volunteers at least two from each of the habitations.

Aapda Mitra

NDMA has been implementing a central sector scheme titled Aapda Mitra since May 2016 with a focus on training in disaster response in selected 30 most flood prone districts of country. During this phase 200 volunteers were trained in Chennai District. The Aapda Mitra scheme was upscaled for imparting training to 5500 community volunteers in 16 disaster prone districts in Tamil Nadu in 2020. The Government of Tamil Nadu is utilising the scheme to develop skills of community volunteers.

7.9 Evacuation Search and Rescue

Disaster mortalities can be reduced considerably if contingency plans are in place regarding quick assessment of evacuation needs, identification of temporary shelters, determination of evacuation routes, mobilization of transportation arrangements, preparation of checklists etc.

The State has prepared vulnerability area map and detailed contingency plans for the vulnerable areas. Searching and rescuing for people marooned in flooded areas or trapped in collapsed structures or debris is a specialized job, requiring equipment, training, drills etc. The Tamil Nadu State Disaster Response Force, the Tamil Nadu Fire and Rescue Services have been well equipped and trained to handle the evacuation, search and rescue operations actively aided by the community first responders.

7.10 Emergency Medical Response

The immediate impact of disasters is the surge of persons of different age groups inflicted with severe and minor injuries for treatment in hospitals. Many such injuries may require medical attention even before hospitalization. This requires operational readiness of medical response teams, availability of ambulance, helicopter -ambulance and other logistic arrangements.

The Govt of Tamil Nadu has issued guidelines for emergency response, trained doctors and para-medical staff on emergency health management and augmented strength of ambulance services by introducing 108 Emergency Ambulance Service. The Department of Public Health also has the practise of post disaster surveillance of diseases.

7.11 Emergency Support Services

Disaster response is not the job of responders alone. It requires performance of Emergency Support Functions (ESF) by line departments and agencies, such as restoration of electricity, water supply and sanitation systems, telecommunication, road and transportation networks, supply chains of food and other essential items.

The State has identified primary and secondary agencies and functionaries responsible for the performance of these functions, and outlined

the process and timeline to be followed for the same. The plans have also been provided for advance procurement of materials required for the performance of such functions.

7.12 Animal Care

Veterinary care for disaster affected livestock and animals, including wild animals and arrangements for their evacuation, shelter, fodder / feed etc. are important for rehabilitation of animals. The Govt of Tamil Nadu has created exclusive animal shelters in Coastal districts which face the wrath of cyclones, storm surges and flooding of low-lying areas. Tamil Nadu Veterinary and Animal Sciences University (TANUVAS) has developed Tamil Nadu State Animal Disaster Management Standard Operating Procedures for animal care during disasters. This includes procurement and supply of adequate stock of fodder, animal shelters and fodder banks in high altitude grazing areas, availability of essential drugs for veterinary care and uninterrupted movements of wild animals through identified corridors in sanctuaries, etc. This TNSADM-SOP applies to the entire State. The State Department of Animal Husbandry and Veterinary Services will be the major implementing agency with the support from Tamil Nadu Veterinary and Animal Sciences University (TANUVAS), Tamil Nadu Co-operative Milk Marketing Federation (TNCMMF), Tamil Nadu Livestock Development Agency (TNLDA) and NGOs, etc.,

The TNSADM-SOP aims to reduce the risk and manage disasters. This lays down the operational procedures which would apply to emergency situations like drought, floods, cyclones, earthquake and other man-made disasters.

7.13 Protection of Women and Children

Vulnerable women and children often become victims of trafficking and sexual abuse after disasters. Tamil Nadu has put in place a surveillance system for preventing such abuses and protecting them. The Social Defence Department of Tamil Nadu is focusing surveillance in places where vulnerable women and children become victims of trafficking and child abuse.

With a view to provide police assistance during any emergency the Government of Tamil Nadu have launched the 'Kaaval Uthavi' app. The app is containing sixty features that are used to send an emergency alert to the police

control room. By pressing the emergency red button, the user's live location will be shared with the control room. The user can also identify the nearest police station/patrol vehicle to avail their assistance.

7.14 Disposal of Dead Bodies

In the event of mass casualties in disasters, proper collection, preservation, storage, identification and disposal of dead bodies according to the religious customs and rites of the deceased assume importance as there are serious legal and ethical issues to consider. The NDMA guidelines on the subject is being followed by the State.

7.15 Disposal of Animal Carcasses

Proper removal and disposal of animal carcasses at pre-identified sites is important to ensure that no health hazards are created, for the staff as well as the general public. NDMA has also issued guidelines to be followed by the States. The NDMA guidelines on the subject is being followed by the urban/ Rural Local Bodies in the State.

7.16 Disposal of Debris

Major disasters like earthquakes and cyclones cause widespread destruction of built-up structures like houses and infrastructure, as well as natural assets like trees and plantations. Removal and disposal of construction debris and fallen trees have been problematic in many urban areas, during Vardah and Gaja Cyclones where open sites were not available so easily unless these are pre-identified. Much of these materials can also be recycled. Municipal Corporations and local authorities have a system of debris disposal which is not geared to handle large debris after disasters. Guidelines have been issued for safe disposal of debris to the local bodies.

7.17 Information and Media Partnership

During disaster situation, the dissemination of accurate information through electronic and print media is very important. Regular press briefing by trained disaster management officials is essential. At all levels, training in information management and accurate reporting will be provided by TNSDMA.

7.18 Relief

The National Policy on Disaster Management 2009 has laid down the overarching framework of disaster relief and rehabilitation in the following words: “Relief is no longer perceived only as gratuitous assistance or provision of emergency relief supplies on time. It is on the contrary, viewed as an overarching system of facilitation of assistance to the victims of disaster for their rehabilitation in States and ensuring social safety and security of the affected persons.” The relief needs to be prompt, adequate and of approved standards. Based on this approach the Policy has outlined the five main components (a) setting up of temporary relief camps; (b) management of relief camps; (c) review of standards of relief as provided in the Act; (d) temporary livelihood options and socio-economic rehabilitation; and (e) provision of intermediate shelters when reconstruction of houses would be a long drawn out process.

7.19 Minimum Standards of Relief

Taking into consideration the National Policy and the National Guidelines on Minimum Standards of Relief, the Ministry of Home Affairs has notified the 'list of items and norms of assistance' for relief and rehabilitation that can be provided by the State Governments under State Disaster Response Fund (SDRF) and National Disaster Response Fund (NDRF). These norms are to be revised every five years, synchronizing with the fiscal cycles of the Finance Commission. There are two items related to relief and four to the economic rehabilitation of the victims. The remaining items concern disaster response and reconstruction. The norms have been set in monetary terms, taking into account the recommendations of NDMA, the Finance Commission and the current price index.

Section 19 of the DM Act 2005 has provided that State Disaster Management Authorities may lay down detailed guidelines for providing standards of relief to persons affected by disaster in the State, but such standards shall in no case be less than the minimum standards in the guidelines laid down by the National Authority. The State has adopted the norms prescribed by the Minimum Standards of Relief.

7.20 Ex-gratia Relief

The Govt of Tamil Nadu provides ex-gratia relief as per SDRF norms, and additional ex-gratia is also sanctioned under Chief Minister's Public Relief Fund on a case to case basis.

7.21 Relief logistics and Supply Chain Management

Timely procurement, packaging, transportation, storage and distribution of relief materials immediately, as the need arises, are extremely important for efficient management of humanitarian assistance and disaster relief. Relief Manuals/ Relief Codes of the States have laid down detailed guidelines and operating procedures for relief logistics and supply chain management. Tamil Nadu has a well developed system of storing buffer stock of essential commodities to serve inaccessible and vulnerable areas by Tamil Nadu Civil Supplies Corporation. Based on the Standard Operating Procedure (SOP) on channelizing Domestic Aid/ Humanitarian Assistance for disaster relief and recovery to be issued by NDMA, Govt of Tamil Nadu will issue State specific SOP.

7.22 Food and Essential Supplies

Supply of food including cooked food and other essential items to the affected people is one of the major functions of disaster relief. This involves procurement, storage, transportation and distribution of food in a transparent and accountable manner. It further involves setting up community kitchens in the affected areas. The Revenue Department works in close coordination with the Civil Supplies and Consumer Protection Department and the State Civil Supplies Corporation, which play a key role in procurement, storage and distribution of grains.

The Government of Tamil Nadu has issued instructions that cooked foods shall be distributed in such a way that every child gets minimum calories of 1700 and every adult gets 2400 calories. Standards of hygiene to be maintained in community kitchens have also been prescribed. The State has also issued instructions that milk shall be provided to children and lactating mothers.

7.23 Drinking Water, Dewatering and Sanitation

As per the minimum standards of relief, the supply of a minimum of three litres of drinking water per person per day has to be provided to inmates of relief camps. Similar quantities of water have to also be ensured to disaster-affected people not staying in camps. This is extremely important to save lives from dehydration and also to prevent water-borne diseases.

This is challenging in situations of severe drought, when sources dry up as well as in acute floods, wherein sources get inundated with contaminated water. In chronically drought-affected places in water has to be transported from distant sources by trains and trucks and supplied to the affected population as well as cattle. During floods water has to be treated and purified and often supplied in bottles and sachets when saline water ingress in coastal and deltaic regions make all available sources including ground water unfit for human consumption.

Providing sanitation facilities to men and women, particularly those in relief camps, is another important aspect of public health. Minimum standards of one toilet per 30 persons, separate toilets and bathing area for men and women, 15 litres water for bathing and washing, diapers for children and dignity kits of women with sanitary napkins and disposable paper bags and solid waste management have all been prescribed in the Standard Operating Procedures.

Dewatering of flooded areas carried out in urban pockets that have no outlets is also critical for public health as well as safety of lives and structures.

7.24 Health and Mental Care

Health care of disaster affected people is an important aspect of relief and rehabilitation. Minimum standards of health care of pregnant and lactating mothers, neo-natal, aged and those suffering from chronic diseases have been put in place as these people suffer from twin stress during disasters. Mental health care of the affected people suffering from Post-Traumatic Stress Disorder (PTSD) is also crucial at the initial stage for diagnosis and treatment.

Guidelines / instructions for health care of disaster-affected people, particularly for those in staying in relief camps have been issued. This includes steps to be taken for preventing the spreading of communicable diseases, visits of mobile medical teams to relief camps, supply of essential drugs in camps,

transportation of patients to hospitals requiring consultations with specialists, arrangements for safe delivery of pregnant women, counselling of people suffering from trauma and depression etc.

7.25 Management of Relief Camps

Provision of basic shelter, food, water and health care does not solve the problems of people in temporary relief camps, as there are many other issues, such as privacy, safety, security, gender-based violence etc. that should also be addressed. This includes identification of buildings for being used as a temporary relief camp, construction of pre-fabricated shelters or tents when no suitable buildings are available, provision of minimum of covered area required per person, provision of separate toilets and bathing space for men and women, arrangements for lighting with power back up facilities, special arrangements for differently-abled, old and medically serious patients, provision of privacy for lactating mothers and children friendly space.

7.26 Setting up of Temporary Relief Camps

DDMAs, mainly in recurring disaster-prone areas, will identify locations for building up temporary camps. During the pre-disaster phase, agencies will be identified to deliver the necessary supplies. The use of educational institution premises to set up relief camps should be avoided.

The temporary relief camps shall ensure adequate drinking water and bathing facilities, as well as sanitation and essential health care amenities. Wherever feasible, special task forces will be formed from among the disaster-affected families to explore the possibility of providing food through community kitchens and education through the restoration of Schools and Anganwadis. As part of uniform humanitarian governance standards, efficient governance systems such as entitlement cards, laminated identification cards, have to be distributed by the respective DDMAs.

7.27 Provision of Intermediate Shelters

In the event of a devastating disaster, where extreme weather conditions can be life-threatening, or when the period of stay in temporary shelters is likely to be long and uncertain, the construction of intermediate shelters with suitable sanitary facilities will be undertaken to ensure that the affected people have a reasonable quality of life.

8. Recovery and Reconstruction

8.1 Sendai Framework - Building Back Better

The Sendai Framework, adopted by UN member States in March 2015, as a blueprint for reducing disaster losses places special emphasis on ensuring that the capacities are in place for effective recovery. The principle of 'Build Back Better' is generally implicit to use the disaster as a trigger to create more resilient nations and societies than before.

8.2 Tamil Nadu Experience of Building Back Better

Tamil Nadu is one of the few States that addresses the long-term concerns of the Community by not only building resilient infrastructures but also by improving access to services, imparting new skills, strengthening livelihood security and expanding services with well-coordinated actions as part of the Build Back Better strategies. The process of “Building Back Better” starts with the commitment to deliver the best with the available resources and also by accessing international funding & implementing the Projects within specified time limits. The Build Back Better strategies adopted by Tamil Nadu instill confidence in the communities which were psychologically traumatized and economically devastated due to unprecedented disasters. The activities and measures initiated under build back better strategies focus on prevention and mitigation of disaster risks.

As a part of build back better strategies and experience gained during the past disasters, Government of Tamil Nadu undertook need assessment in a post-disaster scenario, taking into account not only the damages that have been caused to the infrastructure, losses incurred by the community but also design interventions needed through a detailed assessment carried out by different agencies encompassing Housing, Industry, Public Infrastructure, Health, Agriculture and – other sectors. Based on the needs assessment, projects are undertaken with a special focus on risk-proofing the housing infrastructure of the vulnerable sections and enhancing livelihood opportunities and resilience of the community. In addition, the infrastructure of different sectors is built back better. The core philosophy principle of Building Back Better is deeply ingrained in all the project designs and interventions.

8.3 15th Finance Commission - Paradigm Shift in Recovery and Reconstruction

As per the recommendations of 15th Finance Commission, "Recovery presents an opportunity to get development activities off the ground as governments and communities spend recovery assistance on rebuilding infrastructure and houses, reviving livelihoods and improving civic services. The present near-total expenditure focus on response and relief does not leave any resources left for recovery. Without recovery, development gets seriously affected, which deepens the incidence of poverty and backwardness.

Based on a clear appreciation of the pressing needs to rebuild assets and Livelihoods, the 15th Finance Commission has recommended setting up a Recovery and Reconstruction Facility, both within the SDRF and NDRF, and suggested that 30 per cent of the resources available with these two funds be earmarked for this purpose.

8.4 Loss and Damage Assessment

The conventional assessment of loss and damage after disaster events will be replaced with Geo Spatial disaster loss and damage assessment system. The new method not only expedites the assessment but also improves the accuracy and factual correctness at granular scale with geo tagging of photographic evidence. It is expected that the new method also will enable preparation of memorandums faster with the inputs collected through a Mobile App. The Multi Sector officials will be trained to use the mobile app with ease.

8.5 Post Disaster Need Assessment (PDNA)

Post Disaster Need Assessment (PDNA) planning process, the formulation of Reconstruction and Rehabilitation will be initiated by TNSDMA with the objectives to –

- Provide indicative steps to facilitate a sequenced, prioritized and flexible Multisectoral planning guide for recovery programmes.
- Provide guidance for organizing post-disaster recovery in accordance with the damages, losses and needs following a disaster event.

- Plan and implement a post-disaster recovery programme in an inclusive and transparent manner (including financial planning and institutional Arrangements).
- Recommend policies, strategies, areas of technical assistance and monitoring support needed for recovery programming.
- Optimise the use of national and state flagship programmes, other schemes and resources for implementing recovery. Provide guidance to reduce future disaster risks and allow for further opportunities for long-term sustainable development.

8.6 Short, Medium- and Long-term Recovery Strategies:

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

8.7 Repair, Reconstruction and Relocation Strategies

The State as per the existing policy provides assistance to the affected citizen to repair and restore damaged houses and dwellings. Respective departments carry out repair and restoration of the related infrastructure, facilities, services, etc., at the earliest so that the essential services can be resumed to bring the life back to normalcy. The government shall also coordinate with national and international agencies and other government bodies to prioritize restoration of critical infrastructure like health, temporary housing, lifesaving facilities, critical government infrastructure, etc.

8.8 Relocation

The State Government believes that need-based considerations and not extraneous factors drive the relocation of people. The local authorities, in consultation with the affected persons and under the guidance of TNSDMA, shall determine relocation needs taking into account criteria relevant to the nature of the calamity and the extent of damage. Relocation efforts will include

activities like:

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

Wherever necessary while planning on site reconstruction or relocation, adequate care will be taken to provide the community with all basic amenities in close vicinity of the reconstruction site. This leads to inclusive and holistic reconstruction process.

Some of the basic amenities are as follows:

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

8.9 Rehabilitation Planning and Strategy (Socio–Cultural, Psychological, Economic and Environmental Issues)

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

8.10 Linking Recovery with Safe Development

The Govt of Tamil Nadu will continue to revamp the socio-economic recovery with safe and inclusive development. This approach will ensure the needs of various socially and economically vulnerable groups like that of women, adolescent girls, old age persons, person with disabilities, children, destitute, below poverty line population, scheduled castes, scheduled tribes, particularly vulnerable tribal groups, etc. The Govt will continue to support and strengthen Housing, Drinking water, Sanitary facilities, inputs for Agriculture/Horticulture in the form of Technology, Farm implements and Machinery, Seeds fertilisers, Storage processing marketing livelihood opportunities , Education, Health care and required training, skill, tools and equipment to restart the previous or new livelihood options as part of post disaster recovery.

8.11 Psychological Rehabilitation

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

8.12 Environmental Rehabilitation

Environmental impacts of disasters can result in serious risk to life and livelihoods if not addressed. Environmental emergencies like uncontrolled, unplanned or accidental release of a substance into the environment not only impact human life in many ways but also damage environment to great extent which may be impossible or may take years to restore to its original position. Hence, the Government of Tamil Nadu along with other concerned department will ensure measures to decontaminate the affected elements like air, river, water bodies, forests, etc., and to revive the eco-system services.

8.13 Build Back Better approach in recovery, rehabilitation and Reconstruction

As a part of build back better strategies and experience gained during

the past disasters, the core philosophical principle of Building Back Better is deeply ingrained in all the project designs and interventions. The World Bank assisted Coastal Disaster Risk Reduction Project, Tamil Nadu Irrigated Agriculture Modernization, Dams Rehabilitation and Improvement Project, ADB assisted Climate Adaptation in Vennar Sub-basin in Cauvery Delta Project have imbibed the Build Back Better principles. In the Highways Sector, a practice of providing Box Type Culverts (which allows smooth and speedy flow of flood waters) in place of Pipe Culverts (which get clogged often and hinder the flow of water) is followed.

8.14 Services required during recovery process:

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

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

The Department of Social Welfare, Government of Tamil Nadu, will take extensive steps for bringing the affected villagers out of the trauma and depression. Psychosocial support will be provided with the support of experts from Government and Non-Governmental Organisations. Also, the Anganwadi workers are trained to provide counselling services to the rural women in trauma. Institutes like NIMHANS, will extend the capacity building support, willing community First Responders are proposed to be trained for providing psychosocial support.

8.15 Livelihood Restoration:

People affected by disasters, more often than not, lose their livelihood. Relief employment under MNREGA is one of the several avenues for providing alternate source of livelihood to the affected people. During the drought of 2017, as a measure to mitigate the effects of drought situation, and to improve livelihood of the rural mass, the number of days of employment provided to a family was increased from 100 to 150 days. As part of the coastal disaster risk reduction and tsunami rehabilitation strategies Government has launched special programmes for enhancing livelihood opportunities for the vulnerable poor.

8.16 Coordination with NGO-CSO for Relief Efforts:

When a natural calamity of extremely severe in terms of intensity and extent strikes, lot of Non-State Actors such as national, international agencies and even foreign nationals pour in relief material and assistance. Special arrangements are made to coordinate with multiple agencies to ensure that the relief so obtained reaches all the needy in the most transparent manner. The NGOs co-ordination centres established at State & Districts, the Donors and Seekers platform will render their services.

8.17 Institutional Mechanism:

The Commissioner of Revenue Administration and State Relief Commissioner with the support of DDMAs ensures smooth distribution of relief material, undertakes all activities relating to Disaster Management and Mitigation besides managing relief and rehabilitation activities of all the disaster in the State. At the district level, the District Collector has the responsibility for the overall management of disasters (The Commissioner of Greater Chennai Corporation will be responsible for the overall management of disasters in Chennai Corporation areas). All departments of the State Government, including the Police, Fire and Rescue services, Urban and Rural Local Bodies, Health, Public Works, Irrigation, etc., work in a coordinated manner under the leadership of the District Collector during disasters. In the Greater Chennai Corporation areas the Municipal body plays a major role.

8.18 Restoration of Damaged Cultural Heritage Sites, their Precincts and Museums

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

8.19 Way Forward

The Ministry of Home Affairs is expected to approve the Guidelines for Recovery and Reconstruction. Based on the guidelines the State will take up Recovery and Reconstruction Programmes on a priority basis. According to the 15th Finance Commission Report "Urban flooding requires an approach which brings together urban planning, ecological conservation and disaster management together. In respect of riverine floods." "To reduce the annual flood disasters caused by regular river erosion, major capital works are required for proper upstream river basin management, with gestation spreading over ten to fifteen years. These cannot be accommodated through Finance Commission awards. Therefore, we are persuaded to recommend that such projects should be considered national priority projects for execution. Only such holistic projects can help address flood mitigation properly. A piecemeal approach will simply witness yearly washing away of river embankments." Due to the inadequate support from National/State Disaster Risk Management Fund, the major projects for Recovery, Reconstruction and Rehabilitation will be taken up with the funding support of International Funding Agencies.

9. Knowledge Management

9.1 Approach

Sendai Framework for Disaster Risk Reduction 2015–2030 addresses Knowledge-related issues and offers the opportunity to highlight the critical role of knowledge in disaster risk reduction. Knowledge Management principles can be roped for situational awareness, sensitization, and decision-making in disaster management practices. As a strategic approach to achieving disaster management objectives, Knowledge management can play a valuable role in leveraging existing Knowledge and converting new knowledge into action. The Govt of Tamil Nadu has taken the initiative of networking the domains of disaster risk reduction, knowledge management, to address the perils encountered by the vulnerable sections of society.

9.2 Advisory Committee

The TNSDMA has constituted an Advisory Committee consisting of experts in the field of disaster management and having practical experience of disaster management to make recommendations on different aspects of disaster management. The Advisory Committee will be regrouped to evolve disaster specific strategies.

9.3 Partnership with Knowledge Institutes

9.3.1 Partnership with Scientific and Research Institutes

The TNSDMA has established partnership with Scientific, Research, and institutions like Centre for Climate change and Disaster Management Anna University, Institute of Remote Sensing Anna University, Indian Institute of Technology -Madras, National Centre for Coastal Research, and National Centre for Sustainable Coastal Management Tamil Nadu Agricultural University for taking up studies relating to various aspects of disaster management.

9.3.2 Institutional Partnerships

On the other hand partnership with Indian Institute of Tropical Meteorology, IITM, Pune has been established. Partnership with Indian Meteorological Department, National Centre for Seismology, ISRO

Organizations like National Remote Sensing Centre, Space Application Centre Ahmedabad, Geological Survey of India, Satish Dhawan Space Centre SHAR (SDSC SHAR), Sriharikota, will be established.

9.3.3 Partnership with Academic Institutions

The TNSDMA will collaborate and bring together academic institutions at state level, Interstate Level and International levels. These institutions will form the knowledge repository in DM, and also strive to enhance the knowledge base by introducing Disaster Management Curriculum in their academic stream.

9.3.4 Partnership with Intergovernmental Organisation

TNSDMA has established a MoU with intergovernmental organizations registered with United Nations like Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES), Bangkok and Asian Disaster Preparedness Centre Bangkok to work on Multi Hazard Early Warning Systems and Institutional Capacity Building.

9.3.5 Partnership with Training Institutions

TNSDMA is already harnessing the potentials of departmental training institutions, and the Anna Administrative Staff College, State Institute of Rural Development, Tamil Nadu Institute of Urban Studies. With the help of these institutions, a Centre of Excellence for Disaster Management Training and Planning will be established.

9.4 Platform for Knowledge sharing

TNSDMA organized a Conclave on Disaster Management in collaboration with the National Disaster Management Authority in March 2022, which brought together 10 Coastal States and Union Territories. This provided an opportunity to understand the dimensions of disaster issues and mutual cross learning from each other.

The TNSDMA will establish a State Platform for Disaster Risk Reduction which will bring all the above partners and NGO-CSO Organizations to create a Knowledge exchange Forum.

9.5 Documentation of Best Practices and Research

In the immediate aftermath of any disaster, field studies will be carried out, with the help of experts, as an institutional measure. These studies will concentrate on identifying gaps in the existing prevention and mitigation measures and also evaluate the status of preparedness and response. Similarly, the lessons of past disasters will also be compiled and documented. The recovery and reconstruction process will also be analyzed for further refining the DM processes and training needs. With the help of experts, SIDM will develop a reference boo k for the development of case studies and documentation of best practices in a professional manner. This knowledge will be disseminated to all concerned within the country also shared with International organizations.

9.6 Research and Development

A primary concern of future effort in these areas will be the identification of broad research needs in respect of different hazards in various parts of the state and identifying demand driven research programmes. Regional and international collaboration needs to be encouraged.

9.7 Institutional Arrangements for Research

A solid foundation of leading R&D activities, which provides sound and state-of-the-art science and technological option in user friendly manner, is needed to support the whole of DM architecture. A proactive strategy will be recognised to improve mutual reinforcement and synergy among the various organisations and institutions engaged in the field of Disaster Management.

Encouragement of such activities will promote the pooling and sharing of perspectives, information, and expertise. It will be facilitated and addressed by a standing mechanism on the level of state to identify trans-disciplinary concerns via the integration of the talent pool groups. Close collaboration with state ministries and departments of agriculture, environment & forests, health, industry, science & technology, and academic institutions in the State will be encouraged. Internship will be provided for Research Scholars in the SDMA and DDMAs. The young professionals will be engaged as is the practice in NDMA to work on specific themes and organizing Seminars, Workshops on Disaster Management themes and to take up studies on specific topics of necessity.

9.8 Identification of Needs and Promotion of research

The TNSDMA will identify broad research needs in disaster risk reduction, as well as cross-cutting themes such as technological and man-made disasters. Depending on their knowledge base expertise, they will also identify research partners/agencies/groups. The focus will be on climate adaptation, ICT based tools which aid in Communication.

In addition to natural disasters, research on cross-cutting themes such as technological and man-made disasters will be promoted. To investigate the short-term and long-term impacts of these disasters, research and development in areas like micro-zonation and scenario development based on simulation studies will be promoted.

Abbreviations

AASC	-	Anna Administrative Staff College
AF	-	Armed Forces
CSR	-	Corporate Social Responsibility
CWC	-	Center Water Commission
DDMA	-	District Disaster Management Authority
DEOC	-	District Emergency Operation Center
DM	-	Disaster Management
DSS	-	Decision-Making Support System
GIS	-	Geographic Information System
GPS	-	Global Positioning System
GSI	-	Geological Survey of India
ICT	-	Information Communication and Technologies
IIT-M	-	Indian Institute of Technology – Madras
IMD	-	Indian Meteorological Department
INCOIS	-	Indian National Centre for Ocean Information Services
IRS	-	Incident Response System
MOs	-	Ministry of Earth Sciences
MHA	-	Ministry of Home Affairs
NCC	-	National Cadet Corps
NCCR	-	National Center for Coastal Research
NCSCM	-	National Centre for Sustainable Coastal Management
NDMA	-	National Disaster Management Authority
NEOC	-	National Emergency Operations Center

NGO	-	Non-Governmental Organization
NIDM	-	National Institute of Disaster Management
NIOT	-	National Institute of Ocean Technology
NSS	-	National Service Scheme
NYKS	-	Nehru Yuva Kendra Sanghatan
PACC	-	Paris Agreement on Climate Change
POL	-	Petroleum, Oil, & Lubricants
PPP	-	Public-Private Partnership
PRI	-	Panchayat Raj Institutions
PWD	-	Public Works Department
R&D	-	Research and Development
RS	-	Remote Sensing
SDG	-	Sustainable Development Goal
SDMC	-	State Disaster Management Cell
SDRF	-	State Disaster Response Force
SEC	-	State Executive Committee
SEOC	-	State Emergency Operation Center
SF&DRR	-	Sendai Framework for Disaster Risk Reduction
SOP	-	Standard Operating Procedures
TN	-	Tamil Nadu
TNAU	-	Tamil Nadu Agricultural University
TNDRRA	-	Tamil Nadu Disaster Risk Reduction Agency
TNSDMP	-	Tamil Nadu State Disaster Management Policy
ULB	-	Urban Local Body
UNDRR	-	United Nation Office for Disaster Risk Reduction

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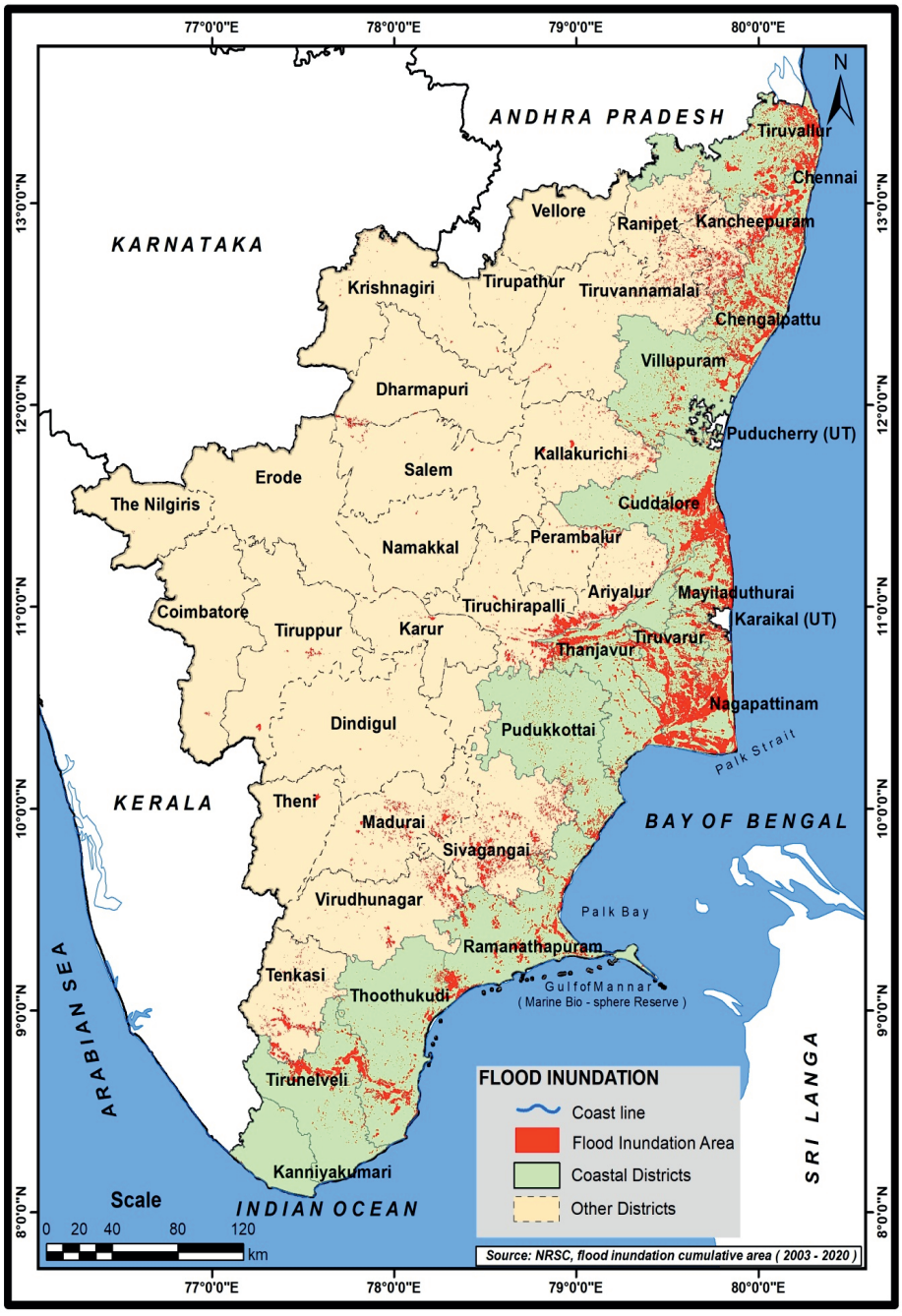
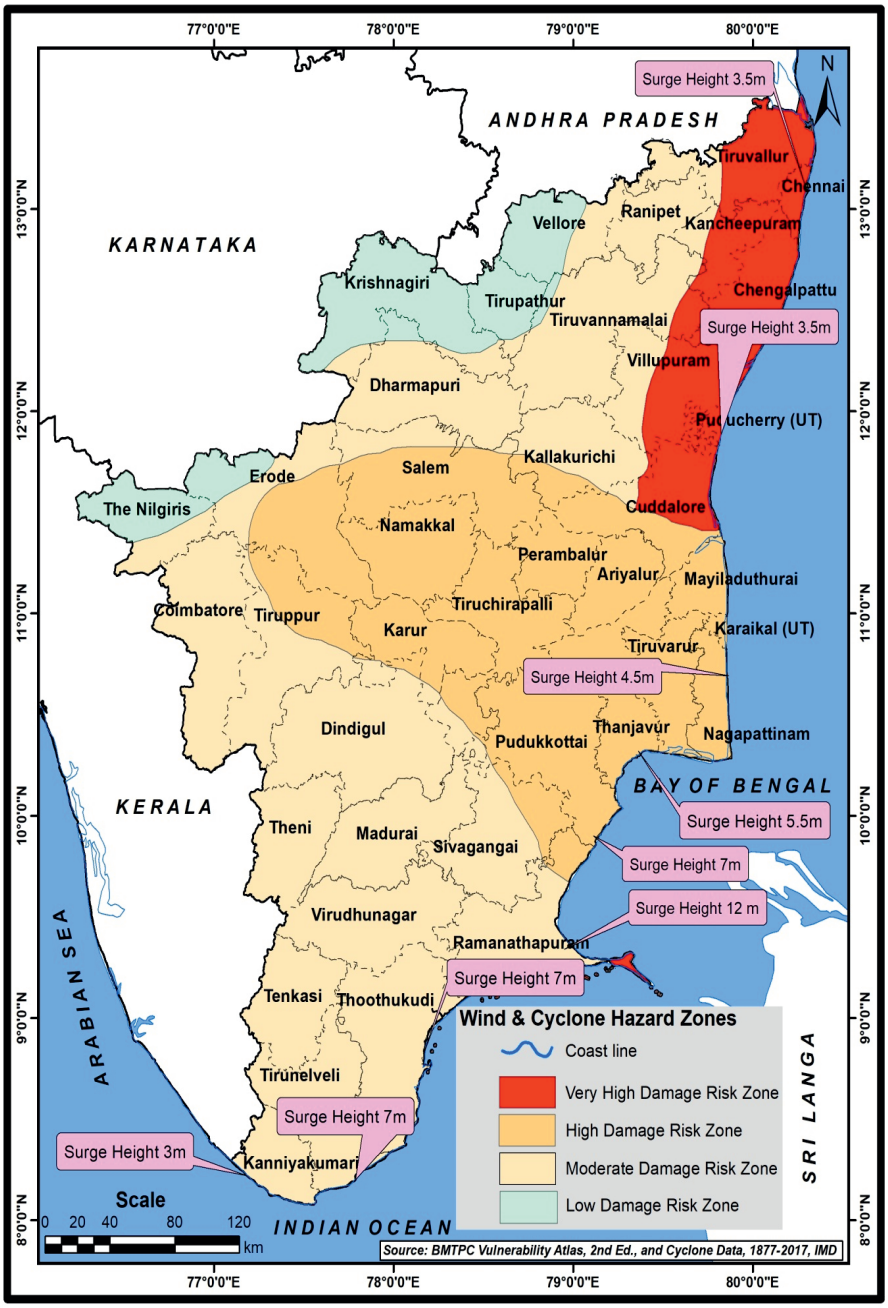
Annexure

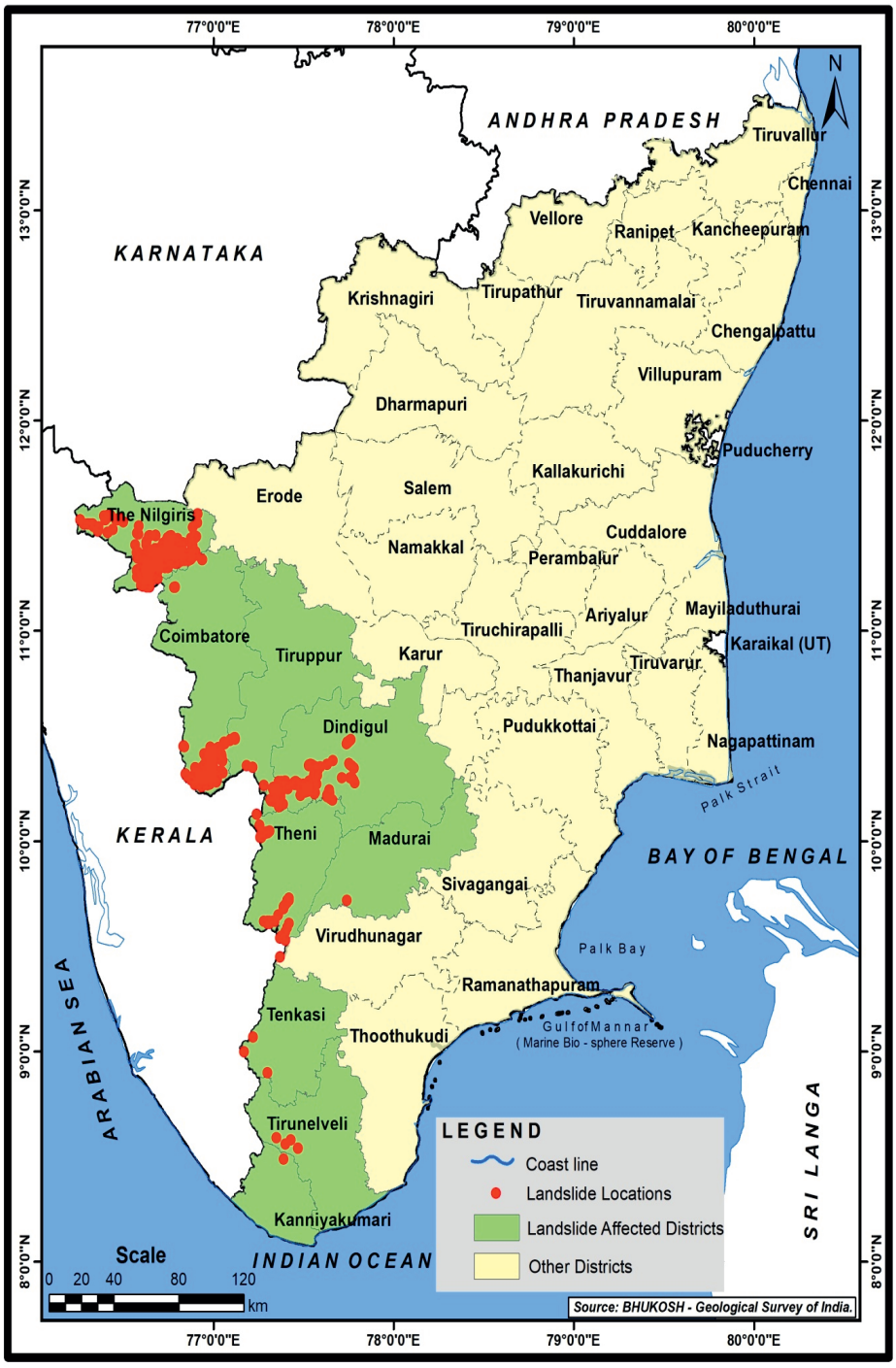
Map 1: Flood Zones in Tamil Nadu



Map 2: Wind and Cyclone Zones in Tamil Nadu



Map 3: Landslide Affected Areas in Tamil Nadu



Map 4: Seismic Damage Risk Zones in Tamil Nadu