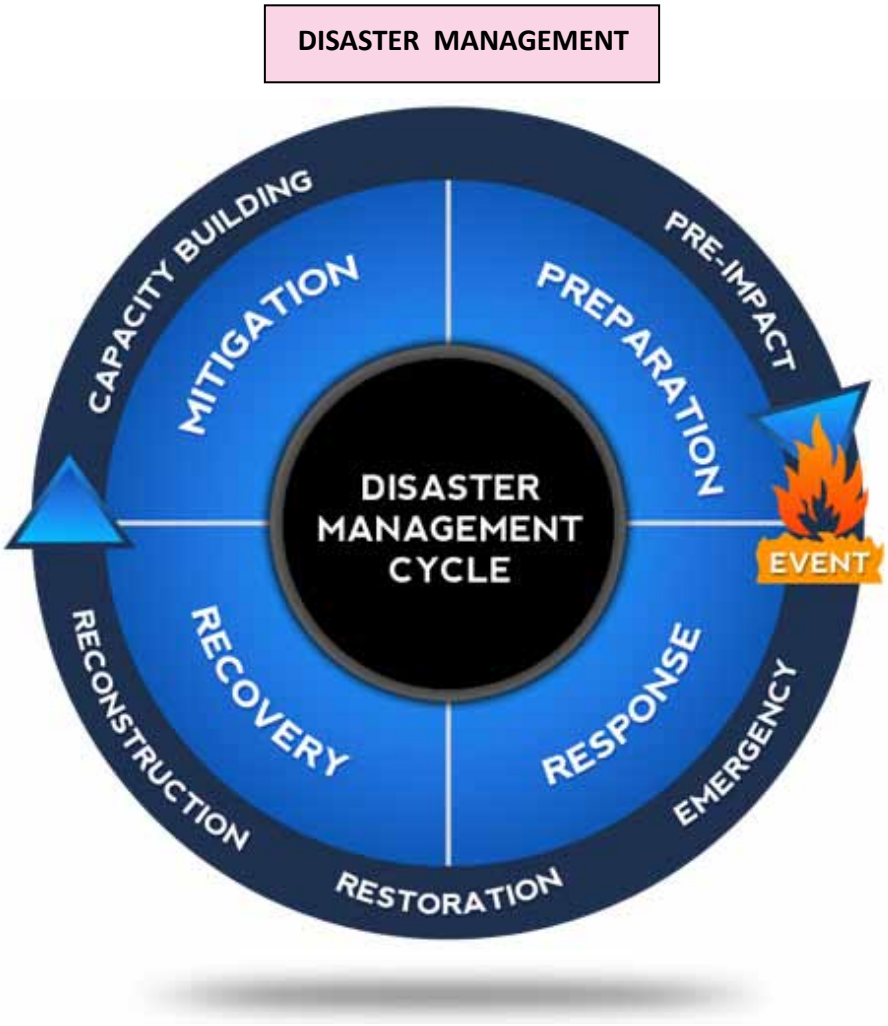
15.5.DISASTER MANAGEMENT IN TAMIL NADU

Introduction

Diverse factors, natural and human induced, adverse geo-climatic conditions, topographic features, environmental degradation, population growth, urbanization, industrialization, unscientific development practices etc. play a huge role in accelerating the intensity and frequency of disasters resulting in huge economic losses and human causalities. These, coupled with the impact of climate change and climate variability, are accentuating disaster impacts and underscore the criticality of promoting disaster-resilience and risk reduction practices. Out of 35 States and Union Territories in the Country, 27 are prone to different disasters. Tamil Nadu is prone to multi hazards, higher than other States and is frequented by hazards of various nature and different intensities. The vulnerability of the coastal community became exceedingly evident when Tsunami struck the southern coast of India. Besides Tsunami, the coastal community faces disasters like cyclone and floods periodically. Communities in other hazard prone plains and hilly regions of the State face threats from Landslides, Earthquakes and Floods. Urban flooding is also becoming a growing concern in the State.



Source: Ministry of Home Affairs, GOI

There has been a paradigm shift in the focus of Disaster Management, from response-centric covering rescue, relief, rehabilitation, and reconstruction to laying greater emphasis on the other elements of disaster management cycle—prevention, mitigation, and preparedness—as a means to avert or soften the impact of future emergencies. The Revenue Administration, Disaster Management and Mitigation Department (RADMMD), is in the process of strengthening disaster management capacity in the State by providing access to essential facilities, creating support systems and building human capacities. To cope effectively with crisis and emergency situations, the department coordinates with the other State departments, policy makers and technical institutions to develop well-defined strategies to manage crises and also to mitigate the risks caused by the same. The Commissioner of Revenue Administration undertakes all activities relating to Disaster Management and Mitigation besides managing relief and rehabilitation activities of any disaster in the State. The Principal Secretary/Commissioner of Revenue Administration is also the Relief Commissioner of the State.

The Department places equal importance on preparedness, response and mitigation to develop a robust disaster management unit in the State. Information on 'State of the Art' technology and equipment to be used during emergencies are collected and necessary actions are being taken to strengthen the control rooms in the State and districts. Efforts are also on to strengthen emergency management systems at the Taluk and Sub-divisional levels. The procedures and systems pertaining to preparedness and relief are periodically reviewed and necessary improvements made. Efforts are also being taken to train the personnel in the revenue administration to handle complex disaster situations to bring down its impact on human life or property. Further the department also reiterates the necessity to continuously undertake measures to build capacity among all the disaster management stakeholders and to create awareness among the community members. The State relief Commissioner is the Member of the State Disaster Management Authority (SDMA), which has the Honorable Chief Minister as its Chairperson.

At the district level, the District Collector has the responsibility for the overall management of disasters. He has the authority to mobilize the response machinery and has been given financial powers to draw money under the provisions of the General Financial Rules/Treasury Codes. All departments of the State Government including the Police, Fire Services, Public Works, Irrigation etc., work in a coordinated manner under the leadership of the District Collector during disasters, except in Metropolitan areas where the Municipal body plays a major role. NGOs have also participated in providing relief, rescue and rehabilitation in recent times.

Specific activities undertaken during the Eleventh Five Year Plan

State Disaster Management Authority: The Authority has been established with the Hon' ble Chief Minister as the Chairperson. The details of the other Members of the Authority are given in the Annexure 15.5.1.

State Disaster Management Policy was prepared during the year 2003.

District Disaster Management Authority: District Disaster Management Authority is notified with the respective District Collectors as the Chairperson.

Disaster Management Plans: A State Disaster Management (DM) Plan has been prepared and is being updated. District disaster management plans are in place and are periodically updated. Standard operating procedures (draft) have been prepared for chemical, biological, radiological and nuclear disasters.

Details of existing Early Warning System in the State: Hotline between Indian Meteorological Department and the State Emergency Operation Centre (EOC) is established. Dissemination to the districts is done through telephone and fax. IP phones are also available, which connects the State with the district headquarters, taluks and blocks of the State. Wireless radio network; both high Frequency and very high frequency are available in the State.

State Disaster Response Force (SDRF) is being constituted by designating Tamil Nadu Special Police (TSP) Battalion II, Avadi as SDRF. Training for the SDRF personnel will commence shortly.

Fig.15.5.1: Disaster Response Force demonstrating the measures to be taken to save the people from natural calamities, in Erode

Fig.15.5.2: Disaster response force personnel carrying out a mock drill on dealing with industrial accidents at the SIPCOT Industrial Estate, Chennai

State level Resource Database: A database of trained personnel, Disaster Management related studies etc., is being developed.

Capacity building programmes: Sensitization of PRIs / ULBs on disaster management in the districts has commenced. Awareness generation on disaster safe construction is being carried out in engineering colleges. School Safety Programme is also being carried out in selected districts. Programmes are being implemented to create awareness on Community Based Disaster Preparedness among vulnerable community members. Training of NGOs on Disaster Management under various programmes are underway. The same has commenced in 3 Districts namely Thiruvallur, Nagapattinam and the Nilgiris and in 2 cities namely Madurai and Thiruchirappalli. Mock drills are conducted for Cyclone, industrial hazards periodically.

Information, Education and Communication (IEC) materials produced

- Posters: tsunami, cyclone, chemical disasters, fire, lightning, earthquake, flood.
- Pamphlets: Do's and Don'ts on cyclone, floods, landslide, earthquake, tsunami, north east monsoon.
- Booklet: Safe Learning – Safe Citizens.
- Video documentary: A video documentary has been produced on safe construction.
- Social advertisement (video): Short advertisements have been produced on water conservation, energy conservation, fire safety and flood preparedness.

Studies carried out in the State and districts in respect of DM including Hazard Risk Vulnerability Area(HRVA)

- Large-scale Tsunami hazard maps were prepared for all the coastal districts

of Tamil Nadu. 1:25,000 and 1:5,000 scale Tsunami hazard maps for the coastal districts of Thiruvallur, Chennai, Villupuram, Kancheepuram, Cuddalore, Nagapattinam and Kanniyakumari were generated.

- With regard to flood, the risk assessment has been carried out for Chennai City by Institute for Remote Sensing, Anna University and Public Works Department has attempted in certain pockets of the State.
- Risk assessment exercise has been initiated on a pilot basis in a few vulnerable wards of Chennai, The Nilgiris, Tiruchirapalli and Madurai. Similar exercise was undertaken in selected vulnerable coastal hamlets and the Nilgiris by the district administration jointly with the respective community members.

Fig.15.5.3 Cyclone-affected people receive food at a rehabilitation centre at Nettikuppam in Ennore in Chennai

Other information / innovative programmes being implemented in the State

- With regard to reaching the last mile community with disaster information, a technical solution is being developed. Various technological options are being studied to design a robust, community friendly early warning system.
- Training and capacity building programmes are being planned with multi-stakeholder approach. NGOs and Civil Society Organisations will be involved in the process to ensure effectiveness and reachability.
- Emergency Management Exercises are being conducted, especially in cities to build the capacities of various stakeholders like, doctors, police personnel, fire and rescue personnel, staff of educational institutions and other vital department representatives.
- Exclusive sensitization programmes on disaster preparedness and management are being planned for schools and hospitals
- Seminars / Workshops are conducted on cross cutting themes such as “disaster management and law”. One said programme was organized jointly with the Law University. Similar programmes are also organized jointly with Engineering colleges on themes relating to building construction.

Twelfth Five Year Plan

Tamil Nadu will actively address the causes of vulnerability of the State and its people to uncertainties arising from natural causes, economic downturns, and other man-made reasons and mitigate their adverse effects. Implementing measures to reduce the vulnerability of the State and its residents to unfavourable events (natural or otherwise) and their consequences, is a key objective of Vision Tamil Nadu 2023. A lot of the progress and good work can come unstuck in the event of natural disasters or other man-made disturbances such as accidents, unrest, economic downturns and the like. While economic improvement enhances the ability of society to bear shocks better, there are several other steps that need to be strategically and consciously taken to reduce the vulnerability of the State. (Vision Tamil Nadu 2023 Document)

Such steps include the following:

- Protection of coastal districts from cyclonic storms and flooding

- Preparation of disaster management plans and procedures consciously at all levels in the Government and regionally in the State including creation of higher capabilities, capacities and preparedness of medical facilities and security establishment across the State for handling emergencies of various kinds
- Improving the fiscal position of the State Government in a conscious manner to build a buffer for contingent expenses, in particular, to help the poor and destitute who have low intrinsic capabilities to face calamities of any kind.

The cyclone "Thane" has deprived the livelihood security of people and its impact was much felt around its landfall zone viz. Cuddalore & Villupuram districts. In a move to mitigate the cyclonic havoc, one lakh houses will be constructed in these two districts. Frequent cyclones cause extensive damages to electricity supply infrastructure in the coastal areas. In order to reduce the impact, it is proposed to convert the overhead supply lines to underground cables at a cost of ₹490.00 crore in these two districts.

The On-going programmes conducted in the Eleventh Plan will be carried out in the Twelfth Plan.

Management Programme

The department shall undertake the following activities and programmes viz., Providing relief during disasters, updating disaster management plans, strengthening emergency operation centers, preparing department specific training modules on disaster management, training the respective departments on the same, conducting hazard, vulnerability and risk assessment etc. A brief description of the programme components is as follows:

Relief and Rehabilitation Activities: During and after any disaster in the State, the department provides relief. Post disaster periodic reviews are made and arrangements made to swiftly disburse relief.

Preparation and Updating of Disaster Management (DM) Plans: As part of the strengthening of disaster management information systems in the State, it is essential to systematically develop district disaster management plans that will be instrumental for effective preparedness, response and mitigation of disaster risks in the respective districts. The existing plans will be reviewed and updated during the said process. The exercise will be undertaken in all the 32 districts. The same exercise will be undertaken to update State DM plan. Regular mock drills based on the DM plans are being planned in the State and Districts.

Strengthening of Emergency Operation Centers in the State/Districts: Sensing the need to create an effective emergency operation center, it is proposed to provide all essential facilities to promote effective coordination between stakeholders and enhance efficiency of emergency management operations. Transport facilities, communication systems (Fax, Telephone, VHF Radio etc.,) and office requirements (essential appliances, furniture) will be provided for, under this component. It is being proposed to strengthen the emergency management systems at the Sub-divisional and Taluk levels also. Towards this end, it is proposed to provide emergency equipment to the Sub-divisional/ Taluk offices, which will be used during times of emergencies. It is also proposed to form State Disaster Response Force (SDRF) by training a Battalion of Tamil Nadu Special Police. The training will be imparted by National Disaster Response force.

Strengthening of Emergency Response at Hospitals: Hospitals are one of the crucial players during emergencies and hence it is proposed to strengthen their emergency response capacities. Towards this end, it is proposed to support major Government hospitals in the State to develop a disaster management plan, to handle emergency

situations effectively. The proposal also envisages training of hospital personnel and organizing mock drills in the premises based on the plan.

Development of Training Modules and Curriculum at State owned Training Institutes: The Government departments in the State have been organizing a series of trainings and workshops for their staff through their training units/institutes. Subjects pertaining to their respective disciplines are dealt with during these programmes. Some of these departments are active stakeholders during disaster/ emergency periods and the services of their personnel are expected to be vital for effective management of disasters/ emergencies. To enhance their understanding on the relevance of disaster/emergency management to their domain of working, the Revenue Administration, Disaster Management and Mitigation department proposes to jointly work with other departments like Agriculture, Rural Development, Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB), Tamil Nadu Water Supply and Drainage Board (TWAD Board), Water Resource Organization (Irrigation), Health, Electricity and Fire and Rescue Services etc., to develop training modules and curricula on disaster management with specific reference to their respective domains. The State Administrative Training Institute (ATI) will be the focal organization to develop individual training modules jointly with the respective departments/training institutes. NCC cadets will be given one week training in selected locations for preparedness and demand driven services.

Conduct of Trainings and Workshops: In continuation of the development of training module and curriculum, it is proposed to support the above said training institutes to integrate the said modules in their ongoing trainings/workshops.

Assessment of Hazard, Vulnerability and Risk in vulnerable districts: Towards developing an effective disaster mitigation plan, it is essential to systematically assess the nature of the hazard, the vulnerabilities that increase the disaster risks and the possible impacts that the disaster could create on lives, livelihoods and assets. Towards this end, it is proposed to undertake this study in multi-hazard prone districts in the State that are prone to wind, cyclone and floods. The said assessment of hazard, vulnerability and risk will be undertaken to develop a disaster risk mitigation plan.

Funds for Capacity Building (under 13th Finance Commission): Funds to the tune of ` 5 crore per year for the years 2012-2015 has been sanctioned for implementing capacity building programmes for disaster preparedness in the State.

New Initiatives for the Disaster Risk Reduction in the State

- It is proposed to revisit existing "Building By-laws" to make necessary amendments to ensure safe construction especially in disaster prone areas
- Recommendations will be made to undertake disaster resistant constructions under IAY (Indira Awaas Yojana) scheme
- Recommendations will be made to lay underground electric / communication cables in cyclone prone coastal areas
- It is proposed to develop bio-shield along the coastal areas, which will serve as wind brakes/ shelterbelts to mitigate damages due to strong winds. Farmers will be encouraged to take up the said activity.
- Special Insurance for cattle and crops in disaster prone areas will be provided. Establishment of a State Disaster Management Training Center is to be proposed.

The State has been a victim of natural calamities such as cyclones, tsunamis, and floods in some years and severe drought

Box 15.5.1: Climate Risk Management Farmers Field School (CRMFFS)

In agriculture, the magnitude of climate associated risks can never be underestimated and absolute wiping of profit is often noticed in those cases. In this context, preparedness is always better than cure / relief. Non-formal education or discovery and experiential learning process (i.e. fewer lectures but more of 'hands on' methods) based on local needs have a predominant role in awareness on Climate Risk Management.

CRMFFS has been established by a Thanjavur based NGO with technical and financial assistance of Regional Integrated Multi Hazard and Early Warning System, Thailand. The objective of the establishment of CRMFFS is to empower farmers to understand and effectively utilize climate information and forecasts in their farming activities.

The training programmes entailed lectures and field level demonstration on Climate and Weather and the difference between the two. It involves training on measuring weather parameters, weather forecast and economic utilization of information for crop planning. As a part of training, farmers were taken on an exposure visit to Tamil Nadu Agriculture University (TNAU), Agro Climate Research Centre.

It is a community-based, hands-on, and practical oriented field study program that will provide opportunity to farmers to learn together.

in certain years. According to the National Institute of Disaster Management, 13 districts of Tamil Nadu are vulnerable to high or very high cyclonic impact and flooding. There are at least seven districts in the state that are regularly impacted by drought conditions. A comprehensive plan for reducing the impact of the natural disasters and creating a dynamic response mechanism to natural calamities is part of Vision Tamil Nadu 2023. Environmental measures such as mangrove plantations in coastal areas prone to cyclonic storms will be developed. Mechanism will be developed for relief measures such as disaster management group will be formed at each taluk. As the State of Tamil Nadu often encounters natural calamities, a dedicated State Disaster Rescue Force will be formed to respond expeditiously and effectively. This will be on the pattern of the National Disaster Relief Force, trained in rapid rescue operations.

The Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES) is an international and intergovernmental institution, owned and managed by its Member States, for the generation and application of early warning information. The Mission of RIMES is building capacity and providing actionable warning information towards forearmed, forewarned and resilient communities. RIMES provides regional early warning services and builds capacity of its Member States in the end-to-end early warning of tsunami and hydro-meteorological hazards.

It is essential to recognize the possible influences of weather and climate at all time scales – from days to decades, and plan for minimizing its impact and maximizing its opportunities to achieve the development trajectories envisioned in the Twelfth Five Year Plan and the Vision Tamil Nadu 2023, through a Climate Risk Management framework.

In Tamil Nadu, weather risks are transmitted directly or indirectly to Primary, Secondary and Tertiary sectors; hence incorporating 5 to 10 days forecast system could be useful to reduce the direct losses and indirect losses through various climate/weather information scales. There is considerable capacity building required to use the robust risk communication ability to accept and adapt the probable forecast information in a risk management framework.

Therefore, the services of RIMES in Climate Risk Management shall be utilized in the development planning processes in Tamil Nadu.

Funding pattern for the Twelfth Five Year Plan

The Thirteenth Finance Commission has recommended total contribution of ₹1621.90 crore to the Tamil Nadu State Disaster response fund for five years from 2010-2011 to 2014-2015, of which the Central share will be ₹1216.43 crore (75 percent) and the State's share will be ₹405.47 crore (25 percent) as detailed in Table 15.5.1.

Funds for Capacity Building: In the above contribution, funds to the tune of ₹25 crore for five years 2010-15 (₹5cr/ year) have been sanctioned for implementing capacity building programmes for disaster preparedness in the State.

For the years 2015-16 and 2016-2017, the total financial outlay(GoI and GoTN) proposed is ₹392.45 and ₹431.70 crore respectively. Adequate funds will also be provided in the event of disaster in the State.

Table15.5.1: Funding Pattern for Disaster Management

(₹ Crore)

Year	GOI contribution	GoTN contribution	Total Contribution
2010-2011	220.14	73.38	293.52
2011-2012	231.15	77.05	308.20
2012-2013	242.71	80.90	323.61
2013-2014	254.84	84.95	339.79
2014-2015	267.59	89.19	356.78
Total	**1216.43**	**405.47**	**1621.90**

Source: Dept. of Revenue Administration, Disaster Management and Mitigation, GoTN

ANNEXURE 15.1.1

List of National Parks, Wildlife Sanctuaries, Biosphere Reserves etc.

S.No.	Name of Wildlife Sanctuary
1	Mudumalai Wildlife Sanctuary
2	Indira Gandhi Wildlife Sanctuary
3	Mundanthurai Wildlife Sanctuary
4	Kalakad Wildlife Sanctuary
5	Grizzled Giant Squirrel Wildlife Sanctuary
6	Point Calimere Wildlife Sanctuary
7	Vallanadu Black Buck Sanctuary
8	Kanniyakumari Wildlife Sanctuary
9	Sathyamangalam Wildlife Sanctuary
10	Megamalai Wildlife Sanctuary
	Name of Bird Sanctuary
1	Vedanthangal Bird Sanctuary
2	Karikili Bird Sanctuary
3	Pulicat Lake Bird Sanctuary
4	Vettangudi Bird Sanctuary
5	Kanjirankulam Bird Sanctuary
6	Chitrangudi Bird Sanctuary
7	Udayamarthandapuram Bird Sanctuary
8	Vaduvoor Bird Sanctuary
9	Koonthankulam-Kadankulam Bird Sanctuary
10	Karaivetti Bird Sanctuary
11	Vellode Bird Sanctuary
12	Melaselvanur-Kilaselvanur Bird Sanctuary

ANNEXURE 15.1.1

List of National Parks, Wildlife Sanctuaries, Biosphere Reserves etc. (Contd.)

S.No.	Name of Wildlife Sanctuary
13	Theerthangal Bird Sanctuary
	Name of National Parks
1	Mudumalai National Park
2	Indira Gandhi National Park
3	Mukurthi National Park
4	Guindy National Park
5	Gulf of Mannar Marine National Park (21 Islands)
	Name of Bio-Sphere Reserves
1	Nilgiris
2	Gulf of Mannar
3	Agasthiarmalai
	Name of the Conservation Reserve
1	Thiruppudaimaruthur Bird Conservation Reserve
	Name of the Elephant Reserve
1	Nilgiris – Eastern Ghats
2	Nilambur – Silent Valley - Coimbatore
3	Anamalai – Parambikulam
4	Srivilliputhur – Periyar
	Name of the Tiger Reserve
1	Kalakkad - Mundanthurai
2	Anamalai
3	Mudumalai

Source: Dept. of Forest, GoTN

ANNEXURE 15.1.2

Bio-diversity - Strategic goals and targets for 2020

Goals & Targets	Proposed action
Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society. Target 1: By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably. Target 2: By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems. Target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions. Target 4: By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.	Awareness creation for Eco development activities, Native and Biodiversity education wildlife bird sanctuaries / National Parks / Biosphere Reserve are taken care of during the plan period.

ANNEXURE 15.1.2

Bio-diversity - Strategic goals and targets for 2020 (Contd.)

Goals & Targets	Proposed action
Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use Target 1: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced. Target 2: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits. Target 3: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity. Target 4: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity. Target 5: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment. Target 6: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.	Invasive alien species like Prosopis, Eupatorium, etc., will be eradicated under different schemes during the plan. In Gulf of Mannar, various conservation programmes are proposed.

ANNEXURE 15.1.2

Bio-diversity - Strategic goals and targets for 2020 (Contd.)

Goals & Targets	Proposed action
Strategic Goal C: Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity. Target 1: By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascapes. Target 2: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained. Target 3: By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	Establishment of Biodiversity Hotspots, Lead gardens, Marine conservation centers, Biodiversity parks, MPDA etc., are proposed.
Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services. Target 1: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable. Target 2: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification. Target 3: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.	Necessary provisions have been made under Biodiversity Conservation, Enhancing Climatic Resilience of open forests and socio-economic development and forest fringe communities and tribal development.

ANNEXURE 15.1.2

Bio-diversity - Strategic goals and targets for 2020 (Contd.)

Goals & Targets	Proposed action
Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building. Target 1: By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan. Target 2: By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels. Target 3: By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied. Target 4: By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan 2011-2020 from all sources and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization should increase substantially from the current levels. This target will be subject to changes contingent to resources needs assessments to be developed and reported by Parties.	Adequate provision is incorporated in the socio economic development, tribal development and Human Resources Development.

ANNEXURE 15.4.1

Decadal trends in land use pattern in Tamil Nadu

(L.ha.)

Details	1960s	1970s	1980s	1990s	2000s
Forests	19.04	20.05	20.77	21.44	21.20
Barren and unculturable land	8.85	7.05	5.28	4.94	4.93
Land put to non-agricultural uses	13.57	15.79	17.95	19.08	21.05
Culturable Waste	6.60	4.15	3.09	3.25	3.61
Permanent Pastures and other grazing lands	3.34	1.98	1.45	1.23	1.14
Land under misc. tree crops and groves not included in Net area sown	2.64	2.15	1.82	2.31	2.69
Current fallow lands	9.69	12.02	16.18	10.55	10.09
Other fallow lands	6.10	5.31	7.03	10.93	15.25
Net area sown	60.26	61.33	56.22	56.32	50.22
Gross cropped area	72.00	74.23	66.77	67.29	58.05
Geographical area	130.13	130.04	130.06	130.06	130.17

Source: Compiled from various Season and Crop Reports, Dept. of Economics and Statistics, GoTN

ANNEXURE 15.5.1

Disaster Management : State Disaster Management Authority.

1. Honourable Chief Minister – Chairperson – Ex-officio- Chairperson
2. Honourable Minister for Revenue- Member
3. Chief Secretary – Ex-officio- Member
4. Secretary – Revenue- Member
5. Secretary – Finance- Member
6. Secretary – Home - Member
7. Special Commissioner and Commissioner of Revenue Administration- Member
8. Dr. S. Rajarathinam, Director, Centre for Disaster Management and Mitigation, Anna University, Chennai – 600025. – Member
9. Prof. K.N. Sathyanarayana, Department of Civil Engineering, Indian Institute of Technology Chennai-600036. - Member

Source: Dept. of Revenue Administration, Disaster Management and Mitigation, GoTN