



GOVERNMENT OF PUDUCHERRY

STATE DISASTER MANAGEMENT PLAN



VOLUME – I

DEPARTMENT OF REVENUE AND DISASTER MANAGEMENT

ACRONYMS USED

IDNDR	International Decade for Natural Disaster Reduction
CBDM	Community Based Disaster Management
ESF	Emergency Support Function
IAP	Incident Action Plan
ISDR	International Strategy for Disaster Reduction
MHA	Ministry of Home Affairs
MSSRF	M S Swaminathan Research Foundation
PIPDIC	Pondicherry Industrial Promotion Development and Investment
PPCC	Puducherry Pollution Control Committee
SAARC	South Asian Association for Regional Cooperation
SDMA	State Disaster Management Authority
UT	Union Territory
UTPDMA	Union Territory of Puducherry Disaster Management Authority
CMP	Crisis Management Plan
SDRF	State Disaster Response Force
DRR	Disaster Risk Reduction
VDMP	Village Disaster Management Plans
IEC	Information, Education and Communication
ICS	Incident Command System
WCDR	World Conference of Disaster Reduction
GOI	Government of India
SOP	Standard Operating Procedure
EOC	Emergency Operations Centre
BWM	Bio-medical Waste Management
DM	Disaster Management
IDRN	India Disaster Resource Network
IT	Information Technology
UNISDR	United Nations International Strategy for Disaster Reduction.
NDRF	National Disaster Response Force
UTDRF	Union Territory Disaster Response Fund

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BACKGROUND

The declaration of 1990- 1999 as International Decade for Natural Disaster Reduction (IDNDR) brought to the fore, Disaster Risk Reduction (DRR) as an agenda in Progress. The Yokohama strategy plan of action, 1994 was the first blueprint for DRR policy guidance with emphasis on social and community orientation. Following this, in 2000, the formation of International Strategy for Disaster Reduction (ISDR) focused more on increased public commitment and linkage to sustainable development, enlarged networking and partnerships mechanisms. In the year 2002, Johannesburg plan of implementation, The World Summit on Sustainable Development (WSSD) includes a new section on “an integrated, multi-hazard, inclusive approach to address vulnerability risk assessment and disaster management including prevention, mitigation, preparedness, response and recovery” as an essential element of a safer world in the twenty-first century. Finally, the World Conference of Disaster Reduction (WCDR) - Hyogo Framework for Action 2005-2015, building the resilience of nations and communities to disasters, is a step to ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation. The common statement of the special session on the Indian Ocean DRR for safer future, which was also part of the WCDR, recommends that necessary regional disaster reduction mechanisms be established and strengthened as soon as possible for all relevant natural hazards. This should include, inter alia, specialized collaborative regional centres, networks for information exchange, early warning systems, establishment of databases and knowledge management, use of modern science and technology, and strategies to reduce disaster risks and to reduce impacts arising from natural disasters.

Taking into account the catastrophic events that have been striking on a continual basis in the recent times it can be derived that irrespective of where one lives, disaster preparedness is mandatory and can no longer remain a choice. However, there could be variations in the types and intensity of the risk, which is largely dependent on the geographic location of the area.

As per the South Asian Association for Regional Cooperation (SAARC) Disaster Management Centre, Indian subcontinent is among the world's most disaster prone areas. Almost 85% of India is vulnerable to one or multiple hazard. Of the 29 states and 7 union territories, 23 are prone to disaster. It is vulnerable to cyclone spawned in the Bay of Bengal and the Arabian Sea, earthquakes caused by active crustal movement in the Himalayan Mountains, floods and drought brought by monsoonal variation in the country. Almost 57% of the land is vulnerable to earthquake (high seismic zones III–MSK V), 68% to drought, 8% to cyclones and 12% to floods. India has also become much more vulnerable to tsunamis since the 2004 Indian Ocean tsunami (http://www.saarc-sadkn.org/countries/india/disaster_profile.aspx).

Since independence, India had well established institutional policy mechanisms for carrying out response, relief and rehabilitation after disasters. Traditionally, the management of natural disasters was seen as non-planned expenditure item as the perception towards mitigation and management was limited to the idea of “calamity relief.” Over the years, with calamities frequently turning into huge disasters due to its devastating effects, causing huge human and economic losses and setting back every development milestones, the management of disasters could no longer remain relief centric but moved on to incorporate prevention, preparedness, response and recovery, also initiating development efforts aimed towards risk reduction and mitigation. The reappraisal of the institutional and policy frameworks resulted in a paradigm shift, which reflected in the 10th Five Year Plan (2007-2012) providing a blue print for the future of Disaster Management in India. In 2004, the National Disaster Management Framework was developed with a holistic approach aimed at sustainable development highlighting the interdependence of economy and environment. In 2005, The

Indian Parliament passed the Disaster Management (DM) Act, subsequent to which the National Policy on Disaster Management was approved in 2009.

The section 23 of DM Act 2005 mandates the states to formulate a State Disaster Management Plan guided and approved by the National Disaster Management Authority (NDMA). The Act lays down the broad coverage of the plan as follows:

- The vulnerability of different parts of the State to different forms of disasters;
- The measures to be adopted for prevention and mitigation of disasters;
- The manner in which the mitigation measures shall be integrated with development plans and projects;
- The capacity building and preparedness measures to be taken;
- The roles and responsibilities of each department of the State Government in context of the above;
- The roles and responsibilities of different departments of State Government in responding to any disaster situation or disaster.

Along with other States, the Union Territories are also required to come up with their respective DM plans, which will have to follow similar processes and steps as that of the State Plans. The guiding principles for the preparation of the State Plans, laid down by the NDMA will have to be the reference document, which would guide the formulation of the plan for the Union Territory (UT) of Puducherry.

Organisation of the Report

The chapters of this document is organised as per the guidelines suggested by the NDMA for the preparation of SDMP. Considering that the four regions of the UT are geographically non-contiguous, location specific information is provided in sub sections under each district. Each sections/chapters are concluded with action points. Generic introduction to subject/topic, status information are avoided to reduce the bulkiness of the plan document.

The plan document is divided into two volumes:

Volume 1: General

Volume 2: Hazard Specific Action Plan and ESFs

CHAPTER –1

Introduction

This plan will be known as Union Territory of Puducherry Disaster Management Plan and will be applicable within the Union Territory of Puducherry.

Till recently, the approach to Disaster Management has been reactive and relief centric. A paradigm shift has now taken place at the national level from the relief centric syndrome to holistic and integrated approach with emphasis on prevention, mitigation and preparedness. These efforts are aimed to conserve developmental gains as also minimize losses to lives, livelihood and property. **Section 2 (e) of the Disaster Management Act 2005 defines disaster management as follows:** Disaster Management means a continuous and integrated process of planning, organising, coordinating and implementing measures which are necessary or expedient for-

- 1) Prevention of danger or threat of any disaster.
- 2) Mitigation or reduction of risk of any disaster or its severity or consequences.
- 3) Capacity-building.
- 4) Preparedness to deal with any disaster.
- 5) Prompt response to any threatening disaster situation or disaster.
- 6) Assessing the severity or magnitude of effects of any disaster.
- 7) Evacuation, Rescue and Relief.
- 8) Rehabilitation and Reconstruction.

As envisaged in the DM Act 2005, the Union Territory of Puducherry Disaster Management Authority (UTPDMA) has been established to discharge the powers and functions of the State Authority. UTPDMA functions under the stewardship of the Hon'ble Chief Minister of Puducherry towards evolving a systematic, comprehensive and holistic approach towards all disasters.

A typical Disaster Management continuum as shown below, comprising of six elements i.e., Prevention, Mitigation and Preparedness in pre-disaster phase, and Response, Rehabilitation and Reconstruction in post-disaster phase, defines the complete approach to Disaster Management.

DISASTER MANAGEMENT CONTINUUM



1.1 Vision strategy

The vision is to build the Puducherry Union Territory as a safer and disaster resilient Union Territory by developing a holistic, proactive, multi-disaster and technology driven strategy for disaster management. This will be achieved through a culture of prevention, mitigation and preparedness to reduce the impact of disasters on people.

1.2 Policy:

Saving of precious human lives will be the highest priority; however the plan will also address minimum loss to property and environment.

1.3 Theme:

The core themes of this DM Plan shall be as follows:

- To study the risk and vulnerability of different parts of the UT to different kinds of disasters
- The measures to be adopted for prevention and mitigation of disasters
- The manner in which mitigation measures shall be integrated into development plans and projects to achieve a holistic approach.
- The capacity building and preparedness measures to be taken
- The roles and responsibilities of each department of the government of the UT in relation to the measures specified above
- The roles and responsibilities of different departments of the government of the UT in responding to any threatening disaster situation or disaster
- Methodologies for the annual review and updating of the UT DM plan
- Appropriate provisions for financing the measures to be carried out under the UT government
- Availability to the government departments of the UT and provision and methodology of such departments to draw up their own plans in accordance with the UT DM plan.

1.4 Objectives and Goal of the Plan:

Section 23 of DM Act 2005, makes it mandatory to have a disaster management plan for every State including Union territories. SDMP shall include Hazard Risk and Vulnerability Analysis (HRVA), prevention, mitigation, preparedness measures, response plan and procedures. The objectives of this plan is given below:

- To identify the areas vulnerable to major types of the hazards in the UT.
- To adopt proactive measures by all the govt. departments to prevent disaster and mitigate its effects.
- To define and assign the different tasks and responsibilities to stakeholders during the pre- disaster and post-disaster phases of the disaster.
- To enhance disaster resilience of the community in the UT by way of effective capacity building.
- Reduce the loss of public and private property, especially critical facilities and infrastructure, through proper planning.
- Manage future development to mitigate the effect of natural hazards in the State.
- To set up an Emergency Operations Centre at the UT level to function effectively in search, rescue, response.
- To develop the standardized mechanism to respond to disaster situation to manage the disaster efficiently.
- To set up the early warning system to prepare the community to deal with the disaster and responsive communication system based upon fail-proof proven technology.
- To prepare the response plan based upon the guidelines issued in the State Disaster Management Plan so as to provide prompt relief, rescue and search, support in the disaster affected areas.
- To adopt disaster resilient construction mechanism in the UT by way of using Information, Education and Communication for making the community aware of the need of disaster resilient future development.
- To make the use of media in disaster management.
- Rehabilitation plan of the affected people and reconstruction measures to be taken by different govt. departments at State level and local authority.

The State Disaster Management Plan (SDMP) is the guide for achieving the objective of mitigation, preparedness, response and recovery.

1.5 Scope of the Plan:

The DM Plan provides a consistent, UT wide framework to enable UT, local governments, Central government and the private sector to work together to prepare, mitigate and to respond and also recover from the effects of emergencies regardless of cause, size, location, or complexity. In accordance with the DM Act, 2005, this plan is in effect at all times and applies to all levels of Government of Puducherry and its administrative subdivisions/Taluks/Blocks/Villages. The plan incorporates and complies with the principles and requirements found in National and State laws, regulations and guidelines.

The scope of this plan envisages active participation of all departments/ agencies of Government of Puducherry, private sectors, NGO's working in Puducherry and citizens in all facets of disaster management. The plan applies to all the four regions of UT of Puducherry namely Puducherry, Karaikal, Mahe and Yanam.

1.6 Authority and Reference:

The Government of Puducherry have notified vide Extraordinary Gazette No 77 dated 01.08.2007 the provisions of DM act 2005 in the whole of UT of Puducherry. Further, a State Disaster Management Authority as envisaged under the DM Act 2005 was constituted under the name, "The Union Territory of Puducherry Disaster Management Authority". In the same lines State Executive Committee at the UT level and District Disaster Management Authorities for the two districts namely Puducherry and Karaikal were also notified. Under Section 23(1) of the DM Act 2005 – it is mandatory for every state to have a State Disaster Management Plan (SDMP) which shall be prepared by State Executive Committee and approved by the State Authority.

1.7 Plan Development:

As per the Section 23(2) of the DM Act, the State Plan is to be prepared by the State Executive Committee (SEC) having regard to the guidelines laid down by the National Authority and after such consultation with local authorities, district authorities and the people's representatives as the State Executive Committee may deem fit.

The State Plan prepared by the State Executive Committee under subsection (2) shall be approved by the State Authority.

Steps in a collaborative planning process while developing State Plan included – formation of core team comprising representatives of line departments and NGO's, understanding hazards, vulnerabilities and risk foot prints of the State, plan development (develop and analyse course of action, identify resources, identify information needs), plan preparation (write, review, approve and disseminate), Plan implementation and maintenance (exercise, review, revise and maintain).

1.8 Institutional Arrangements, Roles and Responsibilities :

The Disaster Management Act 2005 provides the legal and institutional framework for disaster management in India at the national, state and district levels. In the National policy of India, the primary responsibility of disaster management vests with the State Governments. The Central Government lays down policies and guidelines and provides technical, financial and logistic support while the district administration carries out most of the operations in collaboration with central and state level agencies.

1.8.1 State Disaster Management Authority :

Section 14 of DM Act 2005 mandates each State to establish State Disaster Management Authority (SDMA). At the State Level the State Disaster Management Authority (SDMA), headed by the Chief Minister, lays down policies and plans for disaster management in the State.

It is also responsible to coordinate the implementation of the State Plan, recommend provision of funds for mitigation and preparedness measures and review the developmental plans of the different departments of the State to ensure integration of prevention, preparedness and mitigation measures. In case of emergency the Chairperson of the State Authority shall have power to exercise all or any of such powers of the State Authority but the exercise of such powers shall be subject to ex post facto ratification of the State Authority.

Powers and functions of State Authority

- a) lay down the State disaster management policy.
- b) approve the State Plan in accordance with the guidelines laid down by the National Authority.
- c) approve the disaster management plans prepared by the departments of the Government of the State.
- d) lay down guidelines to be followed by the departments of the Government of the State for the purposes of integration of measures for prevention of disasters and mitigation in their development plans and projects and provide necessary technical assistance there for.
- e) coordinate the implementation of the State Plan.
- f) recommend provision of funds for preparedness and mitigation measures.
- g) review the development plans of the different departments of the State and ensure integrated holistic approach of prevention and mitigation measures to achieve optimum result.
- h) review the measures being taken for capacity building, preparedness, and mitigation by the departments of the State and issue such guidelines as may be necessary.

As envisaged in the DM Act 2005, the Union Territory of Puducherry Disaster Management Authority (UTPDMA) has been established to discharge the powers and functions of the state authority. UTPDMA functions under the stewardship of the Hon'ble Chief Minister of Puducherry. The Members of UTPDMA shall comprise both the elected representatives, Officers and technical experts.

1.8.2 State Executive Committee:

The State Executive Committee under with Chief Secretary as Chairperson (ex-officio) has been constituted as detailed below:

1	The Chief Secretary to Government	Chairperson
2	The Development Commissioner	Member
3	The Secretary (Finance)	Member
4	The Secretary (Health)	Member
5	The Secretary (Local Administration)	Member
6	The Secretary (Revenue)	Member
7	The Chief Engineer, Public Works Department	Member
8	The Secretary / Commissioner (Relief and Rehabilitation)	Member
9	The Additional Secretary (Relief and Rehabilitation)	Member

Functions of the State Executive Committee:

- 1) The State Executive Committee shall have the responsibility for implementing the National Plan and State Plan and act as the coordinating and monitoring body for management of disaster in the State.
- 2) Without prejudice to the generality of the provisions given above, the State Executive Committee may-
 - a) coordinate and monitor the implementation of the National Policy, the National Plan and the State Plan.
 - b) examine the vulnerability of different parts of the State to different forms of disasters and specify measures to be taken for their prevention or mitigation.
 - c) lay down guidelines for preparation of disaster management plans by the departments of the Government of the State and the District Authorities.
 - d) monitor the implementation of disaster management plans prepared by the departments of the National, State and the District Authorities.
 - e) monitor the implementation of the guidelines laid down by the State Authority for integrating of measures for prevention of disasters and mitigation by the departments in their development plans and projects.
 - f) evaluate preparedness at all governmental or non-governmental levels to respond to any threatening disaster situation or disaster and give directions, where necessary, for enhancing such preparedness.
 - g) coordinate response in the event of any threatening disaster situation or disaster; 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.
 - h) promote general education, awareness and community training in regard to the forms of disasters to which different parts of the State are vulnerable and the measures that may be taken by such community to prevent the disaster, mitigate and respond to such disaster.
 - i) advise, assist and coordinate the activities of the Departments of the State, District Authorities, statutory bodies and other governmental and non-governmental organisations engaged in disaster management.
 - j) provide necessary technical assistance or give advice to District Authorities and local authorities for carrying out their functions effectively.
 - k) advise the State Government regarding all financial matters in relation to disaster management;
 - l) 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, may direct the District Authority or the local authority, as the case may be, to take such action as may be necessary to secure compliance of such standards;
 - m) provide information to the National Authority relating to different aspects of disaster management;
 - n) lay down, review and update State level response plans and guidelines and ensure that the district level plans are prepared, reviewed and updated;
 - o) ensure that communication systems are in order and the disaster management drills are carried out periodically;
 - p) perform such other functions as may be assigned to it by the State Authority or as may be considered necessary.

1.8.3 State Disaster Response Force (SDRF):

State Disaster Response Force for UT of Puducherry shall be established from personnel of IRBN, PAP and Fire services department. The personnel so identified shall be trained at facilities of NDRF and other state governments as deemed fit and necessary. SDRF shall also include women members to look after the needs of women and children victims of all types of disasters. DM training will be included in the basic and in-service course curricula of gazetted and non- gazetted police officers through the Police Training School (PTS).

1.8.4 State Emergency Operation Centre (EOC):

EOC is an off-site facility functioning from State / District HQ. The EOC will take stock of the emerging situation and assist the incident managers in mobilising the respective line department's resources, manpower and expertise along with appropriate delegated authorities for the on-scene actions / response. State EOC will keep the DEOC and field EOC informed of the changing situation and support extended. Emergency communication, alert and warning system, decision support system, and resources management system are few of the critical components inbuilt into State EOC infrastructures. The basic functions of EOC, derived on the basis of functional framework of disaster management would be to:

- Receive, monitor, assess Disseminate information.
- Keep track of all available resources.
- Monitor, assess, and track availability of response units and resource requests.
- Manage resource deployment for optimal usage.
- Make policy decisions and proclaim local emergencies as needed.
- Provide direction and management for EOC operations through Standard Operations Procedure (SOP), set priorities and establish strategies.
- Coordinate operations of all responding units, including law enforcement, fire, medical, logistics etc.
- Augment comprehensive emergency communication from EOC to any field operation when needed or appropriate.
- Maintain EOC security and access control.
- Provide recovery assistance in response to the situations and available resources
- Keep senior, subordinate and officials informed.
- Keep local jurisdictions (Village/town/City, district and State) informed.
- Operate a message centre to log and post all key disaster information.
- Develop and disseminate public information warnings and instructions.
- Provide information to the news media.
- Manage donation / aids.

State EOC shall have upstream connection with National EOC and down -stream connectivity with District EOC.

1.9 District Disaster Management Authority (DDMA):

The Union Territory of Puducherry comprises two districts namely Puducherry and Karaikal. The composition of DDMA of the above districts is given hereunder:

Puducherry District

1	The District Collector, Puducherry	Chairperson
2	The Chairman/Commissioner, Puducherry Municipality	Co-Chairperson-I
3	The Chairman/Commissioner, Oulgaret Municipality	Co-Chairperson-II
4	The Senior/Additional Senior Superintendent of Police (L&O), Puducherry	Member
5	The Director of Health and Family Welfare Services, Puducherry	Member
6	The Director, Local Administration Department, Puducherry	Member
7	The Chief Engineer, Public Works Department, Puducherry	Member
8	The Deputy Collector (Disaster Management), Puducherry	Member Secretary

Karaikal District

1	The District Collector, Karaikal	Chairperson
2	The Chairman/Commissioner, Karaikal Municipality	Co-Chairperson-I
3	The Senior/Additional Senior Superintendent of . .	Co-Chairperson-II
4	Member Police, Karaikal	Member
5	The Medical Superintendent, Karaikal	Member
6	The Representative of Director of Local Administration, Puducherry	Member
7	The Executive Engineer, Public Works Department, Karaikal	Member
8	The Deputy Collector (Disaster Management), Karaikal	Member Secretary

DDMA will act as the planning, coordinating and implementing body for DM at District level and take all necessary measures for the purposes of DM in accordance with the Guidelines laid down by the NDMA and SDMA. It will, inter alia, prepare the District DM plan for the District and monitor the implementation of the National Policy, the State Policy, the National Plan, and the State Plan concerning its own District and prepare the District Plan. The DDMA will also ensure that the Guidelines for prevention, mitigation, preparedness and response measures laid down by NDMA and SDMA are followed by all Departments of the State Government, at the District level and the Local Authorities in the District.

1.10 Local Authorities:

Local Authorities would include Municipalities comprising urban areas and commune panchayats covering the rural area in UT of Puducherry. Both in Municipalities and Commune Panchayats, disaster response is primarily handled by the District Administration. As head of the DDMA, the District Magistrate is responsible for response and relief in the aftermath of a disaster. Municipalities and Commune Panchayats shall prepare their individual DM plans in consultation with DDMA concerned and shall review such plans annually. Municipalities and Commune panchayats which control and manage civic services. These bodies will prepare DM Plans in consonance with the Guidelines of NDMA, SDMAs and DDMA and will ensure capacity building of their officers and employees for managing disasters, carry out relief, rehabilitation and reconstruction activities in the affected areas.

1.11 Trust/Organisations managing Places of Worships & Congregation

Each Establishment/organization identified as “critical infrastructure and key resource” including places of congregation in UT of Puducherry shall prepare and implement “on site” and “off – site” Disaster management plan in consultation with respective DDMA and carry out mitigation, response , relief, rehabilitation and reconstruction activities.

1.12 Private Sector:

The private sector shall be encouraged to ensure their active participation in the pre-disaster activities in alignment with the overall plan developed by the SDMA.

They shall follow the stipulated rules, regulations/ legislations by relevant authorities for prevention/mitigation and relief/ rehabilitation of the affected community during disasters.

The Private Sector shall undertake DRR projects as part of CSR, in consultation with State / District Authorities towards enhancing State’s resilience/capacity.

1.13 Community Groups and Volunteer Agencies:

Local community groups and voluntary agencies including NGO’s normally have active role in prevention, mitigation, response and rehabilitation activities under the overall direction and supervision of the SDMA or DDMA.

They should be encouraged to participate in all training activities as may be organized and should familiarise themselves with their role in State disaster management.

1.14 Citizens:

It shall be the obligatory duty of every citizen to assist the State agencies engaged in disaster management when demanded through “**General Call**” for the purpose of disaster management.

1.15 Concept of Operation:.

- Section 23 of DM Act 2005 makes it mandatory for every State to prepare a disaster management plan, for the protection of life and property from the effects of hazardous events within the State and induced from neighbouring states.
- In significant emergencies or disasters, District Magistrate or the chairperson of DDMA will have the powers of overall supervision and direction control as may be specified under State Government Rules / State Disaster Management Plan guidelines.
- The State EOC strength will be augmented sufficiently and operated as the situation dictates. When activated, operations will be supported by senior officers from line departments and central government agencies; private sector and volunteer organizations shall also be used to provide information, data and resources to cope with the situation.
- The Chairman of SDMA may recommend for action under Sec 24 of DM Act.
- Facilities that have been identified as vital to operation of the State government functions shall be identified.
- The DM or his designate will coordinate and control the available disaster management resources of the UT.
- Emergency public information will be disseminated by all available media outlets through the designated media and information officer.

- Prior planning and continuous training of personnel are prerequisites to effective emergency operations and shall be considered as integral parts of disaster preparations.
- Coordination with surrounding States is essential when an event occurred have impacts beyond State boundaries. Procedure shall be established and exercised for inter State collaboration.
- Departments, agencies and organizations assigned either primary or supporting responsibilities in this document must develop implementation documents in order to support this plan.
- When local resources prove to be inadequate during emergency operations, request for assistance will be made to the State or higher levels of government and other agencies in accordance with set rules and procedures.
- State authority will use normal channel for requesting assistance and/or resources, i.e., through the State Emergency Operations Center (SEOC) to the National EOC. If state resources are inadequate and if exhausted, the state shall arrange to mobilize the requisite resources through central assistance.
- The State EOC will coordinate with the other State's EOC, National EOC, Agencies of the Govt. of India like IMD / CWC to maintain upto-date information concerning potential flooding, cyclones etc. As appropriate, such information will be provided to the citizens of the affected areas in the State.
- Upon receipt of potential problems in these areas, DEOC / designated official will appropriately issue alert/warning and notify action to be taken by the residents of the area likely to be affected.
- Disaster occurrence could result in disruption of government functions and, therefore, all levels of local government and their departments should develop and maintain procedures to ensure continuity of Government action.

It is necessary that for activation of the agencies involved in the disaster management, the institutional trigger mechanism should be there so that every agency takes its assigned role at the time of such disaster. There will be four levels of the Trigger mechanism set up depending upon the warning signals availability as mentioned below:

The design of plans developed for immediate response which would be initiated on a trigger mechanism basis upon the occurrence of a calamity of extreme nature or the plan that would be put into action considering the situation prevailing at a given point of time;

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

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

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

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

L3 level disaster situation is in case of large scale disaster where the State and District authorities have been overwhelmed and require assistance from the Central Government for

reinstating the State and District machinery as well as for rescue, relief, other response and recovery measures. In most cases, the scale and intensity of the disaster as determined by the concerned technical agency like IMD are sufficient for the declaration of L3 disaster.

1.16 Plan Implementation and Maintenance:

Training- After developing a plan, it must be disseminated and all ESF team leaders shall train their personnel so that they have the knowledge, skills and abilities needed to perform the tasks identified/assigned in the plan. Personnel should also be trained on the organization-specific procedures necessary to support those plan tasks.

Exercise the Plan - Evaluating the effectiveness of plan involves a combination of training events, exercises and real-world incidents to determine whether the goals, objectives, decisions, actions and timing outlined in the plan led to a successful response. The purpose of an exercise is to promote preparedness by testing policies, plans and training personnel.

Revise and Maintain - Planning teams should establish a process for reviewing and revising the plan. Reviews shall be a recurring continuous activity. Review on an annual basis is considered minimum. This should be mandatory to consider reviewing and updating the plan after the following events:

- A major incident.
- A change in operational resources (e.g., policy, personnel, organizational structures, Management processes, facilities, equipment).
- A formal update of planning guidance or standards.
- Each activation.
- Major exercises.
- A change in the State's demographics or hazard or threat profile.
- The enactment of new or amended laws or ordinances.

The responsibility for the coordination of the development and revision of the basic plan, annexes, appendices and implementing instructions shall be assigned to the appropriate person(s) in SDMA.

This SDMP shall be internally reviewed on a yearly basis and either be updated or reaffirmed. The updates or reaffirmed document may also be used to summarize the accomplishments of the past year and help the administration to prioritize mitigation goals for the subsequent years.

1.17 Financial arrangement

To ensure the long-term sustenance and permanency of the UTPDMA, funds would be generated and deployed on an ongoing basis. There are different ways to raise the fund in the UT as described below.

1.17.1 State Budget

The Authority, submit to the State Government for approval a budget in the prescribed form for the next financial year, showing the estimated receipts and expenditure, and the sums which would be required from the State Government during that financial year.

The UTPDMA may accept grants, subventions, donations and gifts from the Central or State Government or a local authority or any individual or body, whether incorporated or not.

1.17.2 Union Territory Disaster Response Fund (UTDRF)

The UT Disaster Response Fund is being created to carry out Emergency Response & Relief activities after any disaster.

1.17.3 Grant in aid

Further UT may receive a grant in aid from Central Govt., World Bank and/or other departments/agencies to carry out specific projects/schemes related to disaster management/ mitigation/ capacity building.

1.17.4 Partnerships

There are projects/schemes in which funding can be done by a public sector authority and a private party in partnership (also called on PPP mode funding). In this, UT Govt. along with Private organizations and with Central Govt. share their respective part.

CHAPTER 2

Vulnerability Assessment and Risk Analysis

2.1 State Profile - Social, Economic and Demographic

Demography: The population of the UT as per Census 2011 is 1247953 with 6,12,511 males and 6,35,442 females. The UT ranks twenty-ninth among all States and Union Territories in the size of population and second among UTs. The density of population of the UT is 2547/sq. km (Census 2011). The rural population is 395200 (31.7%) whereas the urban population is 852753 which constitutes 68.3% of the total population. The sex ratio is 1037 per 1000 males.

Table 2-1: Population details of Puducherry UT

District/Region	Area (sq.)	Population (2001)			Population (2011)		
		Male	Female	Total	Male	Female	Total
Puducherry	294	3,69,318	3,65,686	7,35,004	468258	482031	950289
Karaikal	157	84,365	86,275	1,70,640	97809	102413	200222
Yanam	30	15,876	15,486	31,362	27301	28325	55626
Mahe	9	17,146	19,677	36,823	19143	22673	41816
Puducherry UT	490	4,86,705	4,87,124	9,73,829	612511	635442	1247953

As against the national pattern, the percentage of population in urban areas is much higher than the population in rural areas. The entire Mahe and Yanam regions have been classified as urban. About 68% of the UT is classified as urban as against the all India level of 25.7%. Scheduled Caste (SC) constitutes about 16% of the total population of the UT and occupies 23rd position in SC population among the all states and UTs in India. There is no notified ST population in the UT. About 44% of the SC population are living in the urban areas of the UT. About 22% of the population is below poverty line.

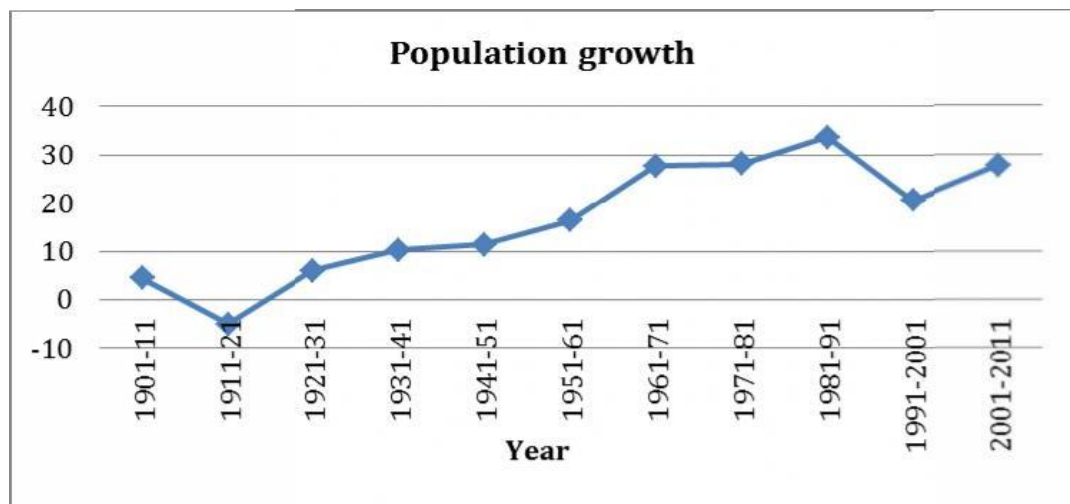


Figure 2-1: Population growth in Puducherry UT (1901-2001)

Puducherry district is the largest among the four regions and consists of 12 scattered areas interspersed with enclaves of Villupuram and Cuddalore districts of Tamil Nadu. The district is located in the deltaic channels of River Gingee and Pennaiyar. It is also interspersed with lakes and tanks.

Karaikal district is located 160 km south of Puducherry and is the second largest in the UT in terms of geographic area. Karaikal is part of the fertile Cauvery delta and mainly thrives on agriculture and fisheries.

Yanam is located in the Godavari delta adjacent to East Godavari district of Andhra Pradesh State and is skirted on the east and south by the Godavari River. The region is divided into two parts by the separation of the Godavari and Coringa Rivers.

The Mahe district is divided into two parts by the west flowing Mahe River. It is bounded in the south west by the Arabian Sea and in the north by the Ponniyam River. While Puducherry and Karaikal regions receive rain mainly from the northeast monsoon, Mahe and Yanam district receive rain from both southwest and northeast monsoons. The district-wise profile of the UT is further discussed separately in the subsequent sections.

Table 2-2: Key demographic indicators of Puducherry UT

Sl. No.	Item	U.T of Puducherry
1	Area	490 sq. Km
2	Population	1247953 (Census 2011)
3	Decadal growth	28.1% (Census 2011)
4	Crude Birth rate	16.1 (2013-14)
5	Crude Death rate	7.2 (2013-14)
6	Infant mortality rate	19 (2013-14)
7	Sex Ratio	1037(Census 2011)
8	Population density	2547 (Census 2011)
9	Population below poverty	21.67%
10	Literacy Rate	85.85%
11	HDI	6 th rank at national level

Revenue and Administration: The UT consists of 264 census villages, 129 revenue villages 6 taluks (4 in Puducherry, 2 in Karaikal) and 2 sub-taluks (Mahe and Yanam). For the purpose of development administration, the UT is divided into six blocks namely (i) Ariyankuppam (Karikalampakkam), (ii) Oulgaret (Reddiarpalayam), (iii) Villianur, (iv) Karaikal, (v) Mahe and (vi) Yanam consisting of 47 circles of village level units. There are five municipalities, namely Puducherry, Oulgaret, Karaikal, Mahe and Yanam. There are 10 Commune Panchayats, namely, (i) Villianur, (ii) Mannadipet, (iii) Ariyankuppam, (iv) Bahour, (v) Nettapakkam, (vi) Tirunallar, (vii) Neravy, (viii) Nedungadu, (ix) Kottucherry, and (x) T.R. Pattinam.

Economy: The net State domestic product of the UT is Rs. 21,061 crore (2013-14). The per capital income is Rs. 1,48,784.

Soil: Various types of soil found in the UT are red loamy, coastal alluvium, delta alluvium, red laterite, deep black and red sandy soil.

Climate: The mean maximum temperature is 38.2° C and mean minimum temperature is 24° C.

Rainfall – North East monsoon is the major source of rainfall in the UT. The average rainfall details of four districts of the UT is provided in the table below;

Table 2-3: Average rainfall in four districts of Puducherry UT

Region	Actual rainfall in mm (Jan – Dec)					
	Normal	2010	2011	2012	2013	2014
Puducherry	1200.05	1812.00	1842.00	967.00	959.40	1333.00
Karaikal	1388.50	1856.40	1261.80	1306.10	1019.90	1356.70
Yanam	1298.45	2286.00	900.00	1348.00	1033.60	635.80
Mahe	3227.4	3256.40	3377.80	2353.80	3493.60	3213.40

Agriculture and economy: Agriculture and fisheries play an important role in the UT's economy, which provides livelihood for majority of the population. Principal crops in the UT are paddy, sugarcane and groundnut. The UT is characterised with large chunk of small landholdings of less than 1 ha. As there is reduction in cultivable land in the UT due to increased non-agri activities, the animal husbandry sector has gained dominance. Milk production and distribution is well organised and is largely in the cooperative sector. A well-established modern dairy is considered a significant achievement of Puducherry. The UT comprises four maritime regions namely, Puducherry, Karaikal, Mahe and Yanam with a total coastal line of 45 km, 1000 sq. km of continental shelves provide good potential for marine fisheries. It has a fishermen population of about 65,000, of which 13,000 are actively engaged in fishing and living in 27 marine fishing villages and 23 inland fishing. The UT has 675 sq. km of inshore waters, 13.47 sq. km of inland water and 8 sq. km of brackish water fisheries. Main item exported includes rice, fish, hides, etc.

Irrigation: The net area under various sources of irrigation during the year 2013-14 was recorded as 13,830 ha, 88.6% of the net area sown was irrigated in Puducherry district, whereas the corresponding figures for Karaikal, Mahe and Yanam are 93.71%, 6.41% and 50.00% respectively. Groundwater serves the irrigation, drinking and industrial needs in the UT. Puducherry and Karaikal have large number of ponds/tanks, which are also a source of irrigation.

Industries: The UT of Puducherry is an industrially backward area classified as Category-A, Special District. Due to the pro-active investment policies, hassle free environment and industry friendly administration, the UT has made rapid strides in industrial development. There are 77 large scale, 188 medium scale and 8,605 small scale industries in the UT of Puducherry.

Education: As per the Census 2011, the literacy rate in the UT is 85.85% as against the national average of 74.04. Almost all the habitations in the UT are provided with primary school facility within 1 km. distance. When it comes to higher education, the UT can boast of a central university - Pondicherry University. There are 02 Medical Colleges JIPMER (Jawaharlal Institute of Postgraduate Medical Education & Research) and IGMCRI (Indira Gandhi Medical College & Research Institute), 01 Rajiv Gandhi Ayurveda Medical College, Mahe, 02 Engineering Colleges Pondicherry Engineering College and Perunthalaivar Kamarajar Institute of Engineering and Technology, Karaikal, 01 Rajiv Gandhi Institute Of Veterinary Education and Research at Puducherry, 01 Pandit Jawaharlal Nehru College of Agriculture (PAJANCOA) at Karaikal, 06 colleges in the UT out of

which two colleges are exclusively for women. In addition to that, one PG centre namely Kanchi Mamunivar Centre for Post Graduate Studies, five Polytechnic Colleges are functioning under the Government. Under technical education, PIPMATE is established to impart Post Matric Technical Education and training in various engineering subjects. Under private sector, there are seven medical colleges, five engineering colleges and two dental colleges.

Table2-4: Literates composition in the UT

UT	Population		Number of Literates			
			Puducherry	Karaikal	Mahe	Yanam
Puducherry	Male	497378	380946	79903	16610	19919
	Female	459931	345703	75013	19860	19355
	Total	957309	726649	154916	36470	39274

Source : Directorate of Economics and Statistics, Puducherry.

Health: Key statistics on health care institutions and health care personnel available in the UT are presented in Table 2-5 and Table 2-6 below;

Table 2-5: Health care institutions and resources in the UT

Particulars	Required	In position	Shortfall
Sub-centre	65	81	-
Primary Health Centre	10	39	-
Community Health Centre	2	4	-
Multipurpose worker (female)/ANM at sub centres & PHCs	116	131	-
Health Worker (male) MPW(M) at sub centres	77	0	77
Health Assistant (female)/LHV at PHCs	39	12	27
Health Assistant (male) at PHCs	39	15	24
Doctor at PHCs	39	68	-
Obstetricians & Gynaecologists at CHCs	4	0	4
Physicians at CHCs	4	4	0
Paediatricians at CHCs	4	0	4
Total specialists at CHCs	16	4	12
Radiographers	4	4	0
Pharmacist	43	63	-
Laboratory technicians	43	21	22
Nurse/midwife	67	219	-

Source: RHS Bulletin, March 2008, M/O Health & F.W., GOI

Table 2-6: Other health institutions in the UT

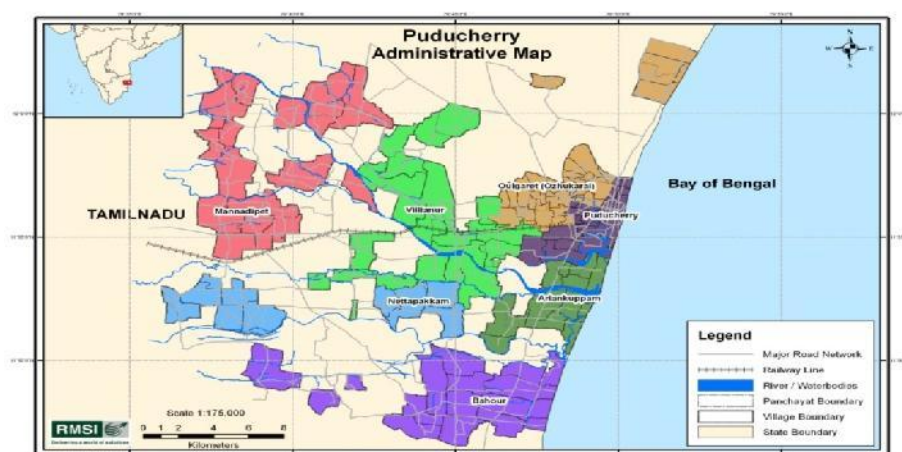
Health Institution	Number
Medical college(Includes Pvt Medical Colleges also)	10
District hospitals	4
Ayurvedic hospitals (Mahe)	1
Ayurvedic dispensaries	16
Homeopathic dispensary	7

Tourism: Puducherry attracts a lot of tourists as it has a rich French cultural heritage, having been the capital of the French colonies in India since the 17th century. Puducherry district, with a coastal line of 32 km, well planned French Boulevard town, palm fringed beaches, resorts, backwaters, water sports centre, fishing villages, harbour, the pier, Aurobindo Ashram, Auroville and other attractions makes it an ideal tourist destination.

2.1.1 District Profile: Puducherry

Demography: Puducherry is the largest urban agglomeration in Puducherry UT, occupies an area of 294 km² and has a population of 950289 (Census 2011). It lies on the east coast of India, approximately 162 km south of Chennai.

Figure 2-2 Administrative map of Puducherry district



The district has a population density of 3,232 persons/sq. km and experienced a population growth of 28.73% (Census 2011). As per Census 2011 provisional data, the density and population growth has shown a remarkable increase. The sex ratio has increase from 990 to 1029 female/1000 male during this decade. The key demographic indicators of the district are provided in Table 2-7

Table 2-7: Demographic detail of Puducherry district

Demographic details	Census 2001	Census 2011*
Population	7,35,332	9,50,289
Population density (person/sq.km)	2,510	3,232
Growth Rate	20.88 %	29.2 %
Sex Ratio (female/1000 male)	990	1029
Literacy Rate	80.66 %	85.4 %
Average household size	4.49	4.25
Population age < 6	88,209	99,838
SC population	16.45 %	16%

* Based on provisional Census 2011 data

Revenue and Municipal Administration: Puducherry district has two urban bodies with the status of municipality – Puducherry (42 wards) and Oulgaret municipality (37 wards). The portion of Ariyankuppam and Villianur commune panchayat is also included with Puducherry and Oulgaret municipalities. The rest of the district land is under the local administration - commune panchayats of Ariyankuppam, Villianur, Nettapakkam, Mannadipet and Bahour.

Table 2-8 Details of urban local bodies in Puducherry district

Urban local bodies	Area (sq. km)
Puducherry Municipality	19.54
Oulgaret Municipality	36.70
Villianur Commune Panchayat [urban]	10.89
Ariyankuppam Commune Panchayat [urban]	4.77
Total	71.9

Soil: The main soil types are red ferrallite, black clay and coastal alluvial. There are 2 main drainage basins, of the Gingee River which crosses diagonally from north-west to the south-east and Pennaiyar which forms the southern border. The topography of the district is more or less flat. There are no hills and forests in the district.

Climate: The climate of Puducherry is very similar to that of coastal Tamil Nadu. Summer lasts from April to early June, when maximum temperatures frequently hit the 41° C. The average maximum temperature is 36° C and minimum temperatures are in the order of 28 - 32 ° C. This is followed by a period of high humidity and occasional thundershowers from June till September. The Northeast monsoon sets in during the middle of October, and Puducherry gets the bulk of its annual rainfall during the period from October to December. The annual average rainfall is 1,200.05 mm. winters are mild, with highs of 30° C and lows often dipping to around 18 - 20° C.

Agriculture and economy: As per the statistical records 2005-06, the area brought under total cropped area is as 18,043 Ha of which 16,054 Ha are gross irrigated area. There are about 80 tanks, which help replenishing ground water. Ground water is the main source of irrigation, which constitutes 100% of total cropped area. The main crops cultivated in the district mainly are paddy, sugarcane, coconut, betel vines, millets. Groundnut and cotton are the major non-food crops in the district and the total irrigated area under non-food crops being 3,945 Ha. In some parts of the districts, flowers such as jasmine, rose, marigold etc., are grown. The livestock and poultry also contribute to the economy of the district.

The district has both marine and inland fisheries. The varieties which appear in fairly large numbers are ribbon fish, sardine, silver belly, sharks, etc. The flying fish fishery that lasts from May to July is the most important seasonal fishery of the district. The Bahour and Oussoudu lakes are the two biggest lakes in Puducherry district and a source of inland fisheries and water for agriculture. The marine and inland fisheries production of the district are 13,310.2 and 2,670 m. tonnes respectively (as per 2011 fisheries department statistics). The district has a total fishermen population of 62,694 in 15 marine and 10 inland fishermen villages (2011 statistics).

Irrigation: The district mainly receives rain from the northeast monsoon and has large number of tanks and ponds with rich aquifer. About 54% of the total cultivable area is under irrigation.

Industries: Puducherry has 61 large scale and 176 medium scale industries of which includes oil tanks and chemical industries handling highly inflammable products. Major industries in the area are Swadeshi cotton mills Ltd, Sri Bharathi mills, and Anglo-French textiles. Small scale industrial units are mainly engaged in the manufacture of furniture, dry cells, cosmetics, steel utensils, cement products, etc. cottage industrial units include pottery, carpentry, blacksmith, basket making, dying, pipe making, cane works, handmade paper, batik, embroidery etc. Main items of exports include groundnut, rice, fish, hides, handicrafts, etc.

Puducherry is an important trading port. The principal trade at this port consists mainly of imports of wheat, fertilizers and cement.

Education: The literacy rate of the district is 85.4% compared to the UT average of 85.8%. The male literates are higher than female. There is a distinct difference in the literacy rate among urban and rural population which is 75% and 62% respectively. Some of the reputed institutes of higher education and research and Jawaharlal Institute of Post-Graduate Medical Education and Research (JIPMER), one of the country's leading centers of medical education and research is in this district. Among the four districts of UT, Puducherry district has the maximum number of educational institutions, from pre-primary to graduate, postgraduate and professional level education being offered in these institutions.

Health: Puducherry has well established and reasonably well developed healthcare facilities from a number of hospitals, nursing homes, maternity homes, speciality clinics, etc. in both Government and private sectors. There are 2 CHCs, 27 PHCs and 55 sub centres in the district. In addition to this there are several private hospitals including speciality hospitals in the district catering to the health care requirements of the people of Puducherry and neighbouring districts of Tamilnadu.

Tourism: Spiritual, pilgrim, healthcare and leisure tourists form the major share of the tourist traffic in the region. A considerable number domestic tourists from the adjacent States also visit Puducherry. Aurbindo Ashram, Auroville Ashram, Architectural French buildings in the French precincts of the town, Promenade, Chunnambar resort, French war memorial, 19th century light house, Ananda Ranga Pillai Mansion, park monument (Aayi Mandapam), Ariyankuppam (Arikamedu) are major tourist attractions in Puducherry.

2.1.2 District Profile Karaikal

Karaikal district occupies an area of 157 sq km. Karaikal is bounded on the north and south by Nagapattinam district of Tamil Nadu state, on the west by Tiruvarur district (also belonging to Tamil Nadu), and on the east by the Bay of Bengal. The enclave is located 132 km south of the Puducherry, and is known for its rich cultural heritage. Tamil is the principal language spoken and Tamils are the predominant linguistic group in the district.

Demography: The total population of the district is 2,00,222 (Census 2011) with a population density of 1,252 person per sq. km. The figures reveal that after continuous increase in the growth rates during 1961 – 1991, 2001 experienced a fall in the decadal and annual population growth (growth decline from 17.52 percent to 17.20 percent based on 2001 and 2011 census data). The sex ratio is 1,047 females for 1000 male population (Census 2011). The urban rural population composition is 49.01 and 50.99 percent respectively.

Table 2-9: Demographic detail of Karaikal district

Demographic details	Census 2001	Census 2011
Population	1,70,640	2,00,222
Population density (person/sq.km)	1066	1,252
Growth Rate	17.52 %	17.20
Sex Ratio (female/1000 male)	1023	1047
Literacy Rate	81.9	87.1
Average household size	4.45	4.12
Population age < 6	21,564	22,263
SC population	18.09 %	17.7 %

Revenue Administration: Karaikal district has 1 municipality and 5 communes; Kottucherry, Nedungadu, Tirunallar, Neravy and Tirumalarajanpattinam.

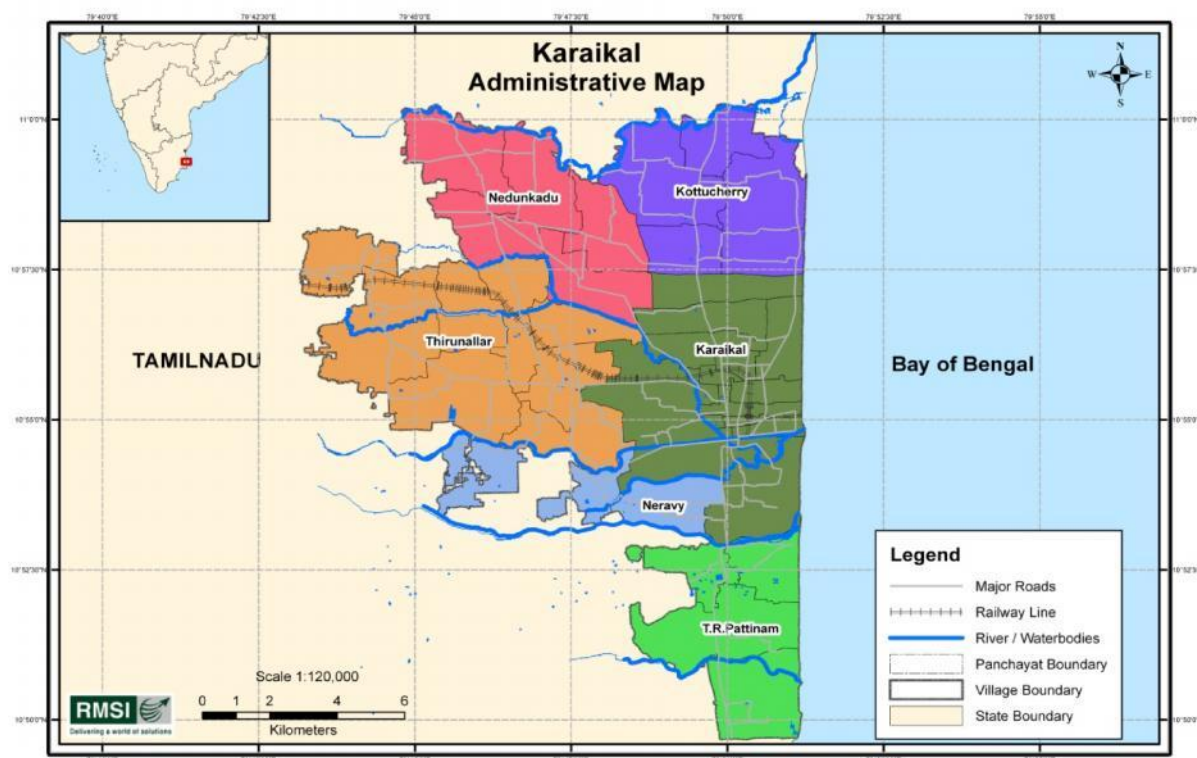


Figure 2-3: Administrative map of Karaikal district

For the purpose of revenue administration, the UT has declared Karaikal as revenue district, with the Secretary dealing with Revenue as Collector. Karaikal region constituted a separate revenue division. A Sub-Collector or Deputy Collector is in charge of this division. The district is divided into Taluks with Tahsildar in-charge and further into firkas and villages.

Soil: Being in the deltaic region of Cauvery, the dominant soil of the district is sandy alluvium. The coastal stretches are characterised by fine sandy loam.

Climate: The district experiences tropical maritime type of climate with small daily range of temperature and moderate rainfall. Karaikal has an annual average rainfall of about 139 cm. About 68 percent of which occurs during October to December. The amount of rainfall during the south-west monsoon period is small, being less than 20 per cent of the annual. November is the rainiest month, accounting for about a third of the annual total. The range of variation of annual rainfall is wide.

December and January are the coolest months with the maximum at about 28°C and the minimum at about 23°C. Minimum temperature as low as 16°C may sometimes be recorded. The diurnal ranges of temperature are generally small throughout the year, being highest (about 10° C) in May and June, and the least (about 5°C) during November to February.

Agriculture and economy: The total cropped area of the district is 6,512 Ha as per 2013-14 statistical records. Agriculture here thrives mainly on canal irrigation as most of the rivers are not perennial (more than 70% of the agriculture). The water in the rivers of the district depends on the release of water from Mettur Dam in Tamil Nadu. The paddy is the main crops and in some part of the district raise 3 crops a year (961, 7,755, 79 Ha for three seasons respectively producing about 17,000

m. tonnes), sugarcane 27 Ha, plantain 11 Ha and other vegetable crops about 4 Ha as per Census 2001. The estimated inland and marine fish production of the district is 19,390 m. tonnes and 738 m. tonnes respectively. The total fishermen population in the district is 19,000 in 10 marine and 1 inland fishermen villages (2011 statistics). The cattle also contribute to the agricultural economy of the district and there are 20 milk producers/co-operatives in the district.

Irrigation: There are eight rivers in Karaikal region, feeding the irrigation requirements of the district's agricultural activities. These rivers are Arasalar, Mullaiyar, Nandalar, Nattar, Noolar, Piravidaiyanar, Thirumalairayanar and Vanjiyar. These rivers are indeed distributaries of the Cauvery River. The water flow in these rivers is dependent on the release of water in the Cauvery River by Tamil Nadu State. Karaikal being at the tail end of the Cauvery delta, a major portion of the flow of water from Tamil Nadu is drained into the sea through these rivers. In times of need, sufficient water is not available in the region for irrigation purposes. The gross irrigated area in the region was 4,953 Ha. as per 2001-2011 statistics. Karaikal has about 26 percent of the total irrigated area of the UT. Canal irrigation accounts for about 85 percent of the gross irrigated area in the region. The remaining areas are irrigated by tube wells and spring channels.

Industries: Karaikal has 12 large scale and 4 medium scale industries as per statistics of Department of Industries and Commerce. To give impetus to the industrial growth in Karaikal the Pondicherry Industrial Promotion Development and Investment Corporation Limited (PIPDC) has set up a growth centre with an area of 597 acres. It is expected to set up 20 LSI, 40 MSI, and 440 SSI with an anticipated capital investment of Rs.69,000 lakhs and a turnover of Rs. 3,45,000 lakhs and an employment generation of 23,000.

Education: The district has a literacy rate of 87.10 which is higher than the UT's literacy rate. The female literacy rate is also higher than UT's average which is 82.02

Health: The health care setup in Karaikal consists of 1 CHC, 11 PHCs and 17 sub centres in the district. In addition to this, there are few private hospitals in the district.

Tourism: Karaikal has few or limited touristic places for the leisure / adventure / entertainment and religious. The domestic tourism, from neighbouring state particularly pilgrim tourism contribute to the major share of tourism in the district. Saneeswaran temple, Sri Darbanayeswarar temple and the Badrakaliyamman temple are the three main attractions of the Thirunallar town. The Saneeswaran temple is the most noted temple in the town and it is famous for the Shrine of Lord Shani. The temple is within Lord Darbanayeswaran. Further, The "Maangani Festival" of Karaikal Ammaiyaar temple is also one of the main tourist attractions.

2.1.3 Regional Profile: Yanam

Yanaon or Yanam was a Dutch colony before French overtook it in 1720s. Puducherry and the other enclaves of Karaikal, Mahé and Yanam came to be administered as the Union Territory of Puducherry from July 1, 1963. After the liberation, the French Government offered citizenship to the people living in colonies of French India, As a result, some 10,000 people in Yanam choose French nationality. According to some estimates, nearly 120 to 150 Telugu families from former French India live in France. The official languages of Yanam are Telugu and French.

Demography: Yanam is situated on the east coast of Indian Peninsula and covers a total area of 30 sq. km. The region lies between 16° 42' north latitude and 82° 11' east longitude. The district lies in the

delta of Godavari River, the town is situated where the river meets its tributary Koringa River (Coringa River), 9 kilometres from the Bay of Bengal in the Coromandel coast. Yanam region has a population of 55,626 with a population density of 3,272 person/sq.km (Census 2011). Its population growth rate over the decade 2001-2011 was 77.2 %. Yanam has a sex ratio of 1038 females for every 1000 males, and a literacy rate of 80.26 %.

Table 2-10: Demographic detail of Yanam region

Demographic details	Census 2001	Census 2011
Population	31,362	55,626
Population density (person/sq.km)	1,568	3,272
Growth Rate	54.67%	77.2%
Sex Ratio (female/1000 male)	975	1,038
Literacy Rate	64%	79.50%
Average household size	4.34	4.4
Population age < 6	4,450	4553
SC population	18.48 %	15.2 %

Revenue Administration: The lone Yanam Municipality is composed of 10 municipal wards. The Regional Administrator is also Deputy Collector (Revenue) is the within the purview of revenue administration and placed under the District Collector Puducherry District who is the head of Revenue Administration. He performs assessment and collection of land revenue, collection of local cess, surcharge on behalf of local bodies, collection of court fees, recovery of loans and advances, excise arrears, other dues of various departments, and all the dues recoverable as arrears of land revenue. He ensures preparation of Crop Report (Adangal) and maintenance of related revenue accounts. Implementation of Land Ceiling Laws, declaration of surplus land under Land Reforms Act and distribution of the same to landless poor. Redressing Public Grievances / Land Disputes. Implementation of Rent control legislations. Maintenance of Law & Order in co-ordination with the Police. Conduct of Revenue Court by the Sub-Divisional Magistrates and making decisions of belated registration under the Registration of Births and Deaths Act. Implementing the Cultivating Tenants Protection Act, Public Premises (Eviction of unauthorized occupants) Act. Issue of licenses under Arms Act, Explosives Act, Cinematograph Act, Mines and Minerals Act and Petroleum Act, etc. Management of all Government poromboke lands, licensing of Government lands. Fixation of fair rent in respect of private buildings taken on lease by the Government Acquisition of land for various agencies/ Departments of the Government for public purpose Census related works Performing duties of Asst. Electoral Registration Officer by Tahsildars / Deputy Tahsildars. Functioning as Charge Officers by Tahsildars / Deputy Tahsildars for census related works. Preparation of Guide-Line Registers for fixation of Land value. Assessment of market value of instruments undervalued by the executants, collection of deficit stamp duty as per the market value. Conduct of Parliamentary/ Assembly/ Civic Elections-District Election Office. Framing State & District level Disaster Management Action Plan. Constituting Emergency Support Forces & Task forces under Disaster Management Act, 2005 to act effectively at the time of Disasters.

Soil: The domain soil type of the district is alluvium consisting of sand clay and gravel. The soil is greyish black and is essentially clayey in composition. A few thin layers of sandy clay or sand, not exceeding 0.3 metre in thickness are intercalated with the clayed soil. The river sands on the bank of Gauthami Godavari consists predominantly of quartz, feldspar and muscovite mica. A few grains of monazite are also found in the black streaks. There are no minerals of economic value in the region.

Climate: Temperatures in Yanam range from 27 °C to 45 °C in summer and 17 °C to 28 °C in winter. From February, temperature starts rising rapidly till May, which is the hottest month with the mean maximum around 37 °C and mean minimum around 28 °C. Humidity being high, the heat is very tiring. The maximum temperature on some days in May or early June before the onset of the southwest monsoon may even touch 47 °C. The sea breeze, however gives some relief in the afternoons. The humidity ranges from 70% in the day and 60% in the evenings with humidity increasing to 80% during summer months. Similarly pre-monsoon thunder-showers may also bring welcome relief on some days. With the onset of the monsoon in June the temperature falls rapidly and remains almost steady till September. In this season mean maximum temperature is around 32 °C and night temperature fall rapidly till December or January when day temperature is around 27 °C and the night temperature around 19 °C. Sometimes the minimum temperature may drop as low as about 14 °C. December and January are the coolest months. The district receives both southwest and northeast monsoons. The average rainfall of normal year is 1,298 mm.

Agriculture and economy: As an agriculture-friendly region, Yanam grows mainly coconut, paddy and groundnut. Eighty small Scale industries and three large scale industries are operational in this area. The district has 10,648 fishermen population in 11 marine fishermen villages. The marine fish catch of the district is 2,879.3 m. tonnes and inland fish catch of 1,001.5 m. tonnes (2013 statistics).

Irrigation: Yanam receive irrigation water through the Bank Canal, which starts from Dowleswaram head works (Sir Arthur Cotton Barrage on the River Godavari downstream Rajahmundry). This canal runs towards east up to Pillanka, a small village near Yanam. From popularly known as French Channel built by an agreement entered in 1949 between the then French Government and the Government of India. This canal serves the irrigation as well as drinking water needs of the areas west of Coringa River. The water from Adivipolam channel is used for drinking purpose also, as in the case of French channel.

Industries: There are 3 large and 8 medium scale industries in the region. Main industries include ceramics, tiles, shrimp feed, deflection components, solvent oil extraction from rice bran and edible oil, aluminium extrusions, alloy steel castings, white cement, coir products, food processing units, etc.

Education: The literacy rate of Yanam is 79.5 percent which is lowest among the 4 regions of UT. The male and female literacy rate is 82.8 and 76.4 percent respectively.

Health: Yanam has one government hospital with 50 beds. There is no CHCs or PHCs in the district and has 5 sub centres.

Tourism: Along with the Yanam ferry road, Annavaram, Draksharamam and Padagaya temples are the most fascinating tourist spots of Yanam. It is more of pilgrim tourism in this district and domestic tourist mainly from neighbouring district contribute to the major share.

2.1.4 Regional Profile: Mahe

Demography: Mahe region of Puducherry with a total area of 9 sq.km and is surrounded on its three sides by Kannur District and one side by Kozhikode District making it geographically part of North Malabar region of Kerala. The region has a population of 41,816 (Census 2011) with a population density of 4,659person/sq.km. The major languages are Malayalam, Tamil and French.

Table 2-11: Demographic detail of Mahe region

Demographic details	Census 2001	Census 2011
Population	36,823	41,816
Population density (person/sq.km)	4,091	4,659
Growth Rate	10.09	13.5%
Sex Ratio (female/1000 male)	1,197	1,184
Literacy Rate	94.43%	97.9%
Average household size	6.08	5.9
Population age < 6	4,274	-
SC population	0.3 %	0.3 %

Revenue and Administration: Mahe district is 100% urban and has the status of municipality. Mahé Municipality consists of 15 wards. They are Naluthara Pocket, Pandakkal North, Pandakkal Central, Pandakkal South, Palloor North-East, Palloor North-West, Palloor South-West, Palloor South-East, Chalakkara North, Chalakkara South, Cherukallayi Pocket, Cherukallayi, Mahé Pocket, Mundock, Manjakkal, Choodikotta, Parakkal, Valavi. The Regional Administrator is also Deputy Collector (Revenue) is the within the purview of revenue administration and placed under The District Collector Puducherry District is the head of administration. He performs assessment and collection of land revenue, collection of local cess, surcharge on behalf of local bodies, collection of court fees, recovery of loans and advances, excise arrears, other dues of various departments, and all the dues recoverable as arrears of land revenue. Preparation of Crop Report (Adangal) and maintenance of related revenue accounts. Implementation of Land Ceiling Laws, declaration of surplus land under Land Reforms Act and distribution of the same to landless poor. Redressing Public Grievances / Land Disputes. Implementation of Rent control legislations. Maintenance of Law & Order in co-ordination with the Police. Conduct of Revenue Court by the Sub-Divisional Magistrates and making decisions of belated registration under the Registration of Births and Deaths Act. Implementing the Cultivating Tenants Protection Act, Public Premises (Eviction of unauthorized occupants) Act. Issue of licenses under Arms Act, Explosives Act, Cinematograph Act, Mines and Minerals Act and Petroleum Act, etc. Management of all Government poromboke lands, licensing of Government lands. Fixation of fair rent in respect of private buildings taken on lease by the Government Acquisition of land for various agencies/ Departments of the Government for public purpose Census related works Performing duties of Asst. Electoral Registration Officer by Tahsildars / Deputy Tahsildars. Functioning as Charge Officers by Tahsildars / Deputy Tahsildars for census related works. Preparation of Guide-Line Registers for fixation of Land value. Assessment of market value of instruments undervalued by the executants, collection of deficit stamp duty as per the market value. Conduct of Parliamentary/ Assembly/ Civic Elections-District Election Office. Framing State & District level Disaster Management Action Plan. Constituting Emergency Support Forces & Task forces under Disaster Management Act, 2005 to act effectively at the time of Disasters.

Villages in Mahé Municipality: Mahé Town, Cherukallayi, Chalakkara (part of Naluthara pocket), Chembra (part of Naluthara pocket), Palloor (part of Naluthara pocket), Pandakkal (part of Naluthara pocket).

Soil: Since this region is contiguous with the Malabar region of Kerala, the land shares similar characteristics such as the typical red laterite soil of Malabar.

Climate: The region gets rain for more than six months of the year. Majority of the rain is from southwest monsoon, along with rain during summer months. During summer months, March to June, the mean maximum temperature ranges between 32 °C and 37 °C. In the post monsoon / winter period, December to February, the temperature ranges from 29 °C and 31 °C. During the monsoon

months of June to November, the temperature variation is from 24 °C to 26 °C. The region experiences very humid conditions. The humidity level is around 80-85% in mornings and about 70 - 75% in evenings throughout the year. The district experiences considerably higher rainfall compared to the other districts of UT. The maximum contribution is from the southwest monsoon during the period June to September, which is about 80% of the total rainfall. Northeast monsoon accounts for 12% and the rest are rest from summer rain.

Agriculture and economy: The total agricultural land area of the district is 870 hectares, the net area sown was 579 hectares and the gross cropped area was 579 hectares, almost the same as the net sown area (2012-13 statistics). The areas under food crops and non-food crops in this total were 148 hectares and 489 hectares. Paddy is cultivated as the major crop, with two crops raised per year. Due to low production of paddy and other food crops, there is a large dependence of the region's population on outside sources for obtaining its requirements of food grains, pulses, and other food crops. Except for betel nuts and tapioca, there is hardly any production of other non-food crops in the region. The marine fish catch is 5,560 m. tonnes and has a total fishermen population of 4445 in 3 marine fishermen villages (2013 statistics).

Irrigation: The gross irrigated area was only 24 hectares (2012-13). The extent of wetland is limited and entirely rain fed. Irrigation is wholly by water from springs, ponds and channels. There is no canal, tank or tube well in this region, indicating the great deficiency in water sources in Mahe. Paddy, banana, arecanut, and tapioca are the major crops irrigated, the last two having a share of over 80% in the total irrigated area. There is no irrigated area for non-food crops.

Industry: Mahe has only a very few industries. The only large scale industry functioning in this region is the Cannanore spinning and weaving mills. There are many small-scale industries in Mahe providing employment.

Education: The literacy rate of the district is 97.9 percent which is higher than the UT's figure of 85.85 percent.

Health: Mahe has a higher health indicators compared to Karaikal and Yanam. The district has 2 government hospitals with total beds of 142. There is 1 CHC, 1 PHC and 4 sub centres in the district.

Tourism: Mahe region does not have any major tourist attraction. Domestic tourist and pilgrim tourist contribute to the major share of tourism in the district. The pilgrims comes to the temple festivals and church festivals being held every year by the various temples and St. Theresa's Church located in Mahe.

2.2 History of Vulnerability of UT to Various Disasters

The UT of Puducherry is vulnerable to various natural and human induced hazards. The hazard frequency and intensity vary in the four regions: Puducherry, Karaikal, Mahe and Yanam, due to the locational, physiographic and social characteristics.

All the four regions are under the influence of monsoon: Puducherry, Karaikal and Yanam being on the east side are under the influence of northeast monsoon and Mahe which is on the west coast of India is under the influence of southwest monsoon. Puducherry, Karaikal and Yanam are also prone to tropical cyclones that develop in the Bay of Bengal region. The cyclone leads to strong winds, wave surge and sometime heavy rain leading to damage of agricultural crops, infrastructure, buildings and sometimes life. The monthly frequency of cyclone in the Bay of Bengal is provided in

the Fig 2-4. The impact/damage of cyclone depends on the wind speed and track of the cyclone.

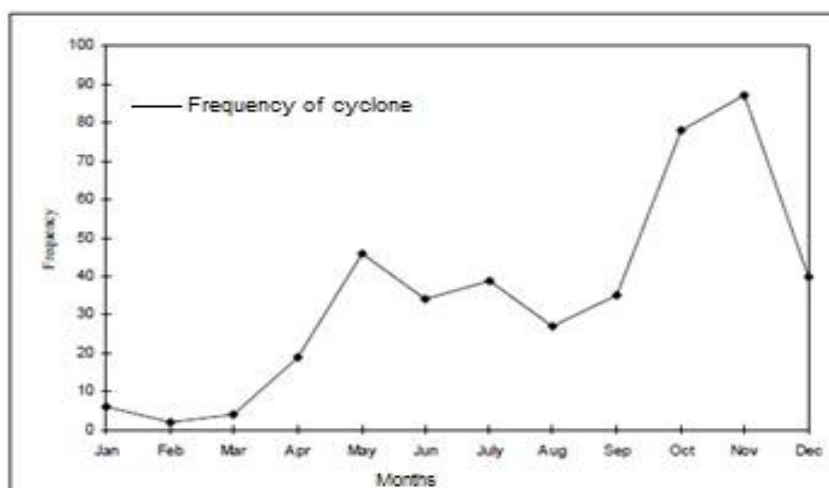


Figure 2-4: Monthly variation of the frequency of cyclones over Bay of Bengal during 1891-2011

Source: SAARC Meteorological Research Centre (SMRC) 1998+IMD data.

The Department of Revenue and Disaster Management has executed a project “Risk and Vulnerability Mapping of Puducherry and Karaikal District” in 2010 and has generated probabilistic risk maps for prominent hazards (flood, cyclone and tsunami) for the two districts. The probabilistic risk maps generated as part of the project are provided in the district level hazard and vulnerability assessment section of Puducherry and Karaikal.

Table 2-12: Historical Natural Hazards in UT of Puducherry

S. No.	Year	Hazard	District	Death	Affected People	Loss in lakhs Rs
1	1993	Cyclone and heavy rain	Puducherry and Karaikal	-	-	4,647
2	1996	Heavy rain/Flood	Puducherry and Karaikal	-	-	4,648
3	1996	Cyclone	Yanam	-	-	7,914
4	1997	Heavy rain/Flood	Karaikal	-	-	1,135
5	1998	Heavy rain/Flood	Puducherry and Karaikal	-	-	911
6	2000	Flood	Yanam	-	-	328
7	2000	Cyclone	Puducherry	2	-	5,165
8	2002	Drought	Karaikal	-	-	3,240
9	2003	Drought	Yanam	-	-	469.29
10	2004	Tsunami	Puducherry	601	43,432	50,065
11	2004	Tsunami	Karaikal	492	30,000	1,500
12	2005	Flood	Puducherry and Karaikal	-	-	-
13	2006	Flood	Puducherry	-	-	-
14	2006	Flood	Karaikal	-	-	-
15	2006	Flood	Mahe	-	-	-
16	2006	Flood	Yanam	-	-	-
17	2007	Heavy rain/Flood	Puducherry	-	-	1,350
18	2008	Cyclone (Nisha)	Puducherry and Karaikal	-	1,60,00	-
19	2011	Cyclone (Thane)	Puducherry	12	11,45,000	247213
20	2013	Cyclone (Helen)	Yanam	1	55,616	995

Historical fire hazard data for the last four years were collected from each fire station in the UT. On analysis, the frequency of events per year shows a decreasing trend but the resultant economic loss has increased. Deaths have also been reported in all four districts due to fire accidents.

Table 2-13: Historical fire hazards in UT of Puducherry

Year	Hazard	District	Death	Affected	Loss in lakhs Rs
2010	613 events	Puducherry	15	-	603.26
	99 events	Karaikal	4	4	74.52
	23 events	Mahe	2	5	59.79
	16 events	Yanam	-	-	18.94
2009	879 events	Puducherry	8	3	206.03
	197 events	Karaikal	-	-	46.04
	21 events	Mahe	4	-	16.40
	24 events	Yanam	1	-	1.74
2008	323 events*	Puducherry	-	-	79.62
2007	357 events*	Puducherry	-	-	469.52

* Data from two fire stations only

Based on historical hazard data and inputs from stakeholders, hazard risks can be categorized as per the matrix below for the four districts of UT.

Table -2-14: District level hazard categorization

Name of district	Flood	Cyclone	Strong Wind	Tsunami	Drought	Industrial Chemical hazard	Fire hazard	Epidemics	Land slide
Puducherry	Moderate	High	Moderate	High	Low	Moderate	Moderate	Low	Low
Karaikal	High	High	Moderate	High	Moderate	Low	Moderate	Low	Low
Yanam	Moderate	Moderate	Moderate	Low	Low	Moderate	Low	Low	Low
Mahe	Low	Low	Low	Low	Low	Low	Low	Low	Moderate

2.3 Hazard Risk Assessment and Vulnerability Mapping: Puducherry District

Puducherry has been classified as a multi-hazard prone district. It is highly vulnerable to cyclone, flood/heavy rains, fire and industrial hazards. Tsunami 2004 severely affected the district. The district falls in earthquake zone III, moderate damage risk zone (MSK VII) and does not have any history of damaging earthquake events. The district has a plain to rolling topography and is not vulnerable to landside hazard.

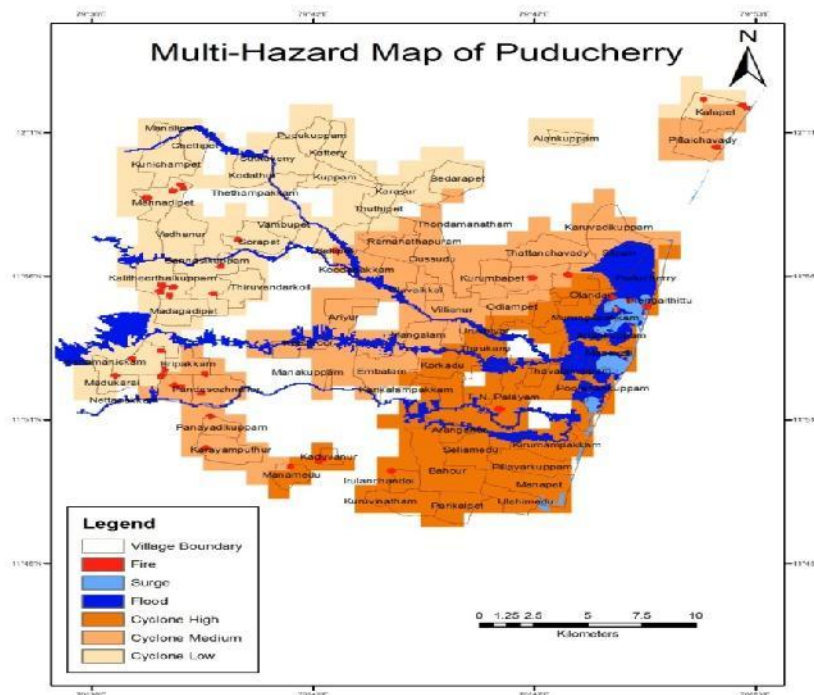


Figure 2-5: Multi hazard prone area in Puducherry district (map prepared based on grid based analysis in GIS)

The historical hazard data points towards a clear clustering of events in a certain part of the year. For instance, cyclone hazards occur in Puducherry district mostly in the months of November, December and January. Occurrence of heavy rain and flood is also during these months. Outbreak of epidemics either waterborne or vector borne disease, in the district is mostly during the rainy months. Most of the houses have access to tap water and incidences of waterborne diseases are likely to occur only when there is a catastrophic event like the 2004 tsunami.

2.3.1 Heavy rain/Flood

Heavy rain and flood occur frequently in Puducherry district. Heavy rains and floods often cause widespread damage to houses, infrastructure - road and communication networks and agricultural crops. Some of the flood events have caused season long impacts on livelihoods for those depend on fishing and agriculture. The modelled flood hazard map is provided in Figure 2-6. The flood inundation affects mostly low lying areas along major rivers/drains and within 2-3km from the shoreline. Both Ozhukarai and Puducherry municipalities are prone to flood hazard while the southern part of the district are relatively less affected by flood. Historical flood hazard data shows damaging floods occurred in 2007, 2006, 2005, 1998 and 1996.

The coastal villages have a higher population density compared to the UT's average density of 2,547 persons/sq. km (as per 2011 Census data) and is more vulnerable to flood. As flood inundation/water logging affects Ozhukarai and Puducherry municipalities to a greater extent than the rest of the district, urban population is affected more compared to the rural population in the district.

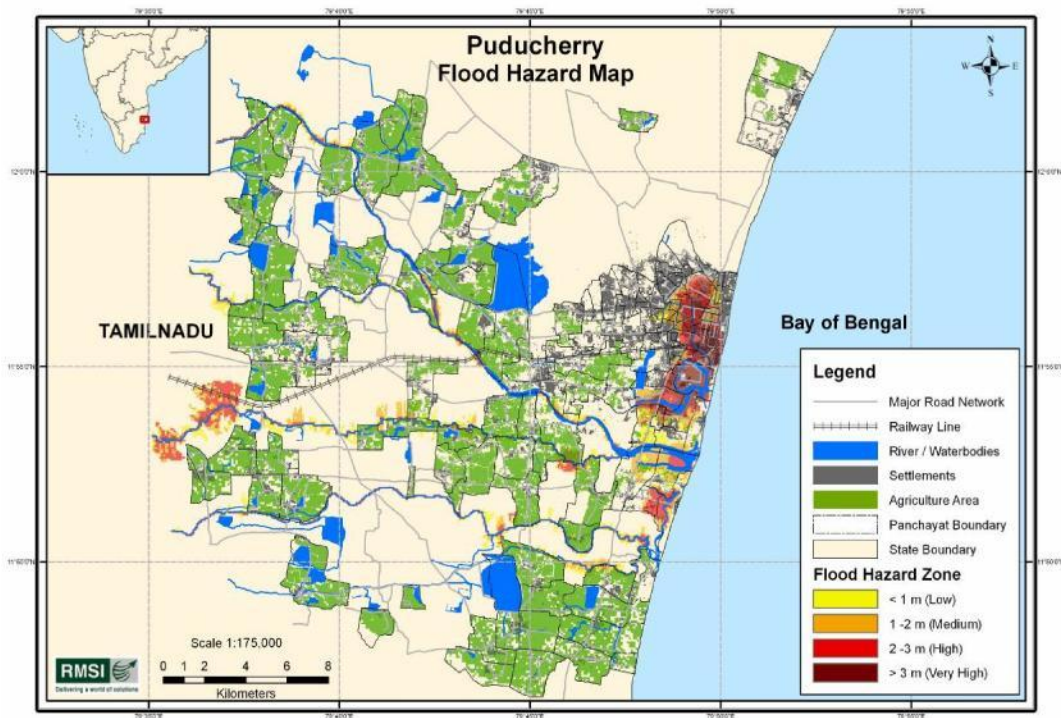


Figure 2-6: Flood hazard map: Puducherry district

2.3.2 Cyclone

The east coast of India is vulnerable to cyclones originating in the Bay of Bengal mostly during November, December and January months. As per the BMTPC Vulnerability Atlas of India, the maximum probable wind speed in the district is 64 miles/sec and is categorized in the high damage risk zone (47 miles/sec). The cyclone Thane (2011), Nisha (2008), the cyclone of 2000 and 1993 caused wide spread damage in the district. The cyclonic situation can lead to wave surges leading to water inundation in the coastal areas. However, in the case of Puducherry district, the damage is often caused by high wind velocity than due to wave surge and water inundation.

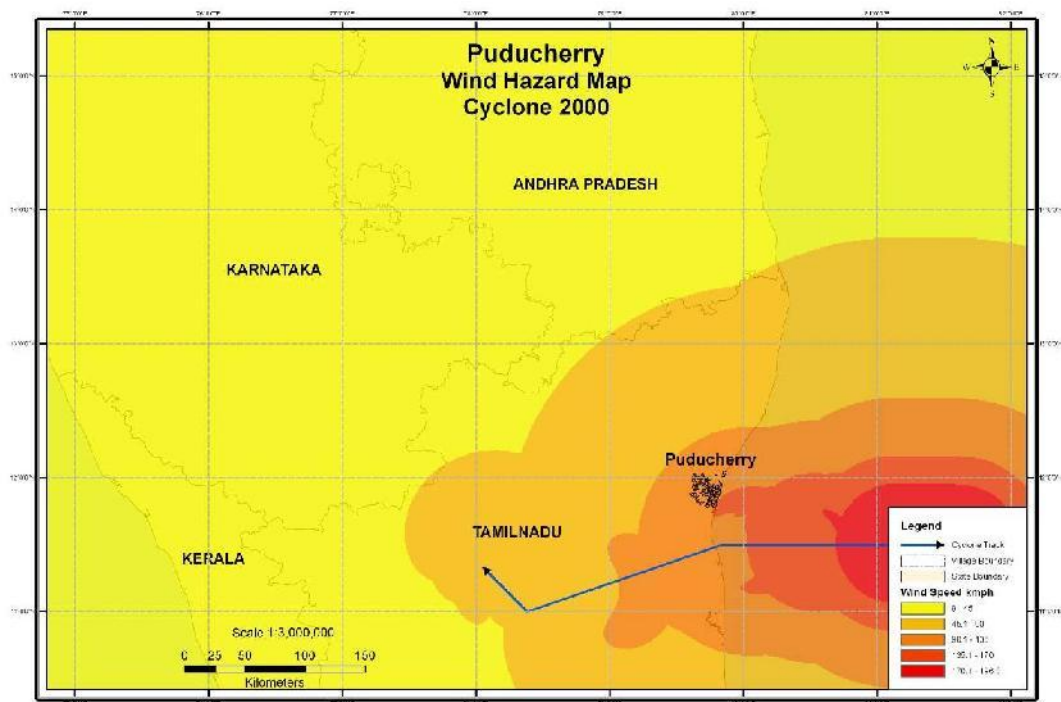


Figure 2-7: Wind hazard map (2000 cyclone) in Puducherry district and surrounding area

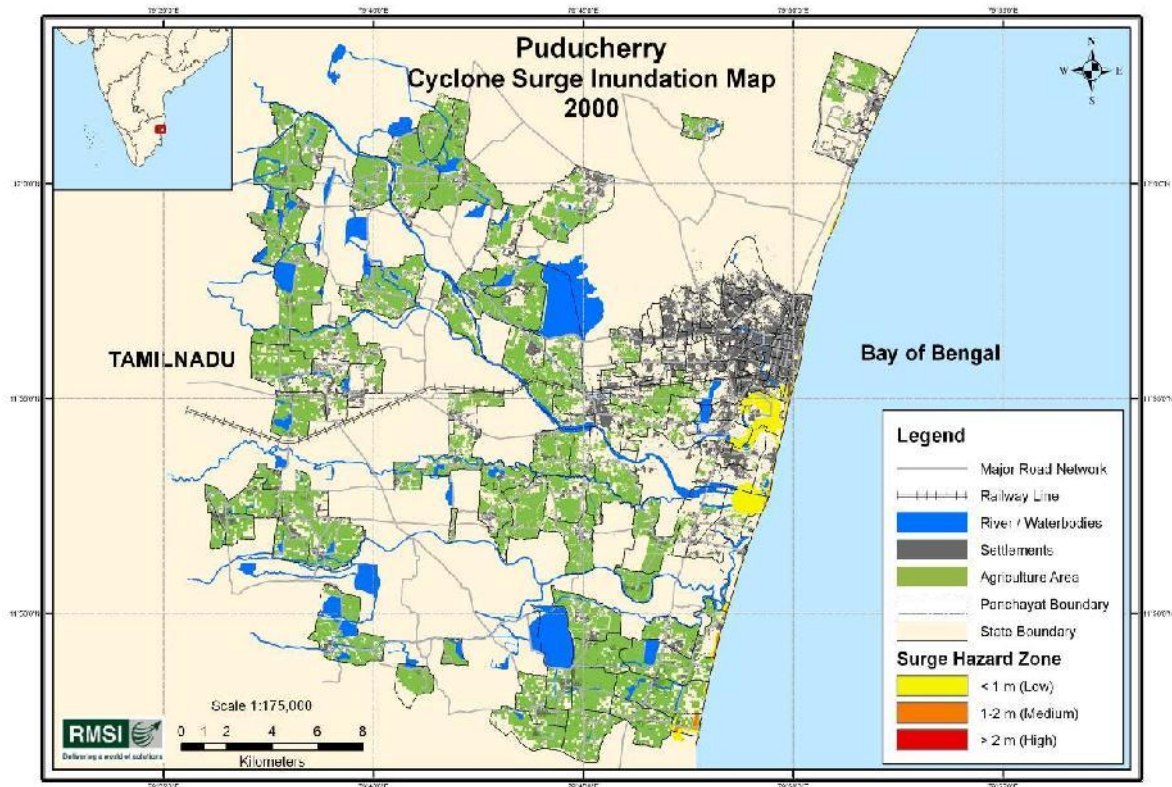


Figure 2-8: Cyclone (2000) surge inundation map: Puducherry district

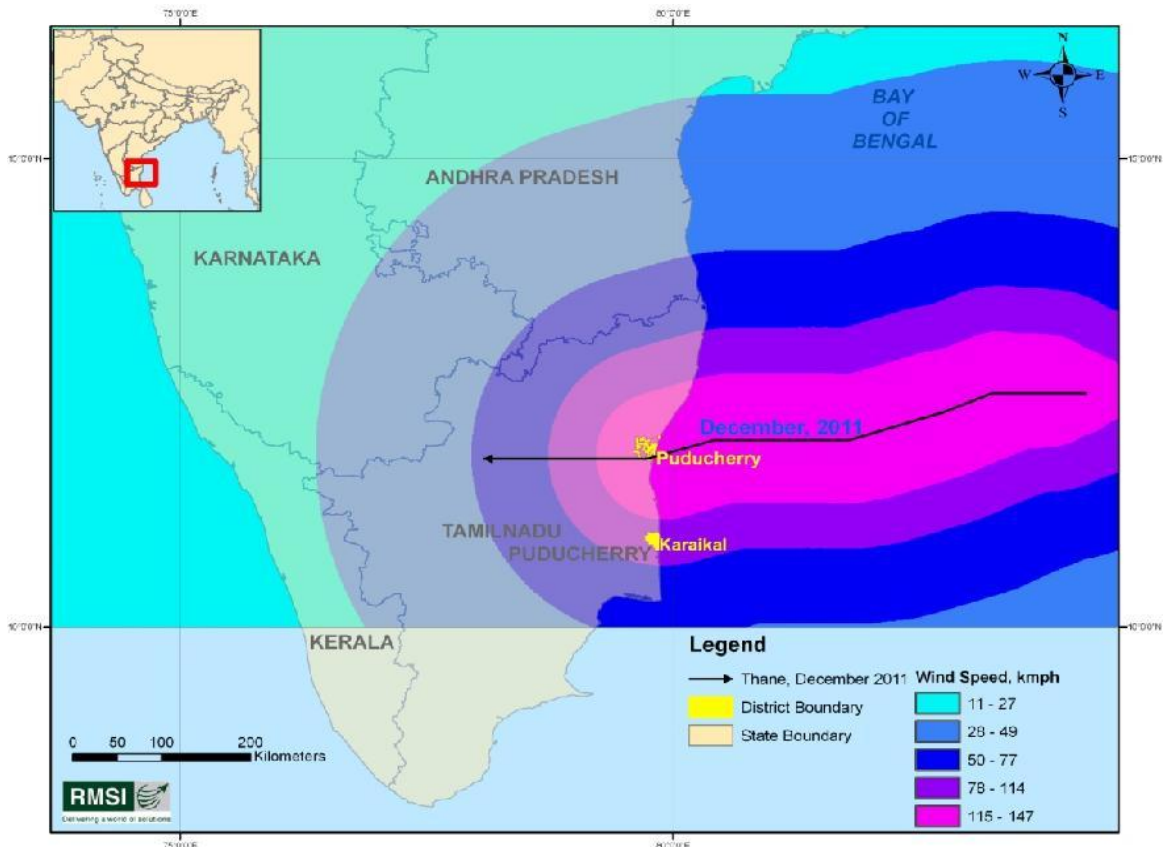


Figure 2-9: Wind hazard map (Thane cyclone) in Puducherry and Karaikal district and surrounding area

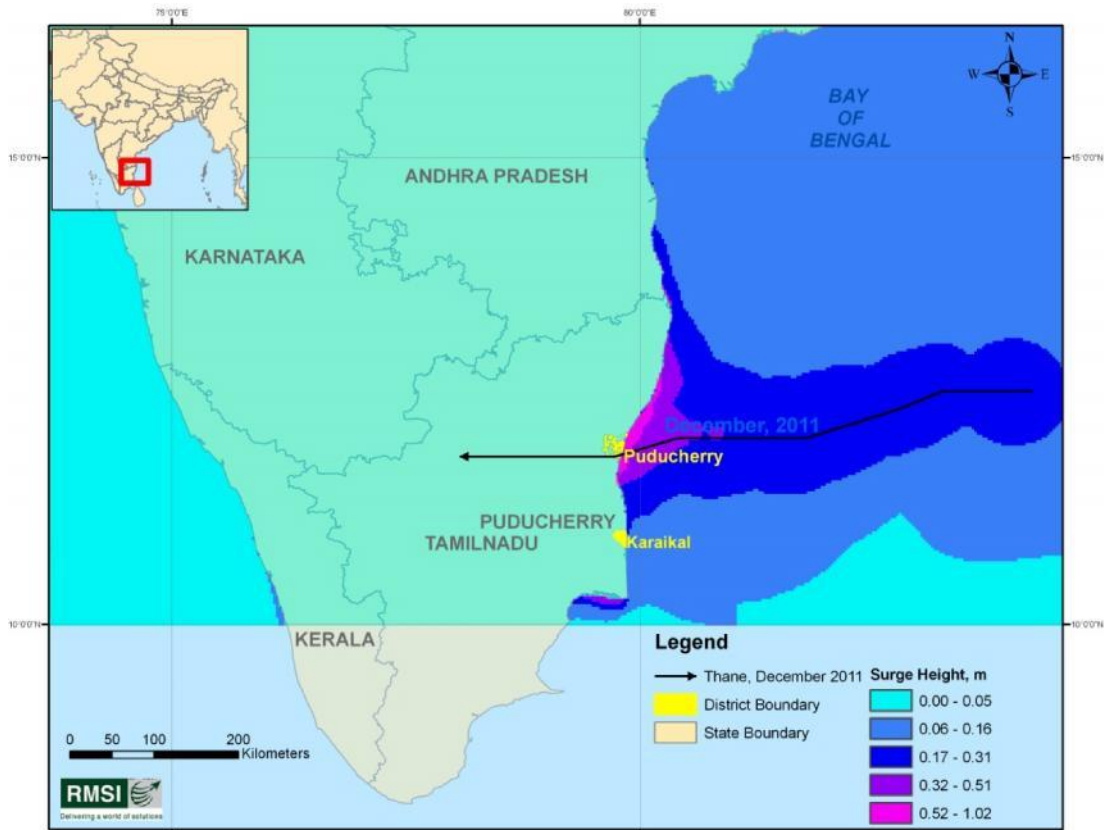


Figure 2-10: Thane Cyclone surge map in Puducherry district and surrounding area

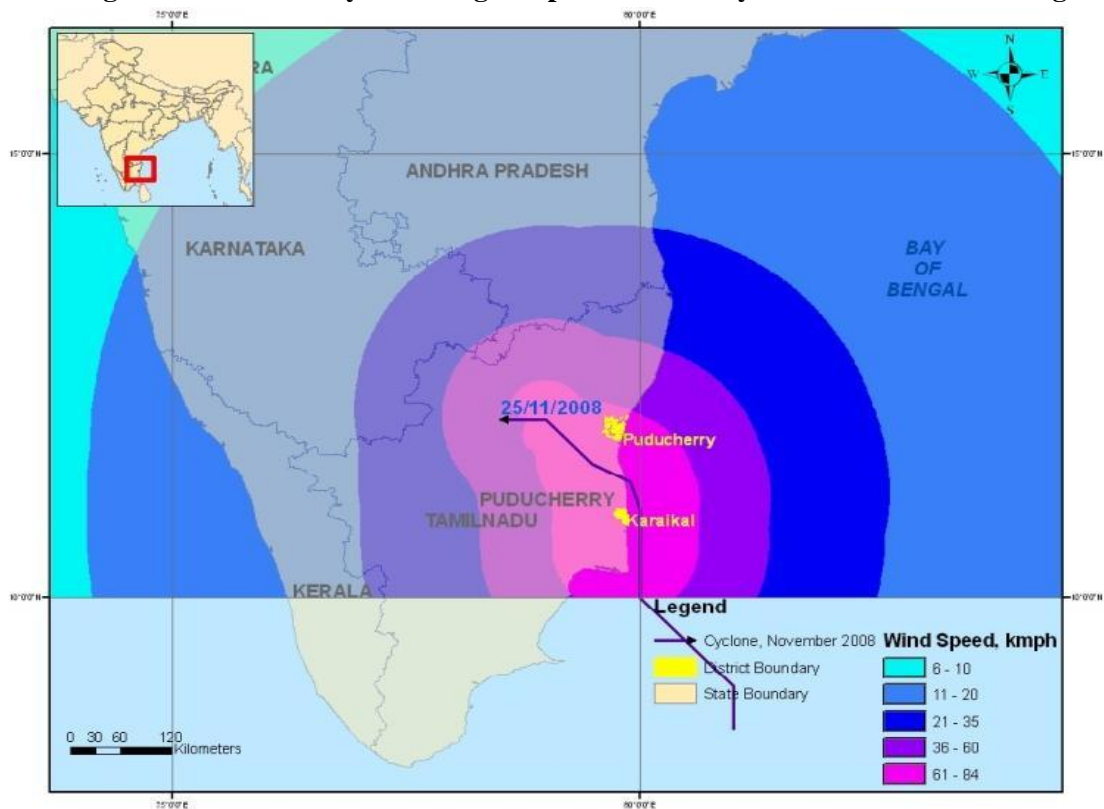


Figure 2-11: Wind hazard map (Nisha cyclone) in Puducherry and Karaikal district and surrounding area

2.3.3 Strong wind

The district is under the influence of strong winds mainly during May, June and July months due to the monsoonal activities in the subcontinent. During May, the peak summer period, unbalanced tropospheric temperature causes a downburst (strong wind normally sustained for not more than 3 to 5 minutes) coupled with heavy thunderstorm over the district. However, there is no record of damage and life loss due to strong winds in the district.

2.3.4 Tsunami

The 2004 tsunami caused wide spread damage and loss of life in the district. Apart from that, there is no historical event recorded in the district. Figure 2.12 shows the modelled water inundation due to the tsunami 2004 in Puducherry district.

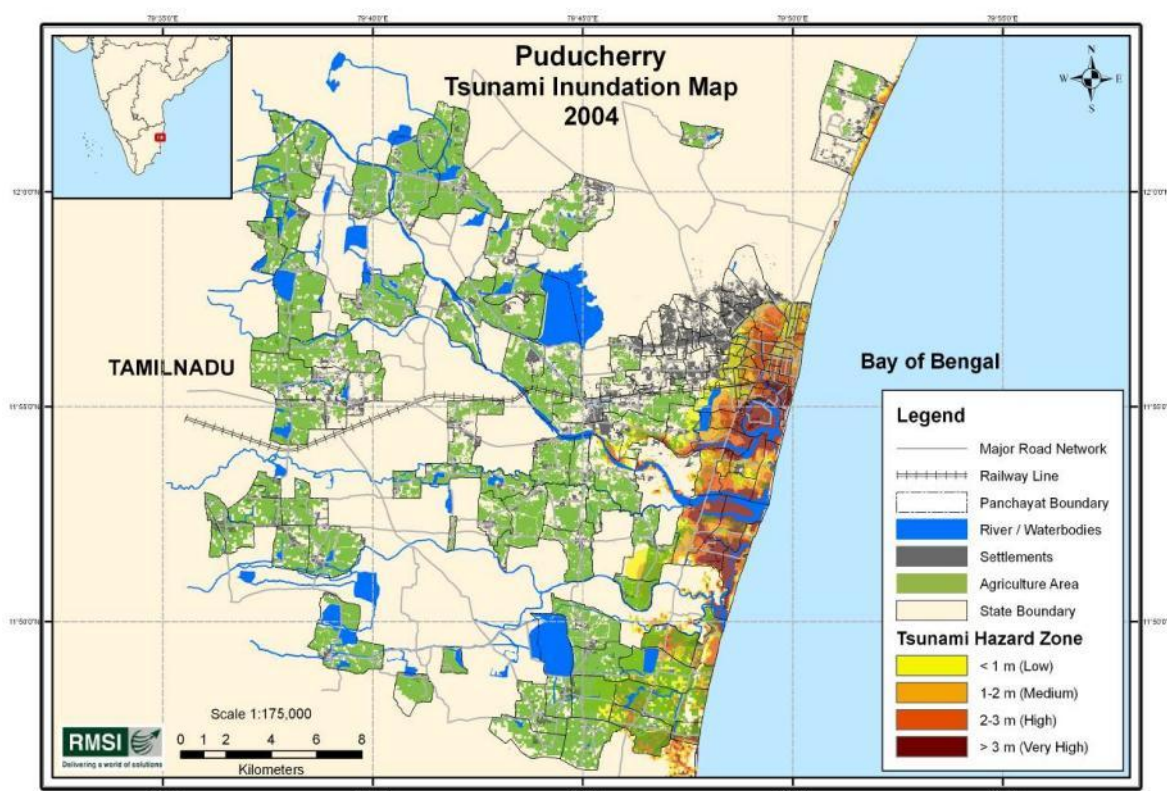


Figure 2-12: Tsunami (2004) inundation map: Puducherry district

2.3.5 Drought

Drought is not a common hazard in the district.

2.4 Hazard Risk Assessment and Vulnerability Mapping: Karaikal District

Karaikal district is prone to multi hazards – flood, cyclone, tsunami and also man made hazards like fire. The multi hazard prone area for Karaikal is presented in Figure 2.13.

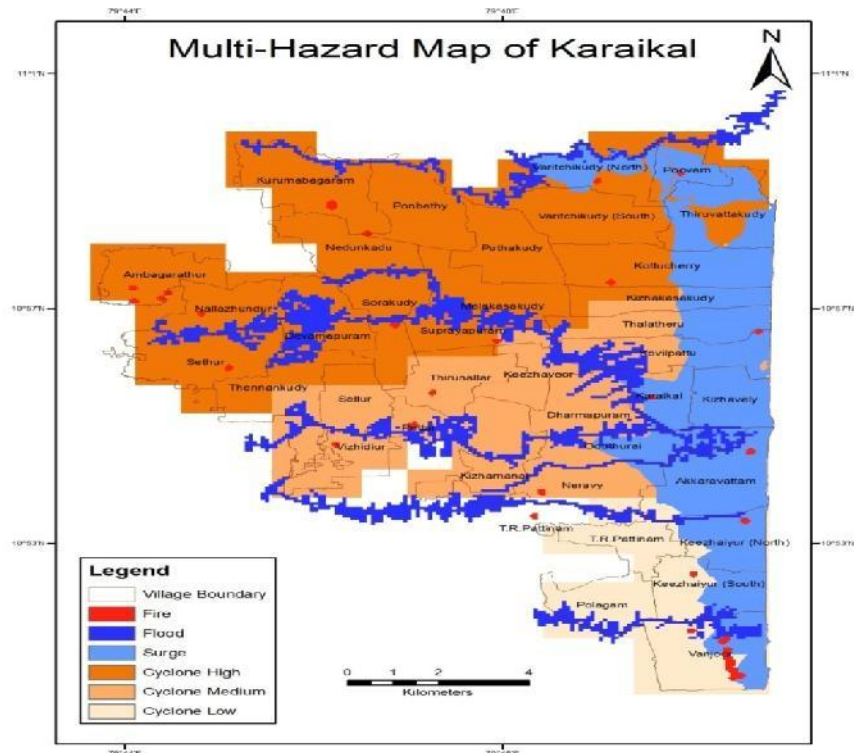


Figure 2-13: Multi hazard prone area in Karaikal district (map prepared based on grid based analysis in GIS)

2.4.1 Flood

Among all the four regions of the UT, impact of flood is severe in Karaikal district. Damaging flood events were recorded in 2008, 2006, 2005, 1997 and 1993 causing heavy damage to agriculture and infrastructure. The district is categorised as a high risk area due to flood as per the BMTPC Vulnerability Atlas of India.

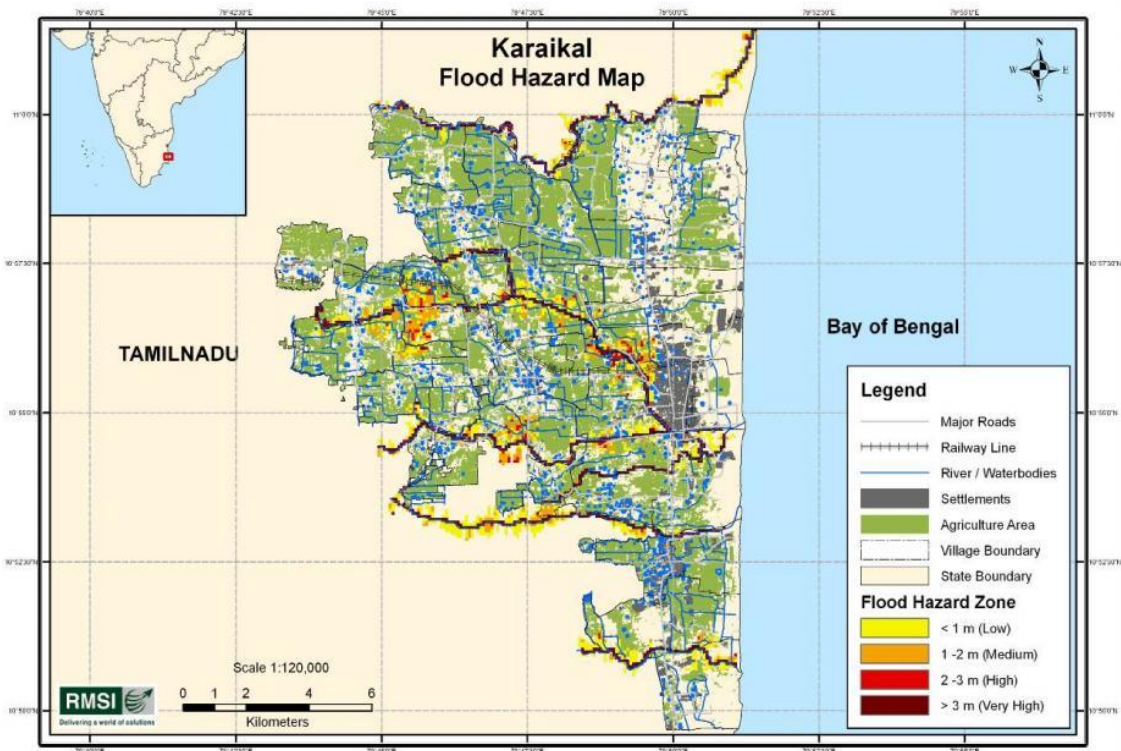


Figure 2-14: Flood hazard map: Karaikal district

2.4.2 Cyclone

The historical data shows that cyclones usually occur during the northeast monsoon periods (Oct - Dec) and sometime during the summer months (March – May). A major cyclone of maximum wind speed of 189 km/hr was recorded in the district in the year 1966. As per the BMTPC Vulnerability Atlas of India, the district has high risk factor with maximum probable wind speed of 64 mile/sec. The historical tracks of cyclone in the region show that the district has higher incidence of cyclone events than the other three districts. The maximum probable wave surge is also highest in Karaikal among other districts, which is 4.5 m.

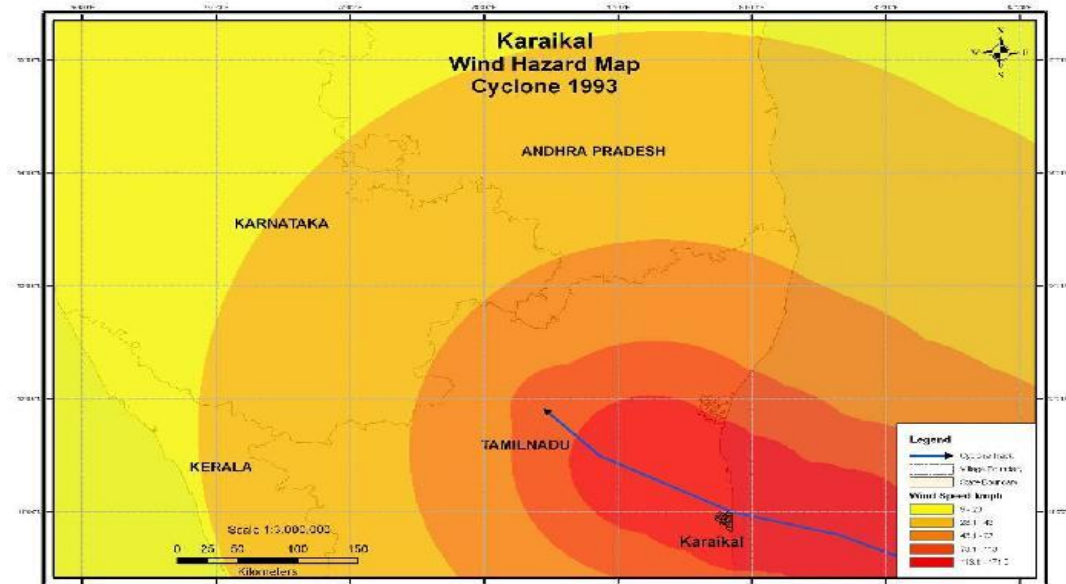


Figure 2-15: Wind hazard map (cyclone 1993) in and around Karaikal district

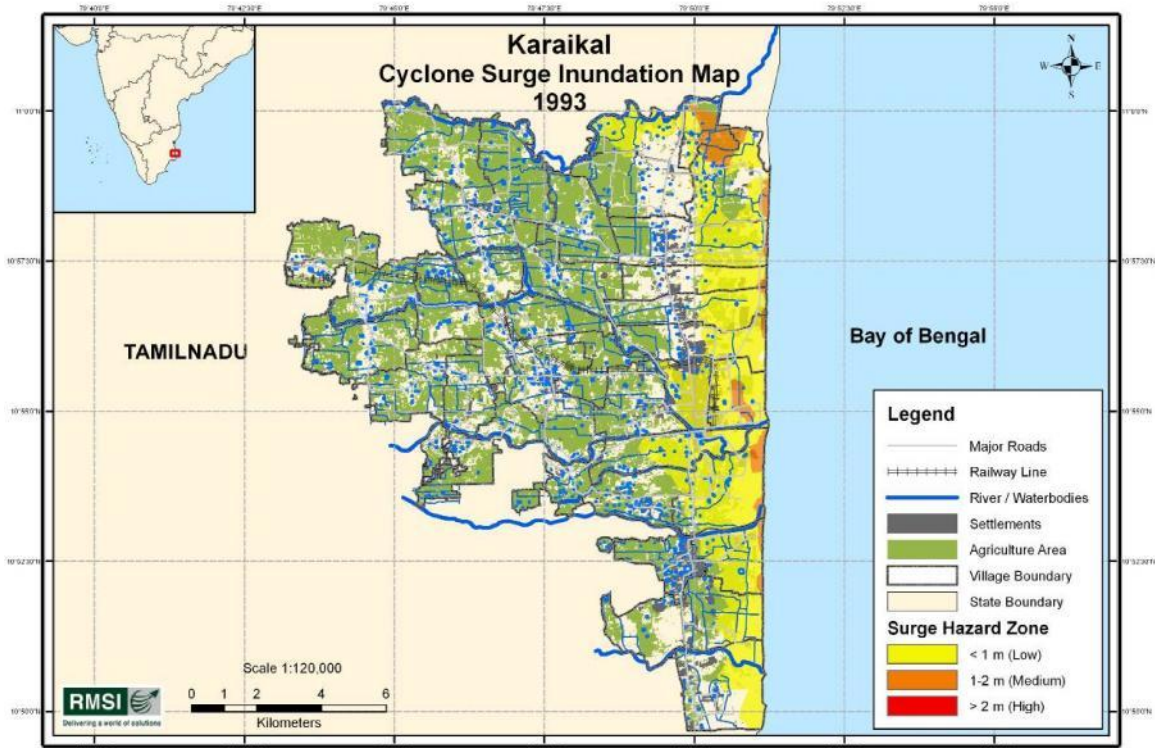


Figure 2-16: Cyclone (1993) surge inundation map: Karaikal district

2.4.3 Strong wind

The district is under the influence of strong winds during the months of May, June and July. Generally, these accompany the southwest monsoon. There are no recorded damages and life loss in the districts, due to strong winds.

2.4.4 Tsunami

The 2004 tsunami severely affected Karaikal district. Several fishing villages were destroyed. The severely affected coastal villages include Akkampet, Kalikuppam, Mandapathur, Kottucherry Medu, Pattinachery, Kilinjalmadu, Keezhakasakudymedu, Vettaikaran Street, Karaikkal Medu, Amman Koilpathu, Paravaipet, Karukulacherry, M.G.R Nagar Keezhavely, Keezhaiyur South, and Vanjore. The waves damaged infrastructures, houses, agricultural and fishing gear and killed a large number of people including their livelihood. The tsunami inundation map of 2004 is provided in Figure 2-17

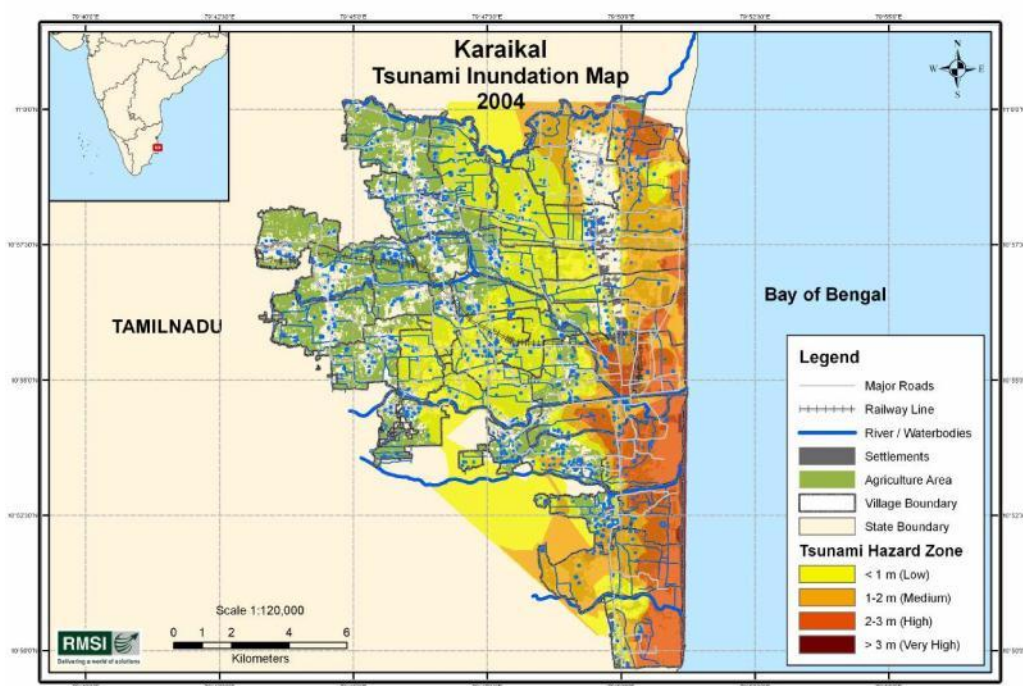


Figure 2-17: Tsunami (2004) inundation map: Karaikal district

2.4.5 Drought

Historical data shows that there was a prolonged dry spell in the summer months impacting agricultural productivity in 2002 in Karaikal district which caused an economic loss of Rs 32.4 crores mainly in the agricultural sector. The year was declared as drought year in the district.

2.5 Hazard Risk Assessment and Vulnerability Mapping: Yanam Region

2.5.1 Flood

Yanam is located in the deltaic zone of Godavari River and is vulnerable to flood. Flood occurrence is mostly during the northeast monsoon. However, flood events have been recorded during the non-monsoon season too. The 2000, 2006 and 2013 floods severely affected Yanam. The flood risk factor is categorised as high for Yanam as per the BMTPC Vulnerability Atlas of India.

2.5.2 Cyclone

The region is vulnerable to cyclonic activities generated in the Bay of Bengal. The 1993 cyclone affected Yanam and caused a loss of Rs. 79 crores. In 2010, there was a cyclonic depression that caused heavy rain and water inundation in low lying areas of the district. The probable maximum wind speed is 78 miles/hour, which is the highest among all four regions.

2.5.3 Strong wind

The region experiences moderate wind throughout the year.

2.5.4 Tsunami

There is no historical tsunami events recorded in the region.

2.5.5 Drought

The UT declared year 2003 as drought hit year for Yanam which recorded an economic loss of Rs. 46.92 lakhs. Other than this, there is no other historical record of drought.

2.6 Hazard Risk Assessment and Vulnerability Mapping: Mahe Region

2.6.1 Flood

Compared to other districts of the UT, Mahe is less vulnerable to flood. As per the BMTPC Vulnerability Atlas of India, the district has a low flood risk factor. Historical flood hazard data of the UT has recorded a flood event in Mahe in 2006. However, damage data for this event is not available.

2.6.2 Cyclone

Being in the west coast, Mahe is less vulnerable to cyclone hazards. The BMTPC Vulnerability Atlas of India categorised the district under low cyclone risk factor category with a maximum probable surge height of 3.5 metres.

2.6.3 Strong Wind

During the summer months the district experiences moderately strong winds. However, there is no history of damage recorded due to wind in the region.

2.6.4 Tsunami

There is no past records of tsunami events in the region.

2.6.5 Drought

The district does not have any recorded history of droughts.

2.7 Probable Threat of Human Induced Disasters: Puducherry District

2.7.1 Nuclear

The nuclear power station installation of Kalpakkam (about 71 km north) and the Kudamkullam (about 400 km south) in Tamil Nadu are the closest nuclear installations to this district. Kalpakkam has all the safety norms and onsite and offsite disaster plans in place. There is no historical disaster events recorded in both these installations.

2.7.2 Terrorism

There is no historical terrorism related events occurred in the district in the past. However, considering that the district being one of the prime tourism destination and pilgrimage district, the risk involved is high.

2.7.3 Stampede

The district has several temples that conduct annual festivals where thousands gather, both pilgrims and tourist. As these are religious festival there is a large participation of women and children. For this reason, there is risk of stampede in case the crowd is not managed well. Some of the main annual festivals of the districts are:

1. Veerampattanam car festival of Shri Sengazhuneer Amman Temple is an annual festival that takes place in the beach of Veerampattanam in July-August month where thousands of people gather.

2. Masi magam is an important festival for Puducherry celebrated during the tamil month of masi, (February- March) on full moon day. This is one of the festival where largest crowd gather in Puducherry (more than 20,000) and main location are Kuruchikuppam and Vaitikuppam. Deities from as many as 38 temples in and around Puducherry are brought in ceremonial processions to the seashore for a symbolic immersion ceremony. The festival mainly host on the sea shore. This is an annual festival with a grand celebration every 12 years.

2.7.4 Industrial/chemical hazard

Puducherry has 41 large scale and 127 medium scale industries (Department of Industries and Commerce, Puducherry,) which includes oil tanks and chemical industries handling highly inflammable products. Other than the toxic gas leak that happened in a factory of Chemfab Alkalis Limited in 26th January 2011, there is no major industrial hazard event reported in the district. However, due to the presence of large number of industries the district is categorised as moderate risk district. The environmental and land pollution due to the increasing use of disposable plastic bags is increasing particularly in the urban and coastal areas.

2.7.5 Fire hazard

During 2013, Puducherry district has recorded more than 600 big and small size fire events in domestic and commercial areas. The number of fire events has decreased compared to past; however, the economic loss due to fire is increasing. The large number of thatched houses which are susceptible to fire are being converted to pucca houses due to improved economic conditions and through the tsunami relief and reconstruction activities and Costal Disaster Risk Reduction Programme thus reducing the domestic fire vulnerability.



Figure 2-18: Location of operational and proposed fire stations in Puducherry district

(Source: RMSI 2013, Fire risk and hazard analysis in the country, Ministry of Home Affairs)

The fire risk and hazard analysis in the country shows 3 new fire stations in Puducherry district and all of them in urban area. This is based on the criteria set by ministry based on population density.

2.7.6 Epidemics

Vector borne diseases like chikungunya and dengue have been reported in the district. The disease outbreak was recorded in India after three decades in 2006 and as per NRHM report 2011, Puducherry district had 498 suspected cases of which 80 were identified with dengue and 3 with chikungunya as per 2010 health records. The incidence rate of dengue was highest in the month of October (12), and August and December (9).

2.7.7 Transportation of hazardous material

There is a heavy traffic of petroleum vehicles coming to the district as well as to the neighbouring places of Tamilnadu.

2.7.8 Road/train accident

Puducherry has a good network of roads. However, there is a high density of vehicles in

the district. However, the increase in number of vehicle, people's scant regard for traffic rules, parking in non-designated areas etc. have lead to traffic congestion and increase in accidents particularly in the municipal areas.

2.8 Probable Threat of Human Induced Disasters: Karaikal District

2.8.1 Nuclear

The district is about 270 km away from the nuclear power plant installation of Kalpakkam and 370 km away from the nuclear power plant Koodamkulam, both in Tamil Nadu. Both onsite and offsite disaster plans are in place. There is no historical disaster events occurred in this installation.

2.8.2 Terrorism

Karaikal district is a very peaceful place from the Law and Order point of view with majority of the people engage in primary activities. The risk of terrorism cannot be ruled out taking into consideration of the large gathering at the pilgrim places in the district.

2.8.3 Stampede

The district has several temples and has annual festivals where thousands of people gather, both pilgrims and tourist. As these are religious festival there is a large participation of women and children. For this reason, there is risk of stampede in case the crowd is not managed well. Some of the main annual festivals of the districts are detailed below.

The Lord Saneeswara (Lord Saturn) at Thirunallar is one of the famous temples of south India and devotees from UT and neighbouring States visit here. During festival days more than two thousand pilgrims visit this temple every day. The Sani Peyarchi festival is the "Kumbh Mela of the UT" attracting lakhs of devotees.

The annual 'Mangani' festival of Karaikal Ammayar temple is another event where large number of people gather. The holy bath as part of the festival in Tirumalairayan-pattinam village of Tirumalairayanpattinam commune also attract large number of people.

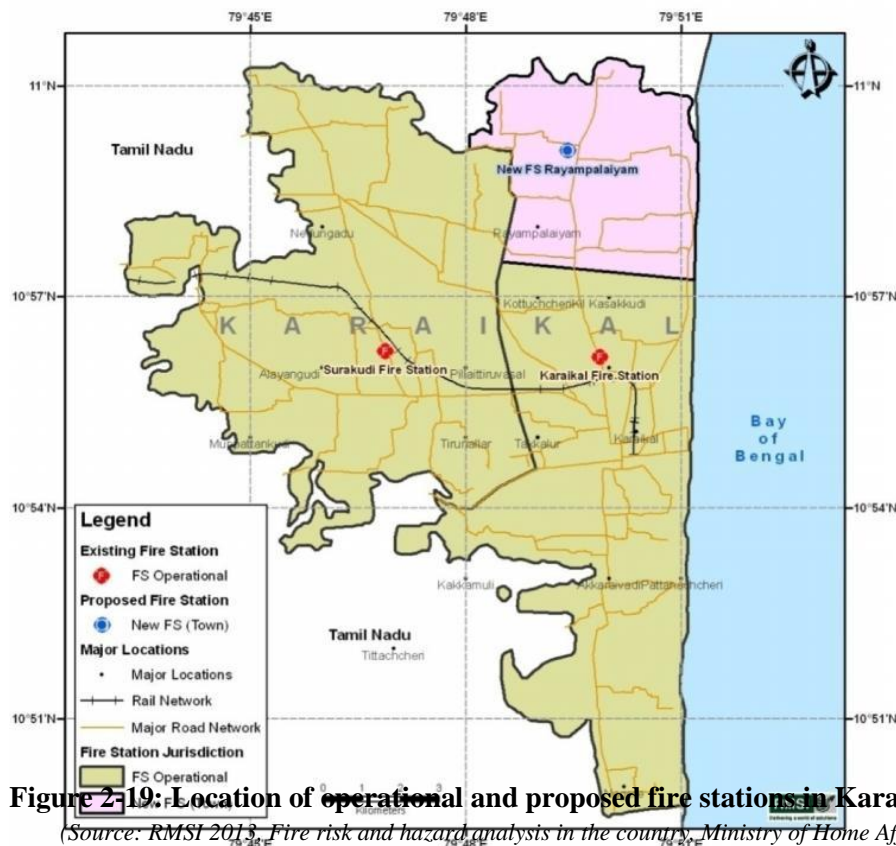
2.8.4 Industrial/chemical hazard

Karaikal has 3 large scale and 12 medium scale industries as per 2010 statistics of Department of Industries and Commerce. There is no major industrial/chemical hazard recorded in the near past in the district. Environmental pollution due to emission of pollutants into air, water and land has been increasing in the district which can lead to environmental and health hazards. However, there is no historical data of alarming event in the district. The environmental and land pollution due to the increasing use of disposable plastic bags is increasing particularly in the urban and coastal areas.

2.8.5 Fire hazard

There are 2 fire stations in the district. The 2013 statistics show 99 fire events with an economic loss of Rs. 74.5 lakhs and 4 deaths. The number of events is at a lower side compared to the

previous year,2009, which recorded 197 events. However, the economic loss due to fire event was higher in 2010 compared to 2009.



The fire risk and hazard analysis in the country shows 1 new fire station in Karaikal district in urban area. This is based on the criteria set by ministry based on population density.

2.8.6 Epidemics

No epidemic outbreak has been reported in the district in the near past.

2.8.7 Transportation of hazardous material

The threat related to transportation of hazardous materials does not exist in Karaikal as the industries in Karaikal mostly do not handle any hazardous material which can cause such incidents.

2.8.8 Road/train accident

Karaikal is the gateway to various places of worship in the eastern coast of Tamil Nadu. Velankanni and Nagore the two famous places of pilgrimage for Christians and Muslims respectively. Heavy traffic is experienced during festival season in the main road of Karaikal.

2.9 Probable Threat of Human Induced Disasters: Yanam Region

2.9.1 Nuclear

There are no threats of nuclear hazards in this district as the nearest Nuclear Plant is in Kalpakkam which is more than 500 kms away.

2.9.2 Terrorism

Yanam is a relatively peaceful region with no incidents of any violent ethnic conflict and act of terrorism recorded in the past. The possibility of occurrence of terror incidents cannot be ruled out anywhere in the world and Yanam is no exception. The principle causes which can lead to terrorist activities could result out of any underlying factors in the region such as brewing tension between the Kapu and Fishermen community over political power, access to benefits such as government jobs, welfare packages etc.

Unforeseen incidents between the external investors and the local populace, industry owners and workers. Example : Regency incident, Religious tensions.

2.9.3 Stampede

Stampedes are expected in places where crowds gather. In Yanam, following are the occasions when people gather in large numbers at a given place:

- A weekly fair is being held on every Tuesday at Panchala Street, Yanam. People from neighbouring villages of Andhra Pradesh and villages of Yanam visits the fair where grocery, vegetables, fruits, clothes and other consumer items are to be sold.
- Sri Venkateswara Festival: It is being celebrated yearly during the month of March usually. It is celebrated for 24 days. There will be a car festivals on the 13th day and a large number of crowd will be there during 12th , 13th and 14th days. Devotees from the neighbouring areas of Andhra Pradesh visit Yanam to attend the festival. This festival is organized by the board of trustees of the Venkateswara Swamy Temple
- The Brahmotsavams of Lord Venkateswara Temple are celebrated during the month of September/October of every year as celebrated by Tirumala Tirupathi Devasthanam, Tirupathi. It is celebrated for 10 days. Devotees from the neighbouring areas of Andhra Pradesh visit Yanam to attend the festival. The board of trustees of the Venkateswara Swamy Temple organizes this festival. Subbaraya Sasty Festival: This festival falls during the month of December normally. It is being celebrated by the Siva temple located in the banks of Coringa river. It is also attracts a huge number of devotees from the neighbouring villages of Andhra Pradesh especially by the ladies. They also prefer to have a holy dip in the river Godavari .
- Mahalaxamma & Polaramma Festival: It falls during the month of June or July of every year. There will be a fire walking during this festival.
- Mary Lourdu Matha Festival: Roman Catholic Church celebrates Mary Lourdu Matha festival during the month of February/March. It also attracts a huge number of Christian devotees from the neighbouring towns and villages of Andhra Pradesh.

2.9.4 Industrial/chemical hazard

There are 3 large and 5 medium scale industries in the district. Main industries include ceramics, tiles, shrimp feed, deflection components, solvent oil extraction from rice bran and edible oil, aluminium extrusions, alloy steel castings, white cement, coir products, food

processing units, etc. However, none of these handle hazardous materials.

2.9.5 Fire hazard

Sixteen fire events (commercial and domestic) were recorded in Yanam in 2010 causing an economic loss of Rs. 18.94 lakhs. No death has been recorded. Considering the high fire vulnerability of Narimanam and the oil extraction areas in Yanam, the firms should have their own fire stations and periodic inspections of these infrastructures.

2.9.6 Epidemics

No epidemic outbreak has been reported in the district in the near past.

2.9.7 Transportation of hazardous material

Yanam does not have any industries handling hazardous chemicals.

2.9.8 Road/train accident

There are no major incidents of accidents related to road and train in the past. The roads are well maintained and the traffic within the Yanam district is lean. The bye pass road which connects Yanam to Andhra Pradesh is where the accidents sometimes occur. This is due to non compliance to speed limits and drunk driving.

2.10 Probable Threat of Human induced Disasters: Mahe Region

2.10.1 Nuclear

This region is about 430 km away from the nuclear power plant installation of Kalpakkam and 400 km away from the nuclear power plant Koodamkulam, both in Tamil Nadu. Both onsite and offsite disaster plans are in place. There is no historical disaster events occurred in this installation.

2.10.2 Terrorism

In the recent past the northern Kerala has been instances of terrorism activities and has linkages with some of the international communal groups. In addition to, Kerala being politically active state, particularly northern districts of Kerala has instance of flared violence activities. Even though there was no instance in Mahe of any terrorism conspiracy or activities, it cannot be ruled out due to such events taking place in the near areas.

2.10.3 Stampede

Northern Kerala including Mahe is known for its cultural and religious activities. Mahe celebrate Mayyazhi Mahotsavam popularly known as 'Fete de Mahe' with a gathering of about 10,000 people is one of the key annual gathering where people from Mahe and Kerala gather. Mahe school youth festival conducted annually in various location in the region gather 1000s of students. These location need proper plans to avoid any stampede events due to crowd or panic.

2.10.4 Industrial/chemical hazard

Mahe has only very few industries. The only large scale industry functioning in the district is the Cannanore spinning and weaving mills. No industrial/chemical hazard has been recorded in the district in the past.

2.10.5 Fire hazard

More than 20 fire events were recorded in 2010 and 2009 in Mahe. The economic loss during 2010 was Rs. 59.78 lakhs. The district is highly vulnerable to fire hazards.

2.10.6 Epidemics

No epidemic outbreak has been reported in the district in the near past. The northern Kerala particularly like Kannur State has reported high incidence of dengue and chikungunya. Being a contiguous region the vulnerability to contagious diseases are very high.

2.10.7 Transportation of hazardous material

Mahe being part of the Union Territory have rebate in certain taxes, attracts more business opportunities. Mainly tax rebate include excise taxes and sales taxes leading to large number of liquor shops and petrol/diesel stations in the boarder of Mahe – Kerala along the main roads. The main road dissecting Mahe is a national highway has high density of tanker traffic. Even though there is no event reported so far due to the proximity of such highly inflammable things and transportation the region is vulnerable to hazards related to transportation of hazardous materials.

2.10.8 Road/train accident

Mahe has very narrow road due to its terrain and high population densities, but has a high density of vehicles particularly four wheelers. In addition to this, there is a high influx of people from Kerala every day for various reasons. As the main road that passes through Mahe is the National Highway and due to the price difference in the petrol/diesel, vehicles from Kerala use to come Mahe for purchase of petrol/diesel. For the reason, that this region has heavy traffic, it is highly vulnerable to road accidents.

2.11 Risk and Vulnerability Assessment Puducherry and Karaikal

The UT has carried out the risk and vulnerability assessment for Puducherry and Karaikal districts in 2010. Baseline data related to bio-physical, socio-economic and infrastructure were collected from various secondary and primary sources and organised in GIS. Puducherry Decision Support System (PDSS), a GIS based application system is also developed which has the capability of organising various thematic data, perform queries, analyse and generate map prints. The application also has the capability of generating statistical reports and perform simulation hazard models for cyclone, flood and tsunani. The model can generate maps and summary tables on probable losses in terms of life and assets. This kind of exercise can help in developing mitigations and can be used for relief and rescue operations. The central kitchens and shelter locations and important emergency information are also store in this system which can be easily retrieved both in the form of maps (true to scale) and in summary tables.

Action points: PDSS database should be updated on a regular basis so that the analytical result can be used for field operations. Trained personnel need to operate the system to enable the best use of this tool for activities related to disaster preparedness, mitigation and rescue operations. At present the PDSS does not have baseline data for Mahe and Yanam. On a priority basis the baseline data for these two districts need to be created and incorporated in the system. The PDSS can be installed for Mahe and Yanam districts as well without incurring any additional licence cost.

Hazards induced from the neighbouring State(s): All the four regions of UT of Puducherry are enclaves in the neighbouring states viz., Puducherry and Karaikal are located within Tamil Nadu, Mahe is located in Kerala and Yanam is located in Andhra Pradesh. Due to this peculiar feature the four regions of the UT are prone to hazards emanating from the neighbouring states as well. Main hazard in Karaikal region which is the tail end of the River Cauvery is flooding due to receipt of excess flood water and run off in various rivers and channels that come from Tamilnadu. The presence of ONGC facilities abutting Karaikal region should also be considered as a potential hazard. In respect of Pondicherry region, flooding of rivers due to excess rainfall in the catchment areas located in Tamil Nadu is a major concern. Another hazard is the movement of vehicles transporting hazardous materials through Puducherry. The Yanam region is located in the East Godavari district of Andhra Pradesh and hence is prone to flooding from river Gautami, which is a distributary of Godavary. Excess water released from Dowleshrum barrage located near Rajamundiry in Andhra Pradesh is also a concern for Yanam. Major industrial units in Godavary basin involved in gas exploration viz., M/s Reliance and M/s Gujarat State Petroleum Corporation are located in the Yanam region and in the neighbouring Andhra area which also need to be taken into account for disaster planning.

CHAPTER 3

Preventive and Mitigation Measures

3.1 Prevention and Mitigation:

Prevention consists of actions that reduce risk from natural or human made disaster incidents. The various measures that need to be planned and implemented in the UT of Puducherry are given below:

- Policy framework on disaster management reflecting the holistic approach involving prevention, mitigation and preparedness in pre-disaster phase.
- To identify, delineate and assess the existing and potential risks and to work towards reducing potential casualties and damage from disasters.
- To substantially increase public awareness of disaster risk to ensure safer environment for communities to live and work.
- To reduce the risks of loss of life, damage to infrastructure, economic costs, and destruction that result from disasters.
- Creation of State mitigation fund.
- Creation of awareness for disaster risk reduction at all level.
- Creating awareness for improving preparedness amongst the communities, using media and school education.
- Appropriate amendments in the legislative and regulatory instruments along with strengthening of the enforcement mechanisms at different levels.
- Capacity building at local and regional levels for undertaking rapid-assessment surveys and investigations of the nature and extent of damage in post disaster situations.
- Conducting micro-zonation surveys.
- To ensure use of disaster resilient construction techniques.
- The use of disaster resilient codes and guidelines to promote disaster resilient construction techniques in all sectors of the society by law and through incentives and disincentives.
- To incorporate the study of disaster engineering subjects in architecture and engineering curricula.
- To create a research oriented database on disasters and its impacts.
- To promote and encourage Research & Development activities in disaster preparation and mitigation.

It is good to have long-term mitigation goals in place and connect these goals with measures that State has planned and implemented. These goals may include (but not limited to):

- Provide better early warning methods for flood, storms, cyclone
- Reduce the destruction and loss of life within buildings
- Provide for safer environments for transportation systems
- Eliminate flooding in populated areas
- Ensure redundant water supply systems
- Reduce effects of the natural environment on the infrastructure
- Ensure redundant power systems on critical facilities
- Ensure adequate materials available for road maintenance

3.1.1 Protection, reduces or eliminates a threat to people, property and the environment. Primarily focused on adversarial incidents, the protection of Critical Infrastructure and Key Resources (CIKR) are vital to local States, national security, public health & safety and economic vitality. Protection includes actions or measures taken to cover or shield assets from exposure, injury or destruction. Protective actions may occur before, during or after an incident and prevent, minimize or contain the impact of an incident.

3.1.2 Mitigation, with its focus on the impact of a hazard, encompasses the structural and non- structural approaches taken to eliminate or limit impact on people, property and the environment when subjected to a hazard's exposure.

Common structural measures for disaster risk reduction include dams, flood wall / levies, ocean wave barriers, earthquake-resistant construction, and evacuation shelters.

Common non-structural measures include building codes, land use planning laws and their enforcement, research and assessment, information resources, and public awareness programs. Note that in civil and structural engineering, the term "structural" is used in a more restricted sense to mean just the load bearing structure, with other parts such as wall cladding and interior fittings being termed non-structural.

Examples of mitigation activities include:

Town Planning Act: Planning, adopting and enforcing stringent building codes, flood-proofing requirements, seismic design standards and cyclone wind-bracing requirements for new construction or repairing existing buildings.

Zoning Regulations: Planning and adopting zoning ordinances that steer development away from areas subject to flooding, storm surge or coastal erosion.

Development Control Regulations: Incorporate the disaster management concerns into development. This should include all Government Sponsored Developmental Programs and Schemes.

Undertaking retrofitting work on public buildings to withstand ground shaking or cyclone-strength winds.

Land use regulation: Planning and building **community shelters** and tornado safe rooms to help protect people in their homes, public buildings and schools in hurricane and tornado-prone areas.

Safety norms for economic and social infrastructures including places of worships and crowd management: Steps taken for developing and implementing public safety norms for critical infrastructures and places of worships.

Capacity Building for Mitigation: Steps taken for human resource development and capacity building for effective disaster mitigation right from at State Level and down to ward/village level.

Awareness generation on disaster mitigation through mock drills and exercises.

Mainstreaming DRR in all developmental projects.

3.2 Human Made Disasters:

Manmade disasters are unpredictable and can spread across geographical boundaries. Some disasters in this class are entirely manmade while other may occur because of natural disasters, equipment failures, or workers having inadequate training or fatigue and make errors.

Technological disasters include a broad range of incidents. Routes of exposure through water and food, airborne releases, fires and explosions, and hazardous materials or waste (e.g., chemical, biological, or radioactive) released into the environment from a fixed facility or during transportation. Fires, explosions, building or bridge collapses, transportation crashes, dam or levee failures, nuclear reactor accidents, and breaks in water, gas, or sewer lines are other examples of technological disasters. The structural and non-structural prevention/mitigation measures for the industrial (chemical) disaster and the Departments responsible to take action are mentioned below;

Table 3.1: Structural & non-structural measures (Industrial hazard)

S.I No.	Task	Activities	Responsibility
Structural Measures			
1	Land use planning	1. Planning permission of any factory/industry should consider the land use planning in view of hazard, risk and vulnerability of the State	Dept of Labour, Town and Country Planning & Puducherry Planning Authority Local Administration Department
2	Adaption of advance technology	1.Application of Science and technology and engineering inputs to improve industrial infrastructures	Dept of Labour, Dept. of Science, Technology and environment Union Territory of Puducherry Disaster Management Authority
3	Techno-legal Regime	1.Review and revision of Acts and Rules 2.Strict implementation of Acts and Rules	Dept of Labour, Dept. Of science, Technology and Environment, Union Territory of Puducherry Disaster Management Authority
4	Safety Audit	1.Carry out structural safety inspection/ audit	Inspectorate of factories and Boilers
5	Capacity Building	1. Establish infrastructure for onsite and offsite warning dissemination 2. Construction/Strengthening of EOC/ERC at all level 3.Procurement of all necessary equipments including PPE	Dept of Labour DDMA Dept of Labour Revenue Dept / UTPDMA
Non-Structural Measures			
1.	Planning	1.Prepare an onsite and offsite emergency plan 2.Conduct mock drills as per the regulations 3.Update the plan as per the requirement 4.Monitor similar activities in all the factories/ industries	Dept of Labour DDMA DRDM/UTPDMA

2	Capacity Building	1. Develop IEC material for Publication & Distribution 2. Awareness generation to general public and the people residing near MAH factories 3. Organize training programs, seminars and workshops 4. Ensure the student community is imparted proper education on the relevant topics by schools/ colleges. 5. Encourage disaster insurance	Dept of Labour & UTPDMA DRDM, DSE Finance Department NGOs
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3.3 Natural Disasters:

The UT of Puducherry follows all-hazard approach for disaster prevention and mitigation due to its vulnerability to all-major natural hazards such as Drought, Flood, Cyclone, Earthquake, Tsunami, landslides etc.

There are several prevention/mitigation activities which will be common for natural disasters. The same are described below.

Table 3.2: All Hazard Structural and Non-Structural Measures

Sl No.	Task	Activities	Responsibility
Structural Measure			
1	Land use planning	1. Land use planning of the State in view of hazard, risk and vulnerability of the State 2. To ensure that development schemes of the State are undertaken in view of hazard, risk, vulnerability and microzonation	TCP, Dept. of Science, Technology and Environment & DRDM Line dept. Planning & Research Line Dept.
2	Mainstreaming Disaster Management in development programmes	1. Ensure that each development programme /scheme in the State should be sanctioned/undertaken only if it meets the requirement of disaster management 2. Ensure the programme/ scheme/ project is facilitated with provision of adequate funds for disaster management	Planning & Research. Line Depts.
3	Adaption of new technology	Application of Science and technology and engineering inputs to improve infrastructures including dams and reservoirs, building design, construction, etc.	Dept., of Science, Technology and Environment, UTPDMA, TCP & Planning Authorities

4	Techno-legal Regime	<ol style="list-style-type: none"> 1. Review and revision of building bylaws 2. Review and revision of CRZ 3. Review and revision of town & Country Planning Act & Rules 4. Ensure strict implementation of Code and Rules 5. Monitoring of quality construction 	TCP & Planning Authorities Dept., of Science, Technology and Environment., DRDM Local Administration Department
5	Safety Audit	<ol style="list-style-type: none"> 1. Carrying out regular structural safety audit of all critical lifeline structures 	DRDM Dept., of Science, Technology and Environment, PWD Electricity LAD DH& FW
6	Capacity Building	<ol style="list-style-type: none"> 1. Construction/Strengthening of EOC/ERC at all levels, providing training to the personnel and stakeholders involved in disaster prevention and mitigation and creating awareness among the general public. 	DRDM UTPDMA
Non-Structural measures			
1.	Planning	<ol style="list-style-type: none"> 1. Prepare Multi hazard disaster management plan 2. Prepare hazard wise contingency planning 3. Ensure hazard wise departmental action plan and SOP 4. Conduct mock drills at regular intervals. 5. Update the plan as per the requirement 6. Monitor similar activities at district & Taluk level 	UTPDMA DRDM Line Departments Commissioner of local bodies Tahsildar(DM)
2	Capacity Building	<ol style="list-style-type: none"> 1. Develop multi-hazard IEC material for Publication & Distribution 2. Media campaign for awareness generation in general public 3. Organize training programs seminars and workshops 4. Include disaster related topics in school Curriculum and conducting drills at school level. 5. Encourage disaster insurance 6. Encourage favorable taxation incentives. 	DRDM UTPDMA Finance Department Education LAD
3	Community based Disaster Management	Strengthening capacity of local self government entities to understand local vulnerability and risk, disaster prevention needs, preparedness and response capabilities through participatory approach	DRDM UTPDMA LAD

3.3.1 Earthquake

In most earthquakes, it is the collapse of structures like houses, schools, hospitals and public buildings which results in widespread loss of lives and property damage rather than the earth quake. Past earthquakes show that over 95 per cent of the lives lost were due to the collapse of buildings that were not earthquake-resistant. In such situation, the losses can be minimized if all structures in earthquake-prone areas are built in accordance with earthquake-resistant construction techniques. The earthquake specific mitigation activities are described below;

Table 3.3: Earthquake - Structural & Non-Structural Measures

Sl No	Task	Activities	Responsibility
1	Micro-zonation	To undertake microzonation study according to priority area To provide or make available seismic microzonation map Provide vulnerability and risk assessment map	DRDM Dept., of Science, Technology and Environment UTPDMA
2	Earthquake resistance design for different earthquake zones	To develop earthquake resistant features for the construction of public utility structures To develop earthquake resistant design features for the construction To develop earthquake resistant design features for the construction in different types of structures to the line departments	TCP PPA PWD UTPDMA
3	Retrofitting of existing structures	Create a database of existing structure in the state Public and Private	TCP PPA PWD, UTPDMA
4	Monitoring of seismic activates	Establish seismological network and round the clock monitoring Dissemination of information and reporting Conduct seismological research	Dept., of Science, Technology and Environment UTPDMA
Non Structural Measures			
1	Capacity Building	Departmental earthquake contingency plan Ensure earthquake related departmental action plan and SOP Include earthquake engineering topics in curriculum Provide professional training about earthquake resistance construction to engineers and architects Provide training to masons Encourage soil and material testing in laboratories	DRDM UTPDMA DSE DHTE Labour Dept
2	Awareness	To disseminate earthquake risk to general public Campaign for earthquake safety tips Special drills in schools to create awareness among school children.	UTPDMA Information & Publicity Dept., Education Department

3.3.2 Cyclone, Storm Surge and Tsunami

Tropical cyclones are characterized by destructive winds, storms surges and very heavy rainfall each one having its own impact on human and livestock and their activities. Of these storm surges and sea waves are responsible for 90% of the loss of lives associated with cyclone and tsunami disaster. The mitigation measures are described as below:

Table 3.4: Cyclone, Storm and Tsunami - Structural & Non-Structural Measures

Sl No	Task	Activities	Responsibility
Structural Measures			
1	Shelterbelt	Shelterbelt plantation & mangrove regeneration	Forest Dept., DRDM
2	Providing cyclone shelters	Construction of cyclone shelters in cyclone prone areas	PWD, DRDM, Local Bodies
3	Strengthening of infrastructure	Construction of missing roads and bridges in cyclone prone areas Strengthening/repair of existing roads and bridges in cyclone prone areas Strengthening of dams and canals New Saline embankment and repairs of existing channels/canals.	PWD Local Bodies
4	Forecasting and warning	Strengthening and up-gradation of existing cyclone and Tsunami forecasting system. Establish infrastructure for cyclone Tsunami warning and dissemination to the onshore and off shore coastal areas. Develop specific warning dissemination system.	IMD, DRDM
Non Structural Measure			
1	Capacity building	Departmental cyclone/ Tsunami contingency plan Cyclone/Tsunami related departmental action plan and SOP Imparting training to the stakeholders involved in Cyclone mitigation and management.	UTPDMA DRDM Line Depts
2	Awareness	Disseminate Cyclone/Tsunami risk to general public residing in coastal areas. Campaign for Cyclone /Tsunami safety tips.	IMD, UTPDMA DRDM Info. & Pub. Dept.

3.3.3 Flood

Floods being the most common natural disaster and people have, out of their experience devised many ways of coping with them. However, encroachments into the flood plains and channels over the years have aggravated the flood problem which requires effective and sustained mitigation measures. Various measures, structural and non-structural measures have been described below:

Table 3.5: Flood - Structural & Non-Structural Measures

Sl No	Task	Activities	Responsibility
Structural Measures			
1	Construction	Improvement of design for irrigation and flood protective structures Construction of dams, flood protection wall, flood diverting channels etc., Strengthening/ repairing of existing roads and bridges and other critical infrastructure in flood plains. Strengthening of dams and canals	PWD Local bodies
2	Development of catchment area	Development of catchment area by <ul style="list-style-type: none"> • Forestation • Land sloping • Small reservoirs/Check dams/ ponds etc., 	PWD DRDM Forest Dept. Agriculture Dept.
3	Flood proofing	Specific building codes for flood plains	TCP
4	Techno – legal regime	Enactment and enforcement of laws regulating developmental activities in flood plain	TCP
5	Forecasting and warning	Strengthening and up gradation of existing flood forecasting system Establish infrastructure for flood warning and dissemination	CWC IMD DRDM PWD
Non Structural Measure			
1	Capacity building	Departmental flood contingency plan Flood related departmental action plan and SOP Imparting, training to the stakeholders involved in flood mitigation and management.	DRDM Line Depts
2	Awareness	Disseminate flood risk to general public residing in flood prone zones Campaign for flood safety tips	UTPDMA DRDM Info. & Pub. Dept.

3.3.4 Drought

Droughts, are caused by lack of rainfall, which are beyond human control. However, by taking effective mitigation measures, the effect of drought can be minimized. The drought prevention measures are given below:

Table 3.6: Drought- Structural & Non-Structural Measures

SI No	Task	Activities	Responsibility
Structural Measure			
1	Construction	Construction of check dams and small reservoirs lift irrigation, tube wells and canals for surface irrigation Construction of percolation tanks check dams farm, ponds etc., Construction of warehouses and cold storages for preservation/ storage of food grains.	PWD DRDM Agriculture Dept. DCS&CA
2	Repairs upgradation and strengthening	Repairs upgrading and strengthening of check dams, tanks, and other water storage structures. Repairs upgrading and strengthening of percolation tanks, check dams, farm ponds etc.,	PWD Agriculture DRDM
3	Techno legal regime	Enactment of enforcement of laws regulating ground water level and exploitation of natural recourses.	Agriculture
4	Adaption of new technology	Application of advanced agro science technology and agro engineering inputs to improve agriculture production	Agriculture
5	Forecasting and warning	Strengthening and up gradation of existing drought forecasting system Establish infrastructure for drought warning and dissemination	Agriculture
Non Structural Measure			
1	Capacity building	Departmental drought contingency plan Drought related departmental action plan and SOP Imparting training to the stakeholders involved in drought mitigation and management Encourage people to use advanced technology of drip and sprinkler irrigation Encourage rain water harvesting. Encourage farmers to understand crop pattern to be adopted in their area. Rational use of fertilizers and pesticides Encourage the adaptation of technique for preservation of green fodder.	Agriculture
2	Awareness	Disseminate drought risk to general public residing in drought prone zones Campaign for drought tips for agriculture, general public and industries.	Agriculture DRDM Info. & Pub. Dept.

3.4 Training Needs Analysis

Training Analysis is most often used as part of the system development process. Due to the closer tie between the design of the system and the training required, in most cases it runs alongside the development to capture the training requirements.

UTPDMA shall analyse education, training and information needs through interviews and conversations with stakeholders in different parts of UT.

The training need analysis is done considering variable factors of intensity, affected population and severity of damage need to be quickly assessed based on which government and non- government agencies can allocate and deploy relief. The training requirements would be based on emergency response functions. Each ERF shall consist of sub functions. The ERFs are:

- o Coordination and Command
- o Source and Impact Control
- o Population Care
- o Medical Care
- o Maintaining law and order

All the line departments who have a stake in different phases of the disaster management shall identify their roles and carry out training need analysis of their personnel as indicated are hereunder.

Table 3.7: Training needs analysis

Task	Activity	Responsibility
Training needs analysis	Identification of roles and responsibilities of the departments in disaster management. Identification of stakeholders to carry out department's roles and responsibilities to carry out training need analysis Development of training design as per the training need analysis Arrangement for resources Imparting training.	UTPDMA DRDM Line Departments

CHAPTER 4

Mainstreaming DM Concerns into Developmental Plans / Programs/Projects

4.1 Overview:

The process of development and the kind of development choices made sometimes creates disaster risks. A close analysis of the development process with its six aspects namely policy, strategy, programming, project/program cycle management, external relations and institutional capacity; clearly argues for the need of systematic and more conscious ways of integrating disaster risk reduction (DRR) into development process. Mainstreaming disaster risk reduction into development planning is a priority concern for the Government of Puducherry.

- Mainstreaming disaster management 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 the hazard.
- Risk reduction strategies and measures are most effective when **integrated into the framework of overall development**.
- Risk reduction should not be considered as an end in itself which requires incorporation into development but rather as an integral component of all development processes right at the first place.
- Hence, a central theme of mainstreaming is to expose and address natural hazard risk within the development context.
- Mainstreaming risk reduction should result in appropriate measures being taken to reduce disaster risk and ensure that development plans and programs do not create new forms of vulnerability.
- In continuation with the efforts to integrate disaster management into development planning especially for new projects that are under preparation stage, the Central Government has revised the formats for pre-approval from **EFC** (Expenditure Finance Committee) and for preparing the **DPR** (Detailed Project Report) to address disaster management concerns.

Mainstreaming has three purposes:

- To make its objective as that all the development programmes and projects that originate from or funded by government are designated with evident consideration for potential disaster risks reduction and to resist hazard impact on the community likely to be affected.
- To make certain that all the development programmes and projects that originate from or are funded by government do not inadvertently increase vulnerability to disaster in all sectors: social, physical, economic and environment.
- To make certain that all the disaster relief and rehabilitation programmes and projects that originate or are funded by government are designed to contribute to development aims and to reduce future disaster risk.

Key components that need to be looked into for effective integration of DRR are:

- Ensuring an enabling environment which would involve strengthening of policies and legislation. It would also mean active advocacy and awareness raising among the various actors.

- Ensuring whether the implementation of the sectoral interventions is carried out by organizations and individuals trained and adequate skill in disaster resistant technologies. It is also imperative that the assessment of development projects are scanned for a risk reduction by all concerned stakeholders.

4.2 Checklist- EFC format: To ensure the implementation of key areas, a check list for EFC format and the responsible departments are as shown below:

Table 4.1: Checklist- EFC format

Task	Activity	Responsibility
Mainstreaming disaster management into development planning	1. To ascertain whether project involve any creation/ modification of existing structural/ engineering assets	DRDM and Line Departments like PWD, Dept., of Science, Technology and Environment, LAD, TCP, Planning Authorities, Planning and Research Department, etc.
	2.To ascertain the possible risks, likelihood and impact from disasters due to the location of project sites	
	3. To ascertain whether probable risks have been prioritized and the mitigation measures being contemplated, both structural and non-structural measures	
	4.To ascertain whether the design and engineering of the structure has taken into consideration the National Building Code 2005, the appropriate BIS Codes, other applicable sources as per the type of the project and the NDMA guidelines	
	5. To ascertain whether the cost of disaster treatment/ mitigation measures been included in the overall project cost	
	6. To ascertain whether the process of risk assessment has been done based on available information and secondary evidence	

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

Table 4.2: Checklist for preparation of DPR

Task	Activity	Responsibility
Mainstreaming disaster management into development planning	1.Impact Assessment of project (damage that can be caused to the project by natural disasters, design of the project that could accentuate the vulnerability of the area to disasters and / or lead to rise in damage / loss of lives, property, livelihood and surrounding environment). 2.Risk assessment of project 3. Vulnerability assessment of project (Evaluation of site with regards to parameters such as probable	DRDM and Line Departments like PWD, Dept., of Science, Technology and Environment LAD, TCP, Planning Authorities, Planning and Research Department, etc.

	<p>maximum seismicity, probable maximum storm surge, probable maximum wind speed, probable maximum precipitation, probable maximum flood discharge and level, soil liquefaction proneness under probable earthquake intensities)</p> <p>4.Compliance of</p> <ul style="list-style-type: none"> o land use management o Building Code o Building use regulation o Directives and Legislation o Maintenance requirement 	
	<p>Details about the location of the project.</p> <p>Analyzing exposure of project area to various hazards.</p> <p>Analyzing of impact on safety of the project.</p>	
	<p>Impact of the project on the environment and the surrounding population with respect to the type of the project and adoption of mitigation measures to reduce the impact of the same</p>	

4.4 State Mitigation Fund:

As envisaged under the DM Act, 2005 the Government of Puducherry through the Department of Planning and Research and Finance Department shall constitute and allocate funds in the name of State Mitigation Fund to the UTPDMA so that the Authority is able to discharge its functions entrusted upon by the said Act.

Mainstreaming DRR in Flagship Programs in UT

1. Sarva Siksha Abhiyan (SSA): To initiate the community as owners of education system, Village Education Committee (VEC) in each school is formed involving members of the community. The VEC is entrusted with the responsibility to monitor and to spend the amount given by SSA to the schools by adhering to the usual procedure and norms.

The programme seeks to open new schools in those areas which do not have schooling facilities and strengthen existing school infrastructure through provision of additional class rooms, toilets, drinking water, maintenance grant and school improvement grants. Existing schools with inadequate teacher strength are provided with additional teachers, while the capacity of existing teachers is being strengthened by extensive training, grants for developing teaching-learning materials and strengthening of the academic support structure at a cluster, block and district level. SSA has a special focus on girl's education and children with special needs. SSA also seeks to provide computer education to bridge the digital divide.

Options for mainstreaming DRR:

1. Capacity building of VECs and teachers on disaster management especially with relevance to school disaster management.
2. Incorporating school disaster preparedness monitoring (structural and non-structural aspects) in the responsibilities of the VECs
3. Essential retrofitting to be taken care of to avoid disasters in the schools viz; fire, wall collapse, etc.
4. School disaster management plans to be developed

2. National Rural Health Mission (NRHM): The NRHM launched in April 2005, aims to provide accessible, affordable and accountable quality health services to the rural poor. The objectives of the mission include reduction in child and maternal mortality, universal access to public health care services, prevention and control of communicable and non-communicable diseases, population stabilisation, revitalisation of local health traditions, mainstreaming AYUSH and promotion of health life style.

Options for mainstreaming DRR:

1. Capacity building/ training of ASHA workers and ANMs in DM
2. Inclusion of ASHA and ANMs in the village DM committees/ task force
3. NRHM to spell out health contingency plans for times of disasters.
4. Significance of continuing immunisation/ANCs etc. during the aftermath of a disaster should be covered during the Village/Urban Health and Nutrition Days (funds available under NRHM for conducting VHND)

3. Integrated Child Development Services (ICDS): The scheme provides an integrated approach for converging basic services through community-based anganwadi workers and helpers. The services are provided through “anganwadi”, a childcare centre located within the village itself. The packages of services provided are: supplementary nutrition, immunisation, health check-up, referral services, pre-school non-formal education and nutrition and health education. These services are provided by anganwadi centers in five ICDS projects. There are 688 anganwadi centres and run the following projects. 1) ICDS Project I, Villianur (141 centres) 2) ICDS Project II, Karaikal (141 centres) 3) ICDS Project III, Ariankuppam (122 centres) 4) ICDS Project IV, Muthialpet (126 centres) 5) ICDS Project V, Sithankudi (138 centres), Mahe (12 centres), Yanam (8 centres).

Options for mainstreaming DRR:

1. Capacity building/ training of anganwadi workers and helpers in DM activities
2. Inclusion of the AWWs and AWHs in DM committees/ task forces
3. The significance of AWCs and their specific roles during the various phases of disasters should be explained to the communities and the workers in the regular ICDS meetings and interactions with the community

ICDS being a centrally sponsored scheme has funds available for regular monthly meetings and also is the source of village level demographic data. The AWCs are also the source of the list of vulnerable population such as children below the age of 5, pregnant and lactating women, people above 60, people with special needs etc. which could be utilized by the DM committee while planning DRR activities.

4. Jawaharlal Nehru National Urban Renewal Mission (JNNURM): Under JNNURM, so far eight projects have been approved for the UT of Puducherry (4 each by MoUD and MoHUPA).

1. Comprehensive Sewerage System for Puducherry
2. Integrated Solid Waste Management for urban areas of Puducherry
3. Proposal for replacing / purchasing 50 buses for urban transport in U.T. of Puducherry
4. Augmentation of water supply for Yanam municipality
5. Construction of 1,136 dwelling units (at Lambert Saravanan Nagar, Reddiarpalayam, Puducherry)
6. Construction of 168 Dwelling units at Kuruchikuppam, Puducherry
7. Construction of 1,660 houses of EWS/LIG category for the SC community in the Puducherry region
8. Construction of 432 tenements at Karaikoilpathu, Karaikal under IHSDP

Options for Mainstreaming DRR

1. Government should make a condition for the cities to amend first their existing GDCR (General Development Control Regulations) for accessing funds from JNNURM. It will motivate the city administrations to amend their GDCR prior to executing the physical projects under the programme
2. Adhere safe construction practices; follow building bye laws, Town and Country Planning Acts and CRZ Act. Safe construction should be a made a mandatory reform, not an optional reform.
3. Aiming at reducing risks in urban areas, all the concerned persons related to construction domain, should be trained, including masons, rod benders, supervisors, engineers, architects, contractors and local builders as well.
4. The old system embedded in construction practices need to be kept alive to promote the DRR through seismic resistant architecture. The traditional building architecture and construction practices have proved to be safe and especially highly seismic resistant.
5. Housing for the poor should look at the locally available materials and technologies that are more appropriate for a particular area than importing new technologies that is not ecologically viable.

5. National Rural Employment Guarantee Act (NREGA): The NREGA 2005 envisages securing the livelihood of people in rural areas by guaranteeing 100 days of employment in a financial year to a rural household. The Act provides a social safety net for the vulnerable households and an opportunity to combine growth with equity. NREGA programme has been launched by the Government of Puducherry to provide employment to unskilled manpower by direct wage employment in the rural areas of Puducherry and Karaikal regions.

Options for mainstreaming DRR:

1. Micro level planning with DRR integration for creation of assets and infrastructure (road, culvert, escape route, raised tube well for pure drinking water, irrigation structure) and get it approved at the district level.
2. Integrate district disaster management plans at UT level with a focus on DRR. Facilitate advocacy on special planning with focus in employment generation and asset creation in disaster prone areas.

Role of SDMA/SEC/DDMA in mainstreaming DRR in Developmental plan

The State Disaster Management Authority (SDMA) which has been created as an apex authority at the state level headed by the Chief Minister has been mandated under clause (d), Sub Section (2) of Section 18 of the Disaster Management Act to “lay down guidelines to be followed by the departments of the Government of the State for the purposes of integration of measures for prevention of disasters and mitigation in their development plans and projects and provide necessary technical assistance therefor” and to “review the development plans of the different departments of the State and ensure that prevention and mitigation measures are integrated therein (Section 18: 2g). Similarly, the SEC headed by the Chief Secretary has been mandated to “monitor the implementation of the guidelines laid down by the State Authority for integrating of measures for prevention of disasters and mitigation by the departments in their development plans and projects (Section 22: 2e).

The DDMA's have also been entrusted with similar functions of laying down guidelines to be followed by various departments and also to review their development plans for DRR integration.

4.5 Action points for effective mainstreaming of DRR

4.5.1 Generating knowledge and building capacity: It is important that knowledge and information on DRR is captured, researched, adapted and applied at all levels. This can only be achieved through meaningful collaboration. Therefore, collaborations of GO-NGO, NGO-NGO and local NGO-International NGO should also be considered as another window of opportunity for mainstreaming DRR into development process.

4.5.2 Geographical planning: The location aspects of the development project of the government and NGOs should be decided on the basis of hazard and vulnerability analysis of a given area and should be a part of the risk reduction strategy.

4.5.3 Project cycle management as a checkpoint: NGOs have the opportunity to integrate DRR during management of various phases of their project. The guidelines of NDMA for NGOs can be followed for this. Few other areas which have a direct bearing on the vulnerability and risk of the communities are shelter and infrastructure, livelihoods, food security and nutrition, health, water & sanitation, education and environment. The matrix provided below is derived from the suggestions of the NDMA guidelines on mainstreaming DRR is presented as a checklist for the UT of Puducherry to follow during sectoral interventions.

CHAPTER 5

Preparedness Measures

Preparedness involves activities undertaken in advance of an emergency to develop and enhance operational capacity to respond and recover from an emergency. As part of a comprehensive preparedness program, there should be established - plans and procedures, prevention programs, resource management system, MoU / agreements with service providers (PPP), training awareness programs etc.,

5.1 Preparedness Planning:

Planning is one of the key elements in the Preparedness cycle. Preparedness cycle illustrates the way the plans are continuously evaluated and improved through a cycle of planning, organizing, training, equipping, exercising, evaluating and taking corrective action.

The Government Departments/ agencies assigned emergency responsibilities in this plan will prepare appropriate supporting plans and related standard operating procedures that describe how emergency operations will be carried out during emergencies.

- **District Disaster Management Plan:** It shall be the responsibility of DDMA to prepare the DDMP of their respective district. UTPDMA shall extend help in preparation of the DDMPs
- **Hazard specific planning:** UTPDMA through the line Departments concerned shall prepare Hazard specific plans in consonance with the guidelines given in Chapter 3 of this Plan.
- **PPP MoU etc:** UTPDMA through the Department of Social Welfare shall augment the availability of resources by mobilizing resources, enlisting volunteers, contracting or outsourcing of essential services during normal times. MOUs and contracts / Agreements with Private operators, firms shall be executed to ensure availability adequate resources during disaster.
- **Recovery Plan:** District authority and other agencies are encouraged to develop recovery plans prior to the occurrence of a disaster. Such a plan should establish mechanisms for recovery decision-making and identify key participants in the recovery organization, including non-governmental and private sector entities. The plan shall also identify processes and procedures for requesting state and central recovery assistance and ensuring that recovery activities are carried out in accordance with the requirements of these programs.

In case of Critical Infrastructure and Key Resources (CIKR) and the places of congregation, the Department / Trust /agency responsible would prepare on-site and off-site plan in consonance with the available guidelines in consultation with UTPDMA.

5.2 Resource Availability

There was a felt need of having a comprehensive database on availability of equipment and resources that can be mobilised in case of an emergency. The resources available within the department or with the UT/State may not be sufficient to saving lives, and when some specialist equipment is required, there is a lack of knowledge as to the whereabouts of the equipment. Also, some of the specialised equipment which otherwise is not of regular use for government departments is not worth to maintain and kept idle. Availability of a comprehensive data at various levels (district, state and national) will help disaster managers to pull required resources and equipment from various source including private parties, neighbouring districts/state.

The India Disaster Resource Network (IDRN – www.idrn.gov.in) is a nation-wide electronic inventory of essential and specialist resources for disaster response, covering specialist equipment, specialist manpower resources and critical supplies. Puducherry UT also has developed its database and ported into IDRN portal in 2008. Additionally, the UT while preparing the village level database also has documented local resources in each village. This is available only in hard copies and segregated at village level.

Action points: Periodic updating of database is essential so that the data stored will be relevant and of use during emergency. IDRN prescribe quarterly updating of the database. Puducherry has updated the data recently in 2014. The responsibility of data updating can be vested with the EOC and all the line departments and organisations should provide the data on quarterly basis to the EOC. The resources of EOC during non-emergency time can be used for data updating. This will also help EOC to own the database who play key role in early warning and response phases. The disaster managers of the UT need awareness of the IDRN resources and training for extracting data from the portal.

5.3 Preparedness Training& Capacity Building:

Training, tests and exercises are essential to ensure Government officials, emergency response personnel and the public are operationally ready. As part of the emergency management training Curriculum, it shall be ensured that personnel with emergency responsibilities complete emergency management courses as prescribed from time-to-time by the National / State Authority.

Training program should include all stakeholders including – community, home guard, NSS, NCC, NYK, Schools and colleges, Civil society, CBOs, corporate entities, SDRF(to be constituted), Fire Service, Media, Police etc.

Table 5.1: Preparedness Training& Capacity Building

Task	Activity	Responsibility
Training	1. Training to home Guard personnel in various aspect of disaster management including search and rescue	Police Dept. UTPDMA
	2. Training to NCC and NSS personnel in various aspect of disaster management	Education Dep. Director NCC
	3. Training to educational and training institutions personal in various aspect of disaster management	UTPDMA
	4. Training to civil society, CBOs and corporate entities in various aspect of disaster management	UTPDMA NGOs
	5. Training to fire and emergency service personnel in various aspect of disaster management	Fire service Department UTPDMA
	6. Training to police and traffic personnel in various aspect of disaster management	Police Department PTS, UTPDMA

7. Training to State Disaster Response Force (SD RF) Teams in various aspect of disaster management	NIDM/NDRF UTPDMA
8. Training to media personnel in various aspect of disaster management	NIDM Information Dept. UTPDMA
9. Training to govt. officials in various aspect of disaster management	NIDM UTPDMA
10. Training to engineers, architects, structural engineers, builders and masons in various aspect of disaster management	PEC Hazard Safety Cell of PWD NIDM UTPDMA

5.3.1 Preparedness Exercise:

Exercises provide personnel with an opportunity to become thoroughly familiar with the procedures, facilities and systems, which will actually be used during emergencies. State agencies and its departments should plan for and/or participate in an all-hazards exercise program that involves emergency management/response personnel from multiple disciplines and/or multiple jurisdictions. Exercises should

- Stress the application of standardized emergency management.
- Be based on risk assessments (credible threats, vulnerabilities and consequences).
- Include non-governmental organizations and the private sector, when appropriate.
- Incorporate the concepts and principles of IRS as envisaged in the Crisis Management Framework formulated by the Government of Puducherry.
- Demonstrate continuity of operations issues.
- Incorporate issues related to special needs populations.

Exercises range from seminars/workshops to full scale demonstrations.

- **Seminars/Workshops** are low-stress, informal discussions in a group setting with little or no simulation. It is used to provide information and introduce people to policies, plans and procedures.
- **Drills/Tests** are conducted on a regular basis to maintain the readiness of operational procedures, personnel and equipment. Examples include tests of outdoor warning systems and the Emergency Alert System.
- **Tabletop Exercises** provide a convenient and low-cost method designed to evaluate policy, plans and procedures and resolve coordination and responsibilities. Such exercises are a good way to check existence of policies and procedures to handle certain issues.
- **Functional Exercises** are designed to test and evaluate the capability of an individual function such as communications, public evacuation, or medical.
- **Full-Scale Exercises** simulate an actual emergency. They typically involve complete emergency management staff and are designed to evaluate the operational capability of the emergency management system.

5.3.2 Awareness:

Awareness generation and sensitizing the communities and other stakeholders towards preparedness can help save lives and assets in the case of a disaster. The awareness of the community is basically educating on dos and don'ts in case of any disaster and awareness should be tailored group specific and hazard specific. It is important to sensitize line department as well regarding their roles and responsibilities during emergency situations. Various IEC methodologies can be used for imparting awareness generation and sensitization. Following awareness generating activities can be imparted at department and community level for preparedness and mitigation activities.

At department level:

- Conduct mock drills involving line departments and communities
- Mainstreaming DM in development activities
- Use of field staff of various line department for imparting community awareness and sanitation hygiene activities
- The VAOs should constantly interact with DMC and DMT so that they are active in the locality
- Using of audio visual mobile units of various departments like - health department and electricity department for awareness development
- Conduct street plays through NGOs and CBOs
- Coordinate with academic organisations for knowledge development and sharing
- Documentation of success and failure stories specific to awareness use these learning for the learning future awareness activities

At community level:

- Awareness should be a continuous process and should be intensified based on the disaster calendar of district/state
- Posters on dos and don't should be displayed in public places
- Awareness and incorporating DM in school curriculum
- Training of masons in hazard resistance building
- Use of audio visuals
- Broad casting awareness messages in FM radios TV and local cable network and sending bulk SMS to cell phones
- Use VKCs as hubs for knowledge dissemination and awareness

Table 5.2: Information education and communication

Task	Activity	Responsibility
Information education and communication	1. Advertisement, hording, booklets, leaflets, banners, shake-table, demonstration, folk dancing and music, jokes, street play, exhibition, TV Spot, radio spot, audio-visual and documentary, school campaign, - Planning and Design - Execution and Dissemination	<input type="checkbox"/> DRDM <input type="checkbox"/> UTPDMA <input type="checkbox"/> Information Dept. <input type="checkbox"/> Education Dept. <input type="checkbox"/> All line dept. <input type="checkbox"/> Dist. Collectors Local Bodies

5.3.3 Geo-spatial DSS:

GIS has the capability to capture, store, manipulate, analyse, manage and present all kind of data related to space in a systematic manner. GIS can be used as a crucial tool in all the phases of emergency management – preparedness, response and reconstruction. Emergency management begins with identifying hazard locations and vulnerable groups and GIS can play a crucial role in mapping hazards and vulnerability groups and deriving relationship with hazard intensity and vulnerability. This will help in prioritizing preparedness and mitigation activities. When hazard maps are viewed with other map data (streets, pipelines, buildings, residential areas, power lines, storage facilities, etc.), disaster/emergency management officials can design mitigation, preparedness, response, and possible recovery plans for various scenarios. GIS can also help simulate scenarios for varying intensities of hazards and help official to visualise situation and plan for response operations. For instance high resolution Digital Elevation model (DEM) is essential to model sea water and flood inundation. As present DEM available for the region is of coarse resolution and it is essential to have levels at various prominent points which can be incorporated in DEM to generate high quality DEM model. This will be very useful for storm water drain management.

Emergency situation demands quick decision that too in a situation where there is disruption in lifeline and communication system. The situation also warns a quick solutions like finding an alternate options as the existing facilities are damaged/destroyed. An organised data in GIS has the capability of providing plan for response and relief operations in a quick turnaround time.

GIS for emergency management essentially should comprise of baseline data (on bio-physical, socio economic and historical hazards), GIS application, hardware system, and trained human resources. The data collection and organisation in GIS is the most tedious job and ideally various department deals with specific aspects need to develop and maintain this. An alternative is to outsource data development activities to specialised individual or group and subsequently arrange appropriate updating mechanism for the same. For data update also same model of using internal resource or outsourcing method can be used. The quality of data is very crucial for generating quality outputs. GIS application can be off-the-shelf products or can be custom made, based on requirement. Both has advantages and disadvantages, however, for DM and emergency response, custom application will have better edge to off-the-shelf products and can be availed on a cheaper price. GIS is an evolving technology and skill imparting to technical person should be considers as a continuous process.

The UT has developed a GIS based application, Puducherry Decision Support System (PDSS), which has GIS data of Puducherry and Karaikal district along with a desktop application. The GIS database of PDSS has all the essential layers required for any emergency operations. However, it required periodic updating and incorporation of baseline data of Mahe and Yanam districts. The ownership of the data layers should be entrusted to the respective department with DRDM as the custodian. All department users should be exposed the refresher training on the use of PDSS. Similar to mock drill exercise department users should conduct simulation model development and design action plans for response activities.

In future, UT should initiate the process of developing the Spatial Data Infrastructure (SDI) for UT. Many of the states and UTs in the country have already initiated the development of SDI complying national standards. This will help in easy data sharing and usage of data of neighbouring States and help in designing emergency plans for hazards that are trans-boundary in nature.

Table 5.3: Geo-spatial DSS

Task	Activity	Responsibility
Puducherry Decision support system (PDSS)	Updation and maintenance of PDSS including collection of data, map generation Extension of PDSS to all the four regions of Puducherry Sharing of PDSS with line departments and using it as a tool in planning and development	UTPDMA, DRDM, Dept. of Information Technology, NIC, ISRO All Line Departments.

5.3.3.1 Techno-Legal Regime:

Enforcing techno-legal regime is another key step for any Disaster Management activity in a state. For Puducherry the major steps that needs to be undertaken on a priority basis is the following.

Table 5.4: Techno-Legal Regime

Task	Activity	Responsibility
Institutional Arrangement	<ol style="list-style-type: none"> 1. Operationalisation of State Level Disaster Management Authority 2. Formation of DM policy and guidelines 3. Emergency Medical Service <ul style="list-style-type: none"> • Creation of an Emergency Medical Services Authority (EMSA) • Establish paramedic cadre through training programmes and accredit / license them • Impart training to manpower for emergency services • Recognize and accredit trauma centres • Standardize and license ambulance Services • Establish state wide medical emergency access number • Creation of City / District EMS councils • Creation of guidelines for Emergency Care of special section of people like children, elders, BPL beneficiaries, citizens of remote and disaster prone areas 4. Preparation and distribution of commentaries and handbooks 5. Development of relief norms and packages 6. Development and promotion of incentives, insurance, disaster bonds, tax rebate, etc. against the disaster 7. Development of disaster management Plans <ul style="list-style-type: none"> • Hazard-wise State Disaster Management Plans • State Action Plans • State Contingency Plans 	DRDM, UTPDMA HEALTH

	<ul style="list-style-type: none"> • Department DM Plans • District, Taluk, City and Village DM Plans <p>8. Regular rehearsal, review and updation of plans</p> <p>9. Publication & dissemination of plans</p> <p>10. Strengthening of early warning system</p> <ul style="list-style-type: none"> • Conduct study • Analyse • Implement <p>11. Arrangement with service provider companies for multiple warning messages for different natural and man-made disasters prone to state</p> <p>12. Hazard Risk & Vulnerability Assessment for different natural and man-made disasters prone to state</p> <ul style="list-style-type: none"> • Conduct study • Analyse • Mapping • Micro zonation <p>13. Safety Measures :</p> <ul style="list-style-type: none"> • Identification of places • Alarm system • Personnel protective equipments • Promotion of life saving methods and techniques <p>14. Strengthening of relief distribution and accounting system at state and district level</p> <p>15. Identification of centralised system for receipt , storage and distribution of relief, rate contract procurement and stockpile of relief material.</p> <p>16. Strengthening of EOC at state level and district level:</p> <ul style="list-style-type: none"> • Retrofitting of existing buildings • Strengthening of resources • Task forces • Equipments • SOP's • Financial arrangement for EOC's • Arrangement for optional EOC • Arrangement for mock drills • Arrangement of logistics • Strengthening communication means 	
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5.4 Information Management:

Preparedness strategies include plans and procedures for utilizing communications and information management systems. Each agency should incorporate the following principles into their communications and information management systems:

- **Common Terminology:** Apply common and consistent terminology
- **Protocols:** Develop procedures and protocols for communications (to include voice, data, access to geospatial information, ICAO Phonetic alphabet pronunciations, Internet/Web use and data encryption), wherever applicable, to utilize or share information during an incident/planned event.
- **Data Collection:** Institute multidisciplinary and/or multijurisdictional procedures and protocols for standardization of data collection and analysis to utilize or share information during an incident/planned event.
- **Common Operating Picture:** Utilize systems, tools and processes to present consistent and accurate information (e.g., common operating picture) during an incident/planned event.

5.5 Preparing Resources:

It is the policy of the state that resource maintenance and mobilisation is done at the lowest level of government under the established policy. When local resources are exhausted and additional resources are required, resource requests will follow an established process for ordering, tracking, mobilizing and demobilizing. Depending on the scale of the emergency, limited resources may need to be rationed or controlled.

5.5.1 State Disaster Resource Network:

The State Disaster Resource Network (SDRN) to be established will be the nucleus for emergency resource management system. The design of SDRN will be based on following considerations:

- **Interoperability:** Ensure that equipment, communications and data systems acquired through State/Territorial and local acquisition programs are interoperable.
- **Standardized database:** Ensure standard database schemes, query management system for optimal operational efficiency and interchangeable.
- **Standard Inventory numbering:** A key part to a successful SDRN implementation is coming up with a consistent unique part-numbering scheme that everyone adheres to and is easy to use. A faulty inventory item numbering scheme will result in data entry errors, mistakes, inventory and other costly processes.
- **Interagency Assistance:** Utilize response asset inventory for intrastate and interstate assistance requests during training, exercises and incidents/ planned events. This includes integration of resources from private sector (PPP).
- **Deployment Policies:** Institute policies, plans, procedures and protocols to prevent spontaneous deployment of resources/personnel and/or responding to a request that bypasses official resource coordination processes (i.e. resources requested through improper channels).
- SDRN should be updated and managed under strict surveillance of state authority and Stakeholders should be regularly trained to operate State Disaster Resource Network through drills and exercises.

On-Line Application:

On-line application should be developed for resource Management with capabilities of mapping crucial real time information reflecting exactly what is happening, what is most needed, and precisely where during severe incidents.

SDRN should be seamlessly integrated with National Disaster Resource network (IDRN) or any other such resource repository created by national Government.

5.5.2 Resource Ordering: All resource requests, at each level, must include the following:

- Clearly describe the current situation.
- Describe the requested resources.
- Specify the type or nature of the service the resource(s) will provide.
- Provide delivery location with a common map reference.
- Provide local contact at delivery location with primary and secondary means of contact.
- Provide the name of the requesting agency and/or Coordinator contact person.
- Indicate time frame needed and an estimate of duration.
- Resource requests involving personnel and/or equipment with operators will need to indicate, if logistical support is required, (i.e. food, shelter, fuel and reasonable maintenance).

5.5.3 Resource Directories:

Each Department/ agency and local government entity should identify sources for materials and supplies internally and externally. The SEOC and DEOC maintain a list of state Department / agencies, their roles and responsibilities as outlined in this plan and the common resources available from each.

5.5.4 Daily Updates:

The requesting agencies are responsible to report to SEOC the Number and status of resources deployed on a mission on a daily basis.

5.5.5 Central Assistance:

When resources are not available within the state or through existing Partners, the UT may request assistance from the central government. Requests for central assistance during an emergency will be coordinated through the State Emergency Operations Centre (SEOC) under established procedure.

5.6 Preparing Community:

Any disaster revolves around the coping capacity of the community and hence community should be closely associated with prevention, mitigation, preparedness, training, capacity building, response, relief, recovery i.e. short term and long term, rehabilitation and reconstruction.

Table 5.5: Community preparedness

Task	Activity	Responsibility
Community preparedness	1. Selecting vulnerable community and most vulnerable groups at risk (Keep gender in mind)	DRDM UTPDMA IMD Finance department., District Collectors All Taluk Tahsildars Municipalities Commune panchayats
	2. Disseminate information about vulnerability and risk to the community	
	3. Promote local level disaster risk management planning through participatory approach	
	4. Advice and issue direction wherever necessary for community disaster prevention, mitigation and preparedness through local resources and participatory approach	
	5. Provide necessary resources and support for disaster risk reduction at community level.	
	6. Promote community managed implementations	
	7. Review the preparedness at community level	
	8. Take appropriate actions to enhance community preparedness	
	9. Promote community education awareness and training	
	10. Ensure fail safe mechanism for timely dissemination of forecasting and warning of impending disaster to the community	
	11. Disseminate information to community to deal with any disaster situation.	

In Puducherry, the involvement of the community in the whole Disaster Management Framework of the UT was ensured through having **Village and Ward Disaster Management Plans, taking each Village Panchayat as a unit**. In 2009, under the DRM project of UNDP, the district authorities of Puducherry and Karaikal had developed the VDMPs for each Village Panchayat and Municipal wards in both districts. This process was carried out with the help of local NGOs and CBOs who were instrumental in organizing the community meetings, focus group discussions, Participatory Rural Appraisals, etc. The plans developed as a result of this is available with the district authorities of the respective districts. This effort has given some awareness to people.

As part of the SDMP preparation, the local DMC are revamped and the local plans were updated for both Puducherry and Karaikal. For Mahe and Yanam fresh local plans were prepared forming new DMCs and DMTs. The DMCs and DMTs (there are 4 DMTs - early warning, search and rescue, first aid, and water sanitation and shelter management) were informed the roles and responsibilities of each team, prior, during and post to a disaster. The local plans were updated with new demographic information, important contact numbers during emergency, names and contact details of DMC and DMT members. Through this exercise, there are 149 local plans for Puducherry (including municipal wards), 44 for Karaikal, 15 for Mahe and 10 for Yanam. The VDMPs were prepared with active participation of local communities with the help of a local NGO.

5.7 Medical Preparedness

Table 5.6: Medical preparedness

Task	Activity	Responsibility
Medical preparedness	Preparation of authentic medical database for public and private facilities available in the state	Director Medical Services & Family Welfare Director National Rural Health Mission Director National Urban Health Mission
	Collection of data	
	Mapping and gap analysis	
	Strengthening	
	Resource management	
	Manpower	
	Logistics	
	Medical equipments	
	Medicines	
	Antidotes	
	Personnel protective equipments	
	Disinfectants	
	Vaccines	
Identification of medical incident command		
Identification of each section head at each level		
Identification of key members of different task force		

5.8 Knowledge Management:

Table 5.7: Knowledge Management

Task	Activity	Responsibility
Knowledge Management	Documentation of disasters and to make it available in easy accessible format	DRDM UTPDMA
	Undertake research studies and application of outcomes in disaster management practices	
	Documenting field data, experience and indigenous technological knowledge from local community	
	Development of plan by using available resources like SDRN, IDRN, etc.	
	Sharing of data/information/ reports/ proceedings through consultation meeting/ seminars etc.	
Use of Information and communication technology at disaster management centres, state, district, taluk,		

5.9 Communication

Table 5.8: Communication

Task	Activity	Responsibility
Fail safe communication and last mile connectivity	- Undertake study to establish fail safe two way communication – information System from state level to disaster site connecting state, district, taluka and city level.	DRDM UTPDMA Science & Technology Dept. Information Dept. District and Local authorities
	- Undertake study to establish alert/siren with multi-lingual recorded messages in coastal areas	
	- To procure the system and run a pilot project	
	- Establishment of multiple/alternative system	
	- Training/IEC campaign for general public of the vulnerable areas.	
	- Plan for re-establishment of disrupted system	

5.10 Plan Testing:

Mock drill and rehearsals play key role in preparedness both for department to test their infrastructure and coordination as well as sensitizing the community. The yearly schedule for the conduct of mock exercises for different disasters in different parts of the UT at specified locations need to be charted out ahead during the start of the year. Some exercises should be undertaken at department level without prior intimation to assessment of the level of preparedness of various departments.

The UT conducted a mock drill for Tsunami on 12 October 2011 as part of the national initiative organized by MHA and INCOIS. Few coastal states have participated in this mock drill activity. It is essential that DRDM should document the success and failure of the mock drill to discuss further to improve the efficiency of coordination among department in enhance the sensitization activities among the community. The process documentation will also facilitate to analyse the gaps in the response planning and the command system and also assess how proactive are the communities. It is therefore important that the documentation process is guided by an analytical outlook to improve contents of the response plan rather than to applaud the activity by itself.

Table 5.9: Plan Testing

Task	Activity	Responsibility
Plan testing	Provide copy of the plan to each stakeholder	DRDM
	Organize mock drills and rehearsal for plan testing	UTPDMA
	Lessons learnt through mock drill; identification of gaps through feedbacks and modification of plan	Science & Technology Dept. Information Dept.
	Organize annual mock drill and updation of plan	District and Local authorities

5.11 Lessons learnt—to be incorporated at the time of updating of plan

SDMP needs to be updated on a timely basis through learnings – success and failure experience in planning and response activities in the past. All response and relief activities, mock drill exercises need to be documented and analysed at inter-department senior level to assess the effectiveness and coverage. While documenting, emphasis on coordination, its effectiveness, addressing the needy like women, people with special needs, infants, etc., response time, impact of awareness, improvement from the past, need to be addressed. Ideally the UT should create a monitoring and evaluation template and different department should assess this separately and later sit together to share their experience and finalise the template. Success stories of similar regions also can be referred and considered for updation, if suitable for UT conditions.

Puducherry was part of a few organised by DRDM with the support of various line department and communities. The activities were documented and circulated among line departments.

The key observations of the mock drill are:

- The line departments carried out adequate preparation before executing the mock drill.
- The coordination between the department was satisfactory
- The media provided adequate support in awareness and sensitization.
- Participation of civil societies and CBOs were not upto the mark
- Participation of communities were also not upto the mark. Livelihood issues and cultural gathering on that particular day were the reasons communities conveyed for non participation.

CHAPTER 6

DISASTER RESPONSE

6.1 Response Strategy:

During the Response Phase, emergency managers set goals, prioritize actions and outline operational strategies. This plan provides a broad overview of those goals, priorities and strategies and describes what should be done by whom under whose direction.

6.2 Operational Goals: During the response phase, the agencies that are charged with responsibilities in this plan should focus on the following goals:

- a) Hazard Mitigation.
- b) Meet Basic Human Needs.
- c) Address needs of people with disabilities / senior citizens / expecting mothers and children (vulnerable group).
- d) Quick restoration of Essential Services.
- e) Support Community for faster economic recovery.

6.3 Operational Priorities: Operational priorities govern resource allocation and the response strategies for the union territory of Puducherry during an emergency. Below are the operational priorities addressed in this plan.

- a) **Save Lives** – The preservation of human life will have the top most priority of emergency managers and first responders and will override priority of all other considerations.
- b) **Protect Health and Safety** – Measures to mitigate the emergency's impact on public health and safety on survivors.
- c) **Protect Property** – All feasible efforts shall be made to protect public and private property and resources, including critical infrastructure, from damage during and after an emergency.
- d) **Preserve the Environment** – All possible efforts must be made to preserve environment and protect it from damage during an emergency.

6.4 Operational Strategies:-To meet the operational goals, emergency responders should consider the following strategies:

- **Mitigate Hazards** – As far as practical, suppress, reduce or eliminate hazards and/or risks to persons and property during the disaster response. Lessen the actual or potential effects or consequences of future emergencies.
- **Meet Basic Human Needs** – All possible efforts shall be made to supply resources to meet basic human needs, including food, water, shelter, medical treatment and security during the emergency. Afterwards provisions shall be made for temporary housing, arrangements for special ration of food items and support for economical restoration.
- **Address Needs of People with Disabilities and Older Adults** –People with disabilities, senior citizens, expecting mothers and children are more vulnerable/ susceptible to more harm during and after an emergency. The needs of these group must be considered and addressed.
- **Restore Essential Services** – Power, water, sanitation, transportation, communication and other essential services must be restored as quick as possible to assist communities in resuming normal daily activities.

- **Support Community and Economic Recovery** – All members of the community must collaborate to ensure that recovery operations are conducted efficiently, effectively and equitably, promoting expeditious recovery of the affected areas.

6.5 Direction Control and Coordination(Response Structure):

Incident Response System (IRS) formulated by National Disaster Management Authority is a system of Management by Objectives through IAP (Incident Action Plan). It takes care of any expanding incident through an organizational structure of Command Staff, Sections, Branches, Divisions, Groups, Units, resources and span of control. Through Unified Command (UC) it allows all agencies having jurisdictional or functional responsibilities to jointly develop incident objectives and strategies. IRS requires that every emergency response involving multiple area or multiple agencies include the four functions.

6.5.1 Command/Management: Command is responsible for the directing, ordering, and/or controlling of resources at the field response level. Management is responsible for overall emergency policy and coordination at the IRS EOC levels.

- **Command:** A key concept in all emergency planning is to establish command and tactical control at the lowest level that can perform that role effectively in the organization...
- **Management:** The EOC serves as a central location from which multiple agencies or organizations coordinate information collection and evaluation, priority setting and resource management.

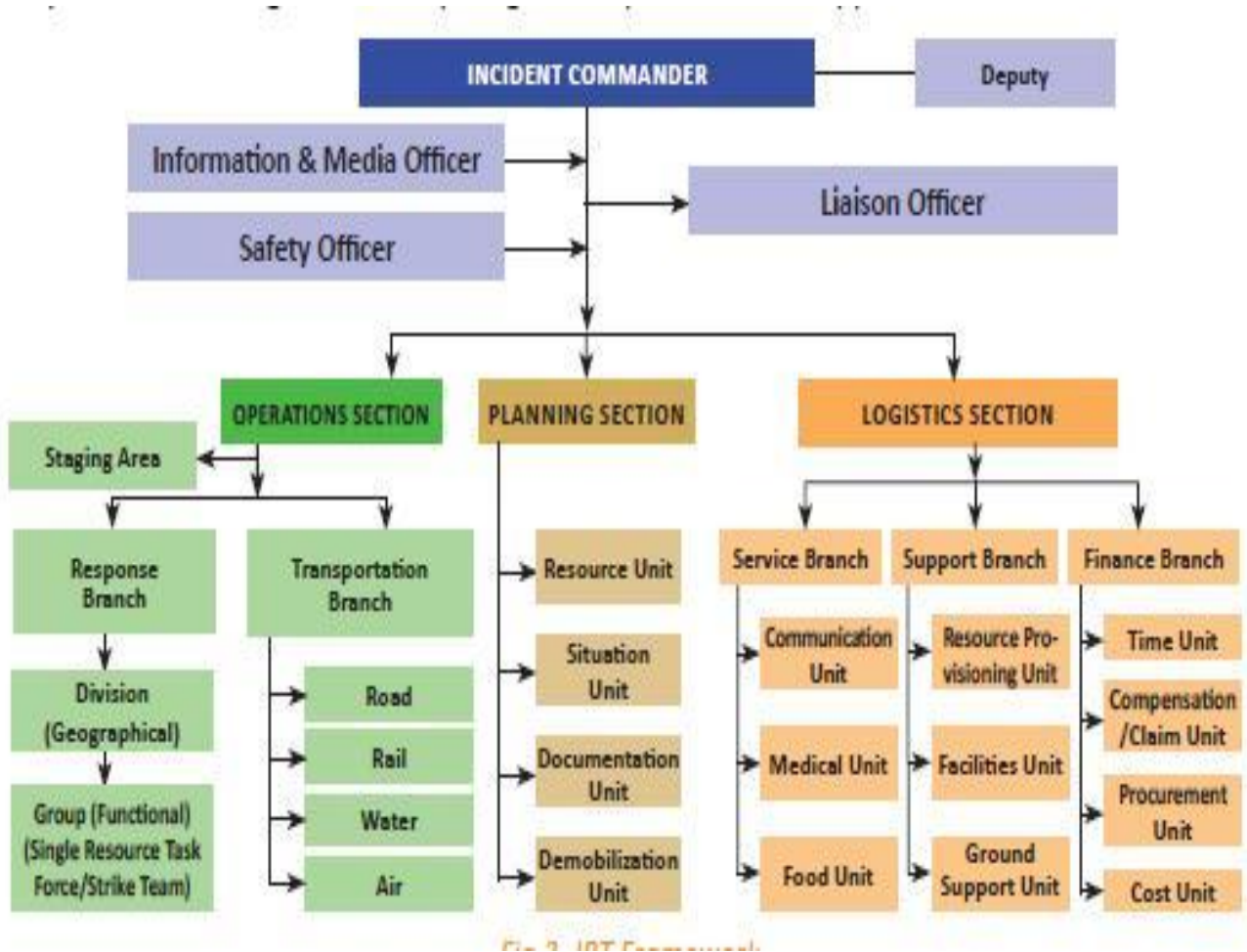
6.5.2 Operations: Responsible for coordinating and supporting operations in support of the response to the emergency through implementation of the organizational level's Action Plans (AP). At the Field Level, the Operations Section is responsible for the coordinated tactical response directly applicable to, or in support of the objectives in accordance with the Incident Action Plan (IAP). In the EOC, the Operations Section Coordinator manages functional coordinators who share information and decisions about discipline-specific operations.

6.5.3 Planning: Responsible for the collection, evaluation and dissemination of operational information related to the incident for the preparation and documentation of the IAP at the Field Level or the AP at an EOC. Planning/Intelligence also maintains information on the current and forecasted situation and on the status of resources assigned to the emergency or the EOC. As needed, Unit Coordinators are appointed to collect and analyse data, prepare situation reports, develop action plans, set PDSS priorities, compile and maintain documentation, conduct advance planning, manage technical specialists and coordinate demobilization.

6.5.4 Logistics: Respective ESF team leaders are responsible for providing facilities, services, personnel, identifying the sources of equipment and materials in support of the emergency to address the needs for communications, food, medical, supplies, facilities and ground support.

6.6 Incident Response System (IRS) No single agency or department can handle a disaster situation of any scale alone. Different departments have to work together to manage the disaster. For proper coordination and effective use of all available resources, the different departments and agencies need a formalised response management structure that lends consistency, fosters efficiency and provides appropriate direction during response. The IRS envisages and lays down various tasks that need to be performed by the existing administrative machinery at various levels

Flow Cart 6-1 Incident Response Team

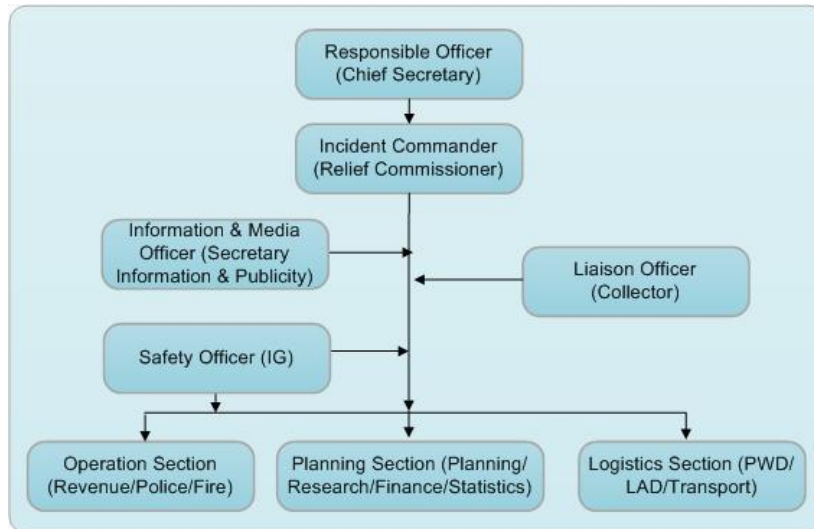


The IRS organisation functions through Incident Response Teams (IRTs) in the field which are pre-designated at all levels; State, District, Sub-Division and Taluk. On receipt of Early Warning, the Response Officer (RO) will activate them. In case, a disaster occurs without any warning, the District IRT will respond and contact Responsible Officer for further support, if required. Accountability of personnel and resources are ensured through procedures and use of various forms prescribed.

6.6.1 State Level IRT:

The UT level of IRT prioritizes tasks and coordinates the resources in response to the requests from the various levels and coordinates mutual aid among the mutual aid regions and between the Regional Level and State Level. The UT level also serves as the coordination and communication link between the state and the National emergency response system. The state level operates out of the State Emergency Operations Centre (SEOC). The IRT is a team comprising of all positions of IRS organisation headed by IC. The Operation Section (OS) helps to prepare different tactical operations as required. The Planning Section (PS) helps in obtaining different information's and preparing plans as required.

Flow Cart 6-2 State Level IRT



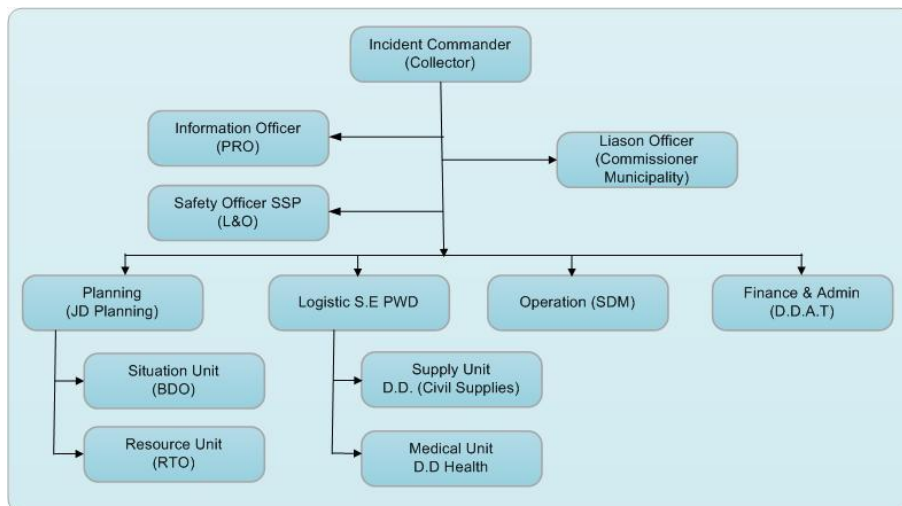
The UT's Incident Command System is headed by the Chief Secretary and Incident Commander at the UT is the Relief Commissioner. The Incident Commander is assisted by Information and Media Officer (Secretary, Information & Publicity), Safety Officer (IGP) and Liaison Officer (Collector), Puducherry. Three different sections i.e., Operation Section, Planning Section and Logistics Section function under the direct control of the Incident Commander.

Revenue, Police and Fire department combine to form the Operation Section. Planning & Research Department, Finance Department and Statistics Department combine to form Planning Section, while, PWD, LAD and Transport combine to form Logistics Section.

6.6.2 District Level IRT:

The District level includes cities, Taluks / Blocks. District governments manage and coordinate the overall emergency response and recovery activities within their jurisdiction. District Governments are required to use IRT when their Emergency Operations Centre (EOC) is activated or a District emergency is declared. The District Magistrate / Responsible Officer will issue a Standing Order for formation of IRT at District headquarters / Sub-Division and Taluk / Block levels. He will ensure that appropriate and experienced officers are selected for IRTs. The complete IRS organizational structure at District level is depicted below.

Flow Cart 6-3 District Level IRT



Incident Response System for Mahe and Yanam Regions: IRS for Mahe and Yanam regions are headed by the Regional Administrators and is supported by representatives of the Departments as shown for the District Incident Command System given above.

6.6.3 Field Level IRT– The Field Level is where emergency response personnel and resources, under the command of responsible officials, carry out tactical decisions and activities in direct response to an incident or threat.

6.7 Coordinating Structure:

Coordinating structures aid preparedness and response at all levels of government and within the private sector, communities, and nongovernmental entities. The structures help organize and measure the whole community’s capabilities in order to address the requirements of the Response mission area, facilitate problem solving, improve access to response resources, and foster coordination prior to and following an incident.

Scalable, flexible, and adaptable coordinating structures are vital in assigning and aligning the key roles and responsibilities to deliver the response mission area’s core capabilities. The flexibility of such structures helps ensure that communities across the country can organize response efforts to address a variety of risks based on their unique needs, capabilities, demographics, governing structures, and non-traditional partners.

6.7.1 State Coordinating Structures

Union territory of Puducherry also leverage the capabilities and resources of line departments and other stakeholders across the UT when identifying needs and building capabilities. The coordinating structures at the UT level also vary depending on factors such as geography, population, industry, and the capabilities of the districts and local agencies within the UT. These structures are also designed to leverage appropriate representatives from across the whole community—some of whom may also participate in local or regional coordinating structures.

6.7.2 Line Departments / Emergency Support Function (ESFs) Agencies:

State governments organize their response resources and capabilities through line departments / emergency support agencies. Specific agencies / line departments have proven to be an effective way to bundle and manage resources to deliver core capabilities. The State emergency support agencies are the primary coordinating structures for building, sustaining, and delivering the response core capabilities. Most UT agencies support a number of the response core capabilities. In addition, there are responsibilities and actions associated with line departments / agencies that extend beyond the core capabilities and support other response activities, as well as department and agency responsibilities.

The State Disaster Management Plan (SDMP) brings together the capabilities of line departments/ agencies and other UT level assets. line departments / agencies are grouped to work together to deliver core capabilities and support an effective response. Departments and agencies identified for emergency support function may be selectively activated by SEOC/ SDMA or as directed by the SEC to support response activities in the UT or elsewhere.

6.7.2.1 Lead / Support Agency:

Different disasters require different types of skill set/expertise along with machineries to respond during major natural and human made disasters **require Lead and Support agencies** to deal specific tasks. The Table below summarizes core capabilities each ESF will directly coordinate and support.

Table 6-1 ESF Team

ESF	Major Responsibilities	ESF Team Leader/ Primary Agency	Support Agencies
ESF #1 Communication	Establishing, maintaining, augmenting, and providing backup for all types of communication devices needed during emergency response operations	SSP (L&O)/ Police	BSNL, NIC, Electricity Dept., IT Dept, HAM radio operators, DD/AIR & private telecom operators
ESF#2 Emergency Medical Services and Public Health	Mass casualty management, Public health, medical, mental health services	Director (health)/ Health Department	GH, JIPMER, PIMS, MGDCRI, blood banks, Ambulance services, Rotary, Lions Club, Red Cross, MGPIIDS, MTPG RIHS, Revenue, LAD, Electricity Dept., Police, NCC
ESF #3 Emergency Warning, Public Information Help line	The flow of accurate and timely emergency information is critical to the protection of lives and property in the wake of a catastrophic event. Preparation and dissemination of notifications, updates, warnings and instructional messages making the help line operational	Collector/ DRDM	Information and Publicity Dept., Planning and Research Dept., Education Dept., NIC, media, NGOs, Dept. of Health, DD/AIR
ESF #4 Search & Rescue	Removal of trapped and injured persons from buildings collapses and other structural collapses, administering first aid and assisting in transporting the seriously injured to medical facilities. This activity involves the use of professional and voluntary search teams including the use of dog teams.	Divisional Fire Officer (DFO)/ Fire Services	Police, Home Guards IRBn), Dept. of Health, municipality, Block development office, Taluk Office, Commune panchayat, PTDC, NCC, Fisheries, Dept., Animal Husbandry, Coast Guard, Dept. of Town and Country Planning, Electricity Dept.
ESF # 5 Transport	Provides transportation out of a disaster area of people in need, and provides transportation essential to support emergency response in the event of a disaster, coordinating for resurrection of transport infrastructure	Transport Commissioner/ Transport Department	Southern Railways, Dept. of Fisheries, Orient flight school, Private vehicle owner's association, PRTC, PTDC, Pasic, GAW, Under Secretary (Estt), Education Dept., PASIC, PAPSCO

Evacuation ESF # 6	Immediately following an earthquake people may need to be evacuated from structures that have been damaged and are likely to receive more damage when hit by one or more of the aftershocks	Collector/ Revenue	LAD, (Municipality & communes), NCC, BDO, RD Department, Police, Dept. of Fisheries, Transport, Dept. of Industries, Dept. of AD welfare, PWD, Dept. of Town & Country Planning.
Debris Clearance & Equipment support ESF # 7	The identification, removal, and disposal of rubble, wreckage, and other materials which block or hamper the performance of emergency response functions and procure needed equipment from support agencies using IDRN; should be a high priority action	Chief Engineer/ PWD	LAD, Under Secretary (Works), Municipality & commune Panchayat, BDO, Police, Revenue, Forest Dept., Electricity Dept., Animal Husbandry, Taluk office, Earth moving Equipment owners Association, Builder's Association.
Damage Assessment ESF # 8	Conduct of ground surveys to determine the scope of the damage, casualties, and the status of key facilities	Collector/ Revenue	Agriculture, AHD, LAD, PWD, DRDA, PASIC, PIPDIC, DIC, Industries Dept., Dept., of Tourism, Electricity Dept., Statistics Dept., civil society organisations.
Relief Camps ESF # 9	Accommodating homeless and affected people and providing mass care	Director Department of Women & Child Development	Education Department, Electricity Department, Municipalities & Communes, BDO's, PWD, AD welfare, Director of social welfare, Department of Health, Contractors Association, civil society organisations.
Food and Civil Supplies ESF # 10	Optimizing Food and Civil Supplies to the needful	Director Civil Supplies/ Civil Department	Agriculture Dept., Dept. of Chamber of Commerce, PAPSCO, PASIC, PONLAIT, P Education Dept., Electricity Dept., Ad welfare, Puducherry Institute of Hotel Management, Transport Dept., Hotel owner's Association, NGOs.
Water Supply and Sanitation ESF # 11	Restoration and repair of water supply system to minimize the impact on critical service to the public	Superintending Engineer/ PWD	LAD, Municipality & Commune Panchayat, Health Dept., DRDA, NGOs.
Electricity Restoration ESF # 12	Restoration and repair of electrical power system to minimize the impact on critical service to the public	Superintending Engineer/ Electricity Department	LAD, PWD, PPCL, Electrical Contractors.

Public works and Engineering ESF # 13	Infrastructure protection and emergency repair Infrastructure restoration.	Chief Engineer/ PWD	NHAI, LAD, Housing Board, Electricity Dept., Forest Dept., Police Dept.
Fire Fighting / Hazardous Materials Response ESF # 14	Coordinating of fire fighting operations, Hazardous materials (chemical, biological, radiological, etc.) response Environmental short-term cleanup	DFO/ Fire Services	Police, IRBn, Coast guards, NCC, Industries Dept., Inspector of Factories, Labour Dept., Dept. of Atomic Energy, Science and Technology, Dept. of Health, Port Dept.
Law and Order Enforcement ESF # 15	Law and Order enforcement for Public Safety	SPs/ Police	Judicial Dept., Revenue, NSS, NCC.
Resources Mobilization; Contracting Services; Volunteer and Donation Support; ESF # 16	Mobilizing support (human, equipment and other) from various organizations. Contracting Services, mobilizing volunteer support, facilitating donations	Director Social Welfare Department	Revenue, Education Dept., PIPDIC, NGOs, NCC, NSS

6.7.3 Local Coordinating Structures

Local bodies / agencies may employ a variety of coordinating structures to help identify vulnerabilities/risks/hazards, establish relationships, organize, and build capabilities. Due to the unique partnerships, geographic conditions, threats, and established capabilities each jurisdiction faces, the coordinating structures at these levels vary. These structures organize and integrate their capabilities and resources with neighbouring area, the UT, the private sector, and NGOs.

6.7.4 Private Sector Coordinating Structures

Business EoC or mutual aid centres, industry trade groups, and private sector information shall serve as coordinating structures for the private sector. These organizations, composed of multiple businesses and entities brought together by shared geography or common function (e.g., banking, supply chain management, transportation, venue management), support the collaboration, communication, and sharing of information within the private sector. Such organizations can coordinate with and support NGOs, and in many cases, they serve as a conduit to local and state government coordinating structures.

6.8 State Wide Network of EOC:

EOC is an offsite facility which will be functioning from the UT / District headquarters and which is actually an augmented control room having communication facilities and space to accommodate the various ESFs. During severe incident - an EOC is also established and activated to support field operations and resource coordination. Field Incident Commanders (IC) and EOCs will establish communications with the district / state EOCs.

6.8.1 Basic functions of an EOC includes, but not limited to

- Receive, monitor, and assess disaster information.
- Keep track of available resources.
- Monitor, assess, and track response units and resource requests.
- Manage resource deployment for optimal usage.
- Make policy decisions and proclaim local emergencies as needed.
- Provide direction and management for EOC operations through Standard Operations Procedures (SOP), set priorities and establish strategies.
- Coordinate operations of all responding units, including law enforcement, fire, medical, logistics etc.
- Augment comprehensive emergency communication from EOC to any field operation when needed or appropriate.
- Maintain EOC security and access control.
- Provide recovery assistance in response to the situations and available resources
- Keep senior, subordinate and tenant officials informed.
- Keep local jurisdictions (Village/town/City, district and State) informed.
- Operate a message centre to log and post all key disaster information.
- Develop and disseminate public information warnings and instructions.
- Provide information to the news media.
- Manage donation / aids.

6.8.2 EOC Activation Criteria

Emergency Operations Centres (EOCs) should be activated in accordance to the standardized Emergency Management procedure and protocols established as ESF 3 in the Crisis Management Frame work formulated by Government of Puducherry. Some of the Natural Hazards have a well- established early warning system. On receipt of information regarding the impending disaster, the EOC will inform the Officer concerned, who in turn will activate the required ESF and mobilise resources. The scale of their deployment will depend on the magnitude of the impending threat/incident.

At times, the information about an incident may be received only on its occurrence without any warning. In such cases the local IRT (District, Sub-Division, Taluk / commune/Block) as the case may be, will respond and inform the higher authority and if required seek reinforcement and guidance. The measures decided to be taken for response will be noted by the Command Staff and later handed over to Planning Section. It will thus form the initial Incident Action Plan.

Based on the HPC report – levels of emergency (L1, L2, and L3) and activation guidelines are as given below:

Level 1 EOC Activation: Level 1 is a minimum activation. This level may be used for situations which initially only require a few people, e.g., a short term earthquake prediction at condition one or two level; alerts of storms, tsunamis; or monitoring of a low risk planned event. At a minimum, Level zero staffing consists of the EOC Head / Director, Section Coordinators and a situation assessment activity in the Planning Section may be included in this level. Other members of the organization could also be part of this level of activation e.g., the Communications Unit, from the Logistics Section, or an Information Officer.

Level 2 EOC Activation: Level Two activation is normally achieved as an increase from Level One or a decrease from Level Three. This activation level is used for emergencies or planned events that would require more than a minimum staff but would not call for a full activation of all organization elements, or less than full staffing. One person may fulfil more than one IRS function. The EOC Head / Director, in conjunction with the General Staff, will determine the required level of continued activation under Level Two, and demobilize functions or add additional staff to functions as necessary based upon event considerations. Representatives to the EOC from other agencies or area may be required under Level Two to support functional area activations.

Level 3 EOC Activation: Level Three activation involves a complete and full activation with all organizational elements at full staffing. Level Three would normally be the initial activation during any major emergency.

6.8.3 IRS for Nuclear and Biological Disasters:

All nuclear facilities have specialised Crisis Management Groups (CMGs) for on-site response Under the aegis of Department of Atomic Energy (DAE). For the offsite incident response at those locations, the Responsible Officer / District Magistrate / DC will act as the IC and ensure that the stakeholders and communities are properly sensitised in advance through regular mock exercises. Support from local experts for such purpose may be obtained wherever available. The State Government should train and equip its own SDRF for this purpose. The help of NDRF may be taken for immediate response and for training the SDRF. The nearest location of NDRF equipped and trained to handle CBRN emergencies is located at Arakonam, Tamil Nadu.

For Radiological Emergencies in towns like Puducherry having population of 12 lakhs and above with high vulnerability, the UT responsible Officer will identify a Nodal Officer for Radiological Emergency to act as an IC. He should have designated experts to assist him in the discharge of his duties. Specially trained and equipped task forces will be earmarked which would be readily available with decontamination facilities. The details of response actions to be taken by the IC in such emergencies are given in the NDMA Guidelines on the Nuclear and Radiological emergencies, which is kept for ready reference as a separate document.

6.9 Alert and Warning:

Each district within the UT is responsible for preparing for a disaster including establishing methods for alerting and warning the public, mobilizing resources and initiating protective actions. At UT level, SEOC will have a UT alert and Warning centre (UTAWC), which is staffed 24 hours a day, 365 days a year to serve as the official state level point of contact for emergency notifications. From this centre, Warning Centre personnel maintain contact with district warning points, UT agencies, central agencies and the National EOC.

6.9.1 Notifications Received by the UT Alert & Warning Centre: District / authority/ EOC notify the UTAWC of emergencies in accordance with existing procedures and protocols, or when state assistance is requested or anticipated. In some specific natural disasters – the notification are received from the designated national agencies as listed below.

Table 6-2 Warning Agencies

Disaster	Agency
Earthquake	IMD
Flood	IMD, Irrigation Department, CWC
Tsunami	IMD, INCOIS
Drought	Agriculture Ministry / Department
Epidemics	Ministry / Department of Health & Family Welfare
Industrial and Chemical Accidents	Department of Labour / Inspectorate of Factories
Fire	Fire & Emergency Services / State/ District/ Local agencies
Severe Weather	IMD
Hazardous Material / Oil spill	Police / Fire / Coast Guard
Nuclear Power Plant Notification	MHA / NDMA/ DRDM

6.9.2 Communications, Alert and Warning System:

The SEOC/UTAWC is responsible for informing, communicating, alerting and notifying state / district officials and the central Government of natural or human caused emergencies. To meet this responsibility, the SEOC should be equipped with a number of telephone, data and radio systems, managed siren system, satellite communication, mass messaging and automated Notification System. Most of these systems are required to be used on a day-to-day basis; others are to be made available for use in an emergency, as conditions require.

6.9.3 Alerting and warning State / District/ Local agencies:

Multiple communication channels will be used to maintain 100% up time communication facility with local, state and communications centres and to ensure the UT can quickly respond to any developing emergencies. The SEOC provides local and state agencies with a broad range of information, including, but not limited to:

- Local emergencies.
- Emergencies induced from neighbouring states/countries (Srilanka)
- Earthquakes.
- Tsunamis (seismic sea waves).
- Floods.
- Cyclone
- Dam failures / burst.
- Major fires.
- Hazardous material spills during transit.
- Radiological and nuclear incidents.
- Radioactive fallout wind data.
- Energy emergencies.
- Foreign animal disease / epidemics.
- Weather watches and warnings.
- Severe weather emergencies.
- Search and rescue incidents.

6.9.4 Notification of Emergency Personnel: The SEOC shall identify and maintain a list of agencies/service provider and personnel that are critical during emergency operations. The SEOC will utilize cell phone, telephone, email, smart phones and Automatic Notification System to notify State personnel of an emergency and help guide response teams across the state.

6.9.5 Public Information:

Public information consists of the processes, procedures and systems to communicate timely and accurate information by accessible means and in accessible formats on the incident's cause, size and current situation to the public, responders and additional stakeholders (both directly and indirectly affected).

Public information must be coordinated and integrated as part of the emergency management System across the State/ central agencies and organizations, and with the private sector and NGOs. Public information includes processes, procedures and organizational structures required to gather, verify, coordinate and disseminate information.

During an emergency, the district authorities disseminate information about the emergency to keep the public informed about what has happened, the actions of emergency response agencies and to summarize the expected outcomes of the emergency actions and also the preventive measure to check rumours.

State authority will coordinate the state's emergency public information efforts and provides support to other state agencies to ensure that the state government issues a timely, clear, concise, consistent message.

6.9.5.1 Media Centres: UT authority may establish a Media Centre that serves as a central location for media briefings, conferences and information distribution.

6.9.5.2 Inquiry / Call Centres: UT authority may activate an inquiry centre to centralize information sharing between the public, the media and government. Inquiry centres should be directly linked to media centres. Inquiry / call Centres will include:

- Establishment of Public Information Hotlines
- Monitoring of radio and television stations and informing the IMO (Information and media officer) Coordination Team of inaccuracies.
- Sharing of information about the emergency or the government's response.

6.10 Sequence of Events during Disaster:

Two sequences of events are typically associated with disasters: One involves the response and the other involves local / district or State emergency declaration. The response sequence generally describes the emergency response activities to save lives, protect property and preserve the environment. This sequence describes deployment of response teams, activation of emergency management organizations and coordination among the various levels of government. The emergency proclamation sequence outlines the steps to gain expanded emergency authorities needed to mitigate the problem. It also summarizes the steps for requesting UT and National disaster assistance.

6.10.1 Before Impact:

6.10.1.1 Routine Monitoring for Alerts and Warnings: Emergency officials constantly monitor events and the environment to identify specific threats that may affect their jurisdiction and increase awareness level of emergency personnel and the community when a threat is approaching or imminent.

6.10.1.2 Increased Readiness: Sufficient warning provides the opportunity for response agencies to increase readiness, which are actions designed to increase an agency's ability to effectively respond once the emergency occurs. This includes, but is not limited to:

- Briefing government officials.
- Reviewing plans and procedures.
- Continuously monitoring the impending threat.
- Preparing and disseminating information to the community.
- Updating resource lists.
- Testing systems such as warning and communications systems.
- Precautionary activation Emergency Operations Centres

6.10.1.3 Pre-Impact: When a disaster is foreseen as highly likely, actions are taken to save lives, protect property and protect environment. During this phase, warning systems are activated, evacuation begins and resources are mobilized.

The IRS organisation functions through Incident Response Teams (IRTs) in the field which are pre-designated at all levels; UT, District, Taluk and Commune panchayat. On receipt of Early Warning, the Responsible Officer (RO) will activate them. Accountability of personnel and resources are ensured through procedures and use of various forms prescribed.

6.10.2 Immediately after Impact:

IRTs at various levels are activated by Responsible Officer based on the situation. The state level IRT prioritizes tasks and coordinates UT's resources in response to the requests from the Regional level and coordinates mutual aid among the mutual aid regions and between the Regional Level and UT Level. The UT level also serves as the coordination and communication link between the UT and the National emergency response system.

During this phase, emphasis is placed on control of the situation, saving lives and minimizing the effects of the disaster.

6.10.2.1 Alert and Notification: Response agencies are alerted about an incident by the public through emergency communication at State EOC and other established methods. First responders are then notified of the incident. Upon an alert, response agencies notify response personnel.

6.10.2.2 Resource Mobilization: Response agencies activate personnel and mobilize to support the incident response. As the event escalates and expands, additional resources are activated and mobilized to support the response. Activation and mobilization continue for the duration of the emergency as additional resources are needed to support the response. This includes resources from within the affected area, or, when resources are exhausted, from unaffected neighbouring area / districts / States.

6.10.2.3 Incident Response: Immediate response is accomplished within the affected area by local area and segments of the private sector. First responders arrive at the incident and function within their established field level plans and procedures. The responding agencies will manage all incidents in accordance with IRS organizational structures, doctrine and procedures.

6.10.2.4 Establishing Incident Command: Incident Command is established to direct, order, or control resources by virtue of some explicit legal, agency or delegated authority. Initial actions are coordinated through the on-scene Incident Commander (IC). The Incident Commander develops an initial Incident Action Plan (IAP), which sets priorities for the incidents, assigns resources and includes a common communications plan. If multiple area or agencies are involved, the first responders will establish a Unified Incident Command Post (ICP) to facilitate multijurisdictional and multiagency policy decisions. The Incident Commander may implement an Area Command to oversee multiple incidents that are handled by separate IRS organizations or to oversee the management of a very large or evolving incident that has multiple incident management teams engaged.

6.10.2.5 Activation of the Multiagency Coordination or Unified Command(UC): Responding agencies will coordinate and support emergency management and incident response objectives through the development and use of integrated Multiagency Coordination Systems. UC is a framework headed by the LG / CM and assisted by the CS that allows all agencies with jurisdictional responsibilities for an incident, either geographical or functional, to participate in the management of the incident.

6.10.2.6 Local EOC Activation: Local area activates their local EOC based on the magnitude or need for more coordinated management of the emergency. When activated, Local EOCs help form a common operating picture of the incident by collecting, analyzing and disseminating emergency information. The local EOC can also improve the effectiveness of the response by reducing the amount of external coordination of resources by the Incident Commander by providing a single point of contact to support multiagency coordination. When activated the local EOC notifies the Operational Area(OA) lead that the local EOC has been activated.

6.10.2.7 Communications between Field and the EOC: When a jurisdiction EOC is activated, communications and coordination are established between the IC and the DEOC / SEOC.

6.10.2.8 Operational Area (OA) EOC Activation: If one or more Local EOCs are activated, or if the event requires resources outside the affected jurisdiction, the OA EOC gets activated. The OA EOC also activated, if a Local Emergency is proclaimed by the UT Government. The OA EOC then coordinates resource requests from the affected jurisdiction to an unaffected jurisdiction, or if resources are not available within the Operational Area, forwards the resource request to the SEOC.

6.10.2.9 Union Territory Level Field Teams: The UT may deploy Field On-Site Observation Teams to provide situation reports on the disaster in coordination with the responsible Unified Command.

6.10.2.10 State Level Emergency Operations Centre (SLEOC) Activation:

The SEOC is activated when in order to:

- Continuously monitor the situation and provide situation reports to brief state officials as appropriate.
- Continuously monitor the impending threat.
- Prepare and disseminate the information.

- Process resource requests between the affected regions, unaffected regions and state agency Department Operation Centres.
- Process requests for central assistance and coordinate with central CMG.
- Provide Decision support backup to DEOC and field EOC / IC.

6.10.3 After Impact is over:

As the initial and sustained operational priorities are met, emergency management officials shall consider the recovery phase needs. Short-term recovery activities include returning vital life support systems to minimum operating standards. Long-term activity is designed to return to normal activities. Recovery planning shall also include reviews of ways to avert or mitigate future emergencies. During the recovery phase, damage is assessed, local assistance centers and disaster recovery centers are opened and hazard mitigation surveys are performed.

Demobilization: As resources are no longer needed to support the response, or the response activities cease, resources are demobilized. Demobilization includes provisions to address and validate the safe return of resources to their original location and include processes for resource tracking and ensuring applicable reimbursement. Where applicable, the demobilization should include compliance with mutual aid and assistance provisions.

6.11 Funds generation

DRDM shall coordinate with the Department of Planning and Research and the Finance Department for release of funds depending on the actual requirement.

6.12 Finalizing relief pay-outs and packages

SEC is responsible for finalization of relief packages as per existing SDRF guidelines based on inputs/proposals received from DDMA's. The SEC shall then submit the relief package to UTPDMA for approval and dissemination to the public.

6.13 Post-relief assessment

This shall be done by the DRDM in coordination with the line Departments concerned whose sectors have been damaged.

6.14 Hazard Specific Action Plan and SOPs for ESFs

This is given in Volume II of the SDMP.

Chapter 7

Partnership with Other Stakeholders

Disaster Management is an inclusive field and requires contribution from all stakeholders in order to effectively manage the emergency situation. Coordination amongst various stakeholders hence becomes extremely important to achieve the desired results.

There are various agencies / organizations / departments and authorities that constitute a core network for implementing various disaster management related functions / activities. It also includes academic, scientific and technical organizations which have an important role to play in various facets of disaster management. A brief note on the role and activities of such functionaries and the existing system of coordination established by the State Government with them is mentioned below.

7.1 National Disaster Management Authority (NDMA):

- The National Disaster Management Authority (NDMA), as the apex body in the GoI, has the responsibility of laying down policies, plans and guidelines for DM and coordinating their enforcement and implementation for ensuring timely and effective response to disasters.
- The guidelines assist the central ministries, departments and states to formulate their respective plans. It also approves the National Disaster Management plan prepared by the National Executive Committee (NEC) and plans of the central ministries and departments.
- It takes such other measures as it may consider necessary, for the prevention of disasters, or mitigation, or preparedness and capacity building, for dealing with a threatening disaster situation or disaster.
- It also oversees the provision and application of funds for mitigation and preparedness measures. It has the power to authorize the departments or authorities concerned, to make emergency procurement of provisions or materials for rescue and relief in a threatening disaster situation or disaster. It also provides such support to other countries in times of disasters as may be determined by the central government.
- The State keeps in touch with the NDMA for implementing various projects / schemes which are being funded through the Central Government. The State also appraises the NDMA about the action taken by the State Government regarding preparation of DM plans and implementation of guidelines issued by NDMA for various hazards from time to time.

7.2 National Institute of Disaster Management (NIDM)

- The NIDM, in partnership with other research institutions has capacity development as one of its major responsibilities, along with training, research, documentation and development of a National level information base. It networks with other knowledge-based institutions and function within the broad policies and guidelines laid down by the NDMA.
- It organizes training of trainers, DM officials and other stakeholders as per the training calendar finalized in consultation with the respective State Governments.

7.3 National Disaster Response Force (NDRF)

- For the purpose of specialized response to a threatening disaster situation or disasters/emergencies both natural and man-made such as those of CBRN origin, the National Disaster Management Act has mandated the constitution of a National Disaster Response Force (NDRF).
- The general superintendence, direction and control of this force is vested in and exercised by the NDMA and the command and supervision of the Force is vested in an officer appointed by the Central Government as the Director General of Civil Defence and National Disaster Response Force. Presently, the NDRF comprises eight battalions and further expansion may be considered in due course. These battalions are positioned at different locations across the State.
- NDRF units maintains close liaison with the designated State Governments and are available to them in the event of any serious threatening disaster situation. While the handling of natural disasters rests with all the NDRF battalions, four battalions are equipped and trained to respond to situations arising out of CBRN emergencies.
- Training centres are also set up by respective paramilitary forces to train personnel from NDRF battalions of respective forces and also meets the training requirements of State/UT Disaster Response Forces. The NDRF units also impart basic training to all the stakeholders identified by the State Governments in their respective locations. In addition, the State Government also utilizes the services of the NDRF whenever required during emergency search, rescue and response.

7.4 Armed Forces

- Conceptually, the Armed Forces are called upon to assist the civil administration only when the situation is beyond the coping capability of the State Government. In practice however, the Armed Forces form a response capacity and are immediate responders in all serious disaster situations.
- On account of their vast potential to meet any adverse challenge, speed of operational response and the resources and capabilities at their disposal, the Armed Forces have historically played a major role in emergency support functions. These include communication, search and rescue operations, health and medical facilities, and transportation, especially in the immediate aftermath of a disaster. Airlift, heli-lift and movement of assistance to neighboring countries primarily fall within the expertise and domain of the Armed Forces.
- The Armed Forces also participates in imparting training to trainers and DM managers, especially in CBRN aspects, high-altitude rescue, watermanship and training of paramedics. At the State and District levels, the local representatives of the Armed Forces have been included in their executive committees to ensure closer coordination and cohesion in all aspects related to Disaster Management.

7.5 Airport Authority of India (AAI)

- When disaster strikes, the airports are quickly overwhelmed with the tons of relief materials (like food, bottled water, medical supplies, cloths, tents, etc.) arriving from all over the world. This material is urgently needed to be in the field.
- In such cases, AAI should appoint senior officer at the airport for proper handling and distribution (which includes precise unloading, inventory, temporary storage, security and distribution of relief material) of relief material during disaster situation.

- The AAI shall prepare and provide a list of equipments required for handling the material to either GSDMA or Commissioner of Relief. The equipments will be procured and maintained through nearest Emergency Response Centre (ERC) that is at Gandhinagar ERC. Deputation of team of official along with necessary infrastructure at the airports will be made available by the Commissioner of Relief for necessary dispatch and accounting of relief material during emergency situation.

7.6 Indian Railways

- Indian Railways is spread over a vast geographical area over 63000 route kilometers. Unlike in other countries where the role of Railways, in the event of a disaster, is restricted to clearing and restoring the traffic, in our country Indian Railways handles the rescue and relief operations. Railways are preferred mode of transport both for the movement of people and relief material in bulk, if accessible.
- Railways should have a provision for transportation of mass community and proper handling and distribution of relief material (through special trains, if required) in their disaster management plan.

7.7 Indian Meteorological Department (IMD)

- The meteorological department undertakes observations, communications, forecasting and weather services. IMD was also the first organization in India to have a message switching computer for supporting its global data exchange.
- In collaboration with the Indian Space Research Organization, the IMD also uses the Indian National Satellite System (INSAT) for weather monitoring of the Indian subcontinent, being the first weather bureau of a developing country to develop and maintain its own geostationary satellite system.
- During the cyclone and flood seasons, the State Government keeps close contact with the IMD –Ahmedabad office for weather related forecasts.
- Earthquakes occurring in the State which are of magnitude 3.0 and above on Richter Scale are also reported by the IMD to the State Government immediately.

7.8 INCOIS

- Indian National Centre for Ocean Information Services (INCOIS) is a national agency of the Government of India, under Ministry of Earth Sciences. It provides the coastal and ocean information services, supporting developmental and operational sectors like ports, fisheries, shipping, meteorology, environment, off shore and coastal zone management in addition to promoting advanced oceanographic research in the country.
- INCOIS generates and disseminates near real time information on Sea Surface Temperature (SST), chlorophyll, Potential Fishing Zones (PFZ) advisories, tracking of oil spills, forecast economical shipping routes, and upwelling zones along the Indian coast, utilizing both remotely sensed and conventionally observed data.
- The parameters envisaged for dissemination include wind, wave, current, mixed layer depth, heat budget and maps on coral reef, mangroves, shore line change and land use pattern. INCOIS thus, plays an important role in supporting the nation for sustainable development of the coastal and ocean sectors through ocean information services.

- INCOIS has already put in place an early warning system for Tsunami through which it alerts the coastal States whenever an undersea earthquake of higher magnitude capable of triggering a Tsunami is reported.

7.9 Roles of Academic, Scientific and Technical Organisations

There are academic, scientific and technical organisation involved in the DM activities in the UT and in the region. Some of the key organisation and their domain and area of operation is provided below.

M S Swaminathan Research Foundation, Chennai: MSSRF is based in Chennai and has a regional office in Puducherry. MSSRF is a non-profit research organization focus in development through a pro-nature, pro-poor, pro-women and pro-sustainable on-farm and non-farm livelihoods through appropriate eco-technology and knowledge empowerment. The key area which has an overlap to DM activities includes Coastal Systems Research and Information, Education and Communication. MSSRF is actively involved in coastal research as well as on ground development activities through community participation for the protection of the coast and livelihood of the people. As part the Information, Education and Communication program MSSRF has established the Village Knowledge Centres (VKCs) in Puducherry on a pilot basis.

Contact details:

Coastal Systems Research Dr. V. Selvam Email: vselvam@mssrf.res.in	Information, Education and Communication Mr. S Senthilkumaran Email: senthil@mssrf.res.in
Address: Head office 3rd Cross Street, Institutional Area, Taramani Chennai 600 113, India Tel: +91 (44) 22541229, +91 (44) 22541698	Regional office in Puducherry Biocentre and Village Resource Centre Pudhucherry Dr. Vidya Ramkumar Biocenter Email: vidramk@gmail.com Ms. D.S. Girija Village Resource Centre pillaiyarkuppam_vrc@rediffmail.com M.S. Swaminathan Research Foundation Pillaiyarkuppam, Thondamanatham post Vazhuthavoor road, Pudhucherry -605502 Tel: 0413-2667313 / 2667861 / 2666484 / 2668108 / 660297

French Institute of Pondicherry, Puducherry: French Institute of Pondicherry is a research centre of the French Ministry of Foreign Affairs carries out research expertise and training missions in South and South-East Asia in the fields of Indology, Social Sciences and Ecology. The institute has a GIS lab and conduct regional research in social science and ecology. There is no much UT specific work undertaken by the institute though.

Contact details: French Institute of Pondicherry, 11 Saint Louis Street, P.O. Box – 33, Pondicherry – 605 001

7.10 NGOs and Community Organisations

The services of the civil society organisations with the areas of specialisations (for instance sanitation, livelihood, etc.) should be utilised during normal times and also during disaster events. The UT has large number of NGOs/community organisations and to efficiently utilise the resources it needs a nodal committee at district level to coordinate and monitor the activities.

Technical organisations like INCOIS, NIO, NIOT, and IMD can provide technical support related for forecast early warning. EOC should have defined communication procedures with these organisation to avail information

The Village level DM committees formed for all the villages and wards are a huge resource which can be used for awareness activities during normal times and relief activities during disaster events.

7.11 Media

Media throughout the world play a vital role in educating the public about disasters, warning of hazards, gathering and transmitting information about affected areas, alerting government officials, relief organizations, and the public to specific needs, and facilitating discussions about disaster preparedness and response. Timely, accurate and warning of natural hazards have demonstrated, cost-effective means of saving lives and reducing property damage. Such communications can educate, warn, inform, and empower people to take practical steps to protect themselves from natural hazards.

The role of media, both print and electronic, in informing the people and the authorities during emergencies thus, becomes critical, especially the ways in which media can play a vital role in public awareness and preparedness through educating the public about disasters; warning of hazards; gathering and transmitting information about affected areas; alerting government officials, helping relief organizations and the public towards specific needs; and even in facilitating discussions about disaster preparedness and response. During any emergency, people seek up-to-date, reliable and detailed information.

During disaster, media even though collect information from various sources, should have a mechanism to coordinate with SLEOC to validate information before disseminating to public. Media should carryout bulletins issued solely by DRDM, at fixed and regular intervals.

Therefore, correct and reliable information disseminated through the media is an important instrument for balancing the possible effects of incorrect, misleading or even will-fully distorted information. Reliable and timely information provided through the media can help people overcome any kind of fear and fatalism during and after an emergency. Indeed, the availability of reliable and

timely information and knowledge about an event and the resulting needs help to improve solidarity and also creates an atmosphere conducive to collective response for sharing the humanitarian challenges created by disasters. Media today has arguably penetrated every household in the world, in one form or another.

Action points: The government departments and especially the various ESFs should seek to develop working relationships with the media based on mutual trust and the recognition of differing characteristics, goals, and needs. Regular, effective communication among these disparate groups, before, during, and after disaster "events" can greatly enhance those relationships. The departments should seek to provide reliable information to the media, as early as possible, in a concise and readily understandable form, and linked, where possible, to newsworthy events while carrying out the mitigation activities. Specific themes and messages, both through the mass media and in other alternative forms of communication need to be communicated. Both, the departments and the media organizations should take advantage of opportunities to work together, to provide relevant training for reporters and field personnel to enhance disaster preparedness, mitigation and relief efforts and the timeliness, quality, and accuracy of reporting about natural hazards. Media organizations should address disaster prevention and reduction in coverage relating to disasters. Specific measures that have either succeeded or failed to reduce the impact of natural hazards should be identified and communicated. Media organizations are encouraged to evaluate their reporting about natural hazards and disaster preparedness, and, where appropriate, to work with the departments to improve the quality, accuracy, and thoroughness of such reporting.

Table 7-1 Engaging the media in the various phases of disasters:

Preparedness phase	Early Warning Phase	Response Phase	Relief/ Reconstruction Phase
Formation of media networks and educate and train them on Disaster communication related aspects	Calling on media networks to explain the dos and don'ts.	Involve the media in assessing the situation. Share accurate damage assessment reports with the media	Orient the media organizations on the various relief and reconstruction provisions of the govt. and other donors and the beneficiary identification process
Develop interesting programs on preparedness for the different types of media	Provide press releases, Television and Radio announcements on the probability and intensity of the expected calamity	Announcements related to air droppings	Ensure that the media organizations cover the relief activities accurately.
Educate the public on various natural and man-made hazards the various areas are prone to and the preparedness needed at individual and community	Provide evacuation plans, information on nearest shelters, important contact numbers, hospitals, etc to be provided	Ensure ethical reporting to avoid vested interests of politicians and others.	Use media as a tool for social audit by sharing and announcing Reconstruction activities viz houses, roads, bridges etc and the financial
Share various prevention and mitigation schemes		Announce compensations, criteria of identification of beneficiaries	

Chapter 8

Rehabilitation & Reconstruction

Reconstruction and rehabilitation activities come under the post-disaster phase. Currently, the Department of Revenue and Disaster Management, PWD, Fisheries Department, Agriculture and other line Departments primarily carry out the activities in this phase. Distribution of cash relief are primarily carried out by the Department of Revenue and Disaster Management. However, their activities in this phase shall be in accordance with the reconstruction and rehabilitation plans/guidelines issued by the Government in conjunction with implementing authorities.

The reconstruction and rehabilitation plan is designed specifically for the worst case scenario. It is activated in case of L3 type of disaster in which the capacity of State and District authorities have been overwhelmed and require assistance from the Central Government for restoring the normalcy in the State.

The key activities in this phase are as below;

8.1 Detailed Damage Assessment

While a preliminary damage assessment is carried out immediately after the disaster phase, a detailed assessment must be conducted before commencing reconstruction and rehabilitation activities. The Department of Revenue and Disaster Management will be the nodal department assisted by all other Line Departments. Respective DDMA's are responsible for damage assessment in their jurisdiction, which will be compiled by the DRDM and submitted to SEC for approval and submitting Memoranda to the GOI and central Teams.

8.2 Assistance to restore houses and dwelling units

The UT Government in addition to the SDRF norms may, if needed, will formulate a policy of assistance to help the affected population to restore damaged houses and dwellings.

8.3 Relocation (need based)

The UT government believes that need-based considerations and not extraneous factors drive relocation of people. The local authorities, in consultation with the people affected and under the guidance of UTPDMA and District Authorities, 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:

- Gaining consent of the affected population
- Land acquisition
- In-situ construction wherever Land acquisition is not possible due to various reasons.
- Urban/ rural land use planning
- Customizing relocation packages
- Obtaining due legal clearances for relocation
- Getting the necessary authorization for rehabilitation
- Livelihood rehabilitation measures for relocated communities, wherever necessary

8.4 Finalizing reconstruction & rehabilitation plan

The effectiveness of any reconstruction and rehabilitation is based on detailed planning and careful monitoring of the relevant projects. UTPDMA will oversee reconstruction and rehabilitation work and ensure that it takes into account the overall development plans for the state. UTPDMA in consultation with line departments and other nodal departments if any specifically set for specific need based reconstruction activity will approve reconstruction and rehabilitation projects based on:

- Identification of suitable projects by relevant departments;
- Project detailing and approval by the relevant technical authority.

8.5 Funds generation

Reconstruction & rehabilitation projects are fairly resource intensive. These projects have been financed in the past primarily through GOI. In the recent past, funds have also been raised from international agencies. UTPDMA shall finalise the fund generation and management mechanism, including the covenants and measures that govern fund inflow and disbursement and usage. This includes:

- Estimation of funds required based on detailed damage assessment reports and consolidation of the same under sectoral and regional heads;
- Contracting with funding agencies and formulating/evolving detailed operating procedures for fund flow, management and corresponding covenants.

8.6 Funds disbursement and audit

The funds raised from funding agencies are usually accompanied by stringent disbursement and usage restrictions. It is therefore important to monitor the disbursement of such funds to ensure that none of the covenants are breached. UTPDMA, in conjunction with relevant agencies, shall monitor disbursement of funds by:

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

8.7 Project management

Since rehabilitation and reconstruction effort typically involves the co-ordinated efforts of several entities, the Government of Puducherry shall encourage the respective entities to strengthen program management capabilities to ensure that synergies across and within entities are managed efficiently. In addition, it is also necessary to constantly monitor the activity to ensure that the project is executed on time, in accordance with the technical specifications and to the satisfaction of the beneficiaries. UTPDMA, therefore in conjunction with relevant Government departments, will

monitor the reconstruction activity that is carried out by various implementation agencies. Typical implementation activities would include:

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

8.8 Information, Education and Communication

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

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

8.9 Dispute resolution mechanisms

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

8.10 Implementing initiatives for recovery of reconstruction costs

The UT Government may finalize and implement select recovery measures such as:

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

CHAPTER 9

Financial Arrangements

9.1 Union Territory Disaster Response Fund (UTDRF)

Union Territory Disaster Response Fund is proposed to be created at the UT Level as mandated by Section 48 of the DM Act. The disaster response funds at the State level would be used by the UTPDMA towards meeting expenses for emergency response, relief, rehabilitation in accordance with the guidelines and norms laid down by the Government of India and the Government of Puducherry.

All the Government Departments, Boards, Corporations, PRIs and ULBs would prepare their DM plans including the financial projections to support these plans. The necessary financial allocations would be made as part of their annual budgetary allocations and ongoing programs and should be used for mitigation and preparedness measures. They will also identify mitigation projects and project them for funding in consultation with the UTPDMA to the appropriate funding agency. The guidelines issued by the NDMA vis-a-vis various disasters should be considered while preparing mitigation projects.

UTPDMA should also look at other options of new financial tools like catastrophe risk financing, risk insurance, micro-insurance etc. to compensate for massive losses on account of disasters.

Opportunities of CSR investments shall also be tapped by the UTPDMA to enhance disaster resilience capacity of the UT.

9.2 Union Territory Disaster Response Fund

As per the recommendations of 9th and 11th Finance Commission, the Government of India had constituted the Calamity Relief Fund (CRF) and National Calamity Contingency Fund (NCCF) and this Union Territory of Puducherry was not entitled to receive any assistance under these funds since it was not covered under the devolution of funds by the Central Finance Commission. And whereas, the Government of Puducherry has been granting relief assistance to the victims of Natural calamities from the State funds by following the norms of assistance of CRF and NCCF right from the year 1976.

The 13th Finance Commission has recommended that the existing National calamity contingency Fund be merged into National Disaster Relief Fund (NDRF) and the Calamity Relief Fund be merged into State Disaster Relief Fund (SDRF) with effect from 1st April 2010, whereas, regarding the contributions of SDRF to Union Territories, there is no mention in the recommendations. Under the realm of Disaster Management Act 2005, this Union Territory of Puducherry has not been provided with SDRF as envisaged under the Act, though it has fully complied with the directions of Ministry of Home Affairs.

Recently, the Ministry of Home Affairs, in its draft guidelines, has stated that the Government of India will contribute 100% to UTDRF and this contribution of the Central government to UTDRF for the Year 2014-15 will be Rs. 10 crores. In this context, the

Department of Revenue and Disaster Management, Puducherry has submitted its no objection on the draft UTDRF guidelines to the effect that Rs.10 crores for the Year 2014-15 and has further requested to allocate funds amounting to Rs. 40 crores for the years 2010-2014 since the inception of the SDRF in other States. Hence, it is requested to release funds to this Union Territory under UTDRF

The Government of Puducherry shall take necessary steps to create mechanism to receive, operate and administer grant of Rs.10 crores under Union Territory Disaster Response Fund (UTDRF)

The Union Territory of Puducherry shall mandate to create State/District Relief and Mitigation funds as stipulated under section 48 (1) of the Act. The “Financing of Disaster Management” for States referred as specific point before the 14th Finance Commission.

9.3 Monitoring ,Controlling and Regulating Non Governmental Organisations in Generating Financial Resources.

The Director, Social Welfare Department (ESF 16) shall create necessary mechanisms to Control, Monitor and regulate the role of Non Governmental Organisations (NGOs) in mobilizing financial resources.

9.4 Project Implementation Agency

The Project Implementation Agency (PIA) is Society primarily established and registered under Societies Registration Act 1860, to plan and execute Relief/ Rehabilitation projects in association with different agencies for 2004 Tsunami affected families. The UTPDMA shall make necessary mechanism to use the experience and expertise gained by the Project Implementation Agency in future disaster relief and rehabilitation works.

CHAPTER 10

Procedure and Methodology for Monitoring, Evaluation, Updation and Maintenance of SDMP

Evaluating the effectiveness of plans involves a combination of training events, periodic mock drills/exercises etc. to determine whether the goals, objectives, decisions, actions and timing outlined in the plan will result in an effective response. Indicative guidelines for monitoring and evaluation of the plan are as given below:

- Regularly review the implementation of the plan.
- Check the efficacy of the plan after any major disaster/emergency in the State and also after mock drills/ exercises to see what did work and what did not work and make modifications to the plan accordingly.
- As per Sub Section (4) of Section 31 of the Disaster Management Act, 2005, the plan would be reviewed and updated annually and the year in which the plan has been reviewed would be clearly mentioned in shape of header in each page of the plan.
- Keep State, State and National Disaster Resource Inventory updated (SDRN / IDRN) and connected with the plan.
- Update coordinates of responsible personnel and their roles / responsibility every six months or whenever a change happens. Names and contact details of the officers/officials who are the nodal officers or the in-charge of resources to be updated on regular basis.
- Plan should be web enabled with access on intra and internet.
- Plan should be circulated to all stakeholder departments, agencies and organisations so that they know their role and responsibilities and also prepare their own plans.
- Regular Drills / exercises should be conducted to test the efficacy of the plan and check the level of preparedness of various departments and other stakeholders.
- Regular training and orientation of the officers/officials responsible to implement the plan should be done so that it becomes useful document to the State administration.
- Army, NDRF, SDRF and other agencies should be integrated into the plan exercise regularly.
- SDMA should hold regular interaction and meetings with the Army or any other central government agencies for strengthening coordination during disasters.
- The DEOC should be made responsible for keeping the plan in updated form and collecting, collating and processing the information.

10.1 Periodic up-dation of Disaster Management Plan

Disaster Management is dynamic. Ground realities, changing population and characteristics, evolving government mechanisms in handling disasters/ emergencies determine the effectiveness of the SDMP. The plan need to be reviewed and updated periodically. The DM Act 2005 section 23(5) required the SDMP to be reviewed and updated annually.

To achieve a level of absolute preparedness and to meet disasters of any magnitude, intensity or force, sufficient and technology-driven Hazard, Vulnerability and Risk Assessment (HVRA) of the UT is required. Based on the outcome of HVRA, the SDMP shall be reviewed and comprehensive revisions will be incorporated.

While the review and update of relevant sections of the plan will be carried out annually, comprehensive revisions to the plan will be done in every five year period. Given frequent shifting of key personnel, both at the state and district level, monthly updates on the contact information of key departments personnel will be integral to the plan updates. Similarly, updates of the inventory of equipments need to be part of quarterly updates of the SDMP.

Disaster management implementation status report

The implementation of SDMP at the district, block, municipal and gram panchayat levels shall be achieved by translating the mechanism identified in the plan on the ground. The administration at all levels and all departments, agencies and stakeholders shall identify their goals and objectives set out in the plan and shall prepare their own plan. The nodal officers nominated by each department are responsible for preparing the plan and ensuring that the actions are carried out as per the plan. An implementation status report will be prepared by the end of every financial year and a copy of which would be submitted to DRDM.

The extent of manpower used to mitigate disasters in all phases (pre, during and post), budget spent on these activities, training and other capacity building activities carried out, and technology and material resources acquired for preparedness and mitigation measures shall be clearly noted in the implementation status report. The implementation status report prepared by the nodal officer shall have the approval of the head of the departments and be forwarded to the Secretary, DRDM. Based on the experience; all departments can review and update the plan on a yearly basis.

10.2 Post disaster evaluation mechanism

Disasters are always unexpected. Each disaster causes huge loss of human lives and property. And every disaster repeats after a particular interval. Also lessons learnt from a particular disaster will help to plan for another potential hazard. In case of a disaster, the SEC shall make special arrangements to collect all concerned data on that particular disaster, irrespective of size and vulnerability. This post disaster evaluation mechanism shall be set up with qualified professionals, experts and researchers and the collected data shall be thoroughly crosschecked and documented in the State & District EOC for further reference. This document shall be prepared with proper attention, keeping in view of the Mitigation, Preparedness, Response, Recovery & Rehabilitation measures.

Consultation mechanism

Consultative mechanisms among the key departments concerned with disaster management at the UT level; consultation mechanism among civil society, NGOs, and training institutes in the state will form the basis of updates and revisions to the plan. The SDMA and SEC shall update the SDMP as the need and demand presents. Similarly, the DDMA shall update the DDMP as per the need and demand.

Time Frame for review and update of SDMP:

Activity	Year 1	Year 2	Year 3	Year 4	Year 5
Consultation with all departments and administration, NGOs, etc. to finalize the SDMP	■				
Undertake state-wide HRV assessment	■	■			
Prepare Implementation Status Report by all departments and administration at all levels.		■	■	■	■
Review and monitor progress		■	■	■	■
Comprehensive revision and update of SDMP					■

CHAPTER 11

Co-ordination and Implementation

Networking and coordination among the departments will lay a strong foundation in achieving the goal of mitigating disasters and managing them effectively. While networking specific to the state will incrementally evolve with active participation of government departments and other stakeholders, there are certain tools already available for ready use. The Indian Disaster Resource Network (IDRN) facilitates better coordination and networking among different states, departments and stakeholders.

11.1 Co-ordination with various departments and agencies

The initial response to a disaster is usually provided by the emergency services supported by local authority, but many agencies can become involved. The emergency services will maintain a state of readiness so as to provide a rapid response and alert local authorities and other services at the earliest. All organizations that need to respond quickly to a disaster will have arrangements that can be activated at a very short notice. These arrangements shall be clearly established and promulgated.

Although involvement of different emergency services like Police, Fire Brigade and Hospital services is inevitable, some other Public Utility Services, such as local bodies, Railways, Air lines, etc., have to be involved also in most cases for dealing with the situation effectively. All such agencies are different organizations, with different hierarchies and chains of command and responsibility. If rescue and recovery work is to be effective, all these departments and agencies have to work together in a coordinated way. They therefore, have to be aware of each other's areas of responsibility and systems of working. Comprehensive discussion and agreement among these agencies in the planning stage and communication of these decisions to lower level functionaries, and of course their capacity enhancement, is of utmost importance. This would not only enable them to know about who is responsible for what, but also make them aware of their own roles and responsibility and can appreciate the need for Multi-Service Involvement in such a situation, avoiding duplication.

The SEC will coordinate all the activities related to Disaster Management at the UT level. Similarly the DDMA will coordinate all the activities related to Disaster Management at the District level.

11.2 Establishing vertical and horizontal linkages

Coordination, as between and amongst the various agencies involved in Disaster Management for ensuring implementation of the tasks entrusted to them is an important statutory responsibility of authorities at various levels.

The Disaster wise Action Plan of part 2 of the SDMP has been designed and drafted keeping in view the practicality, transparency in the realistic terms, sequence and requirement of a disaster situation.

Therefore, this portion ensures vertical and horizontal links and thus coordinates all the existing departments, agencies and stakeholder in the most effective manner.

However, it is pertinent to mention here that the process of coordination has to be a continuous process and is not limited to any particular situation but always should have a holistic view. Coordination efforts amongst various government departments and other stakeholders generates synergy and involves the bringing together of agencies and functionaries to ensure effective performance. Hence, minor alterations and customizations as per local conditions can always be handy for effective Disaster Management processes.

11.3 Annual report

At the end of every financial year, the DRDM will prepare and publish an annual report. The annual report will provide a full account of the activities of the DRDM during the previous year and will include the following –

- A statement of aims, objectives and vision of DRDM for Disaster Management
- Annual targets and achievement, in physical and financial terms, during the year to which the annual report pertains
- The activities implemented/ executed during the previous year.
- Plan for the next year.
- Any other information as deemed fits.

11.4 Institutionalizing Disaster Management Plan

All departments shall nominate a nodal officer who will be responsible for disaster management efforts from their respective departments. The nominated officers will review the SOPs for their respective departments and if required may necessary updating.

11.5 Cross cutting government department and other stakeholder activities

Disaster considerably affects all the sectors of development resulting in a serious social and economic setback of the overall physical and social development of the community. The process of development and the models of development choices made sometimes lead to disaster risks. There is a paradigm shift in an approach to disaster management in the country. The new approach proceeds from conventional approach that development cannot be sustainable unless disaster mitigation is built into the development process. The new policy also emanates from the belief that investment in mitigation is much more cost effective than expenditure on relief and rehabilitation.

Government line departments and service providing departments undertake several development programmes and execute projects in the districts, panchayats on regular basis. For instance, the Agriculture Department regularly conducts outreach programmes in educating farmers on best agricultural practices. Similarly, the DRDM at the UT level would coordinate and develop mechanisms where the information transferred to the farmers is disaster preparedness centric. This could be done by training agriculture staff and frontline workers on Disaster Management. Therefore, these agriculture extension workers could effectively function as field ambassadors of disaster management. This concept is applicable for all the departments and capacity building plays a crucial role. Likewise, Irrigation and PWD departments regularly execute infrastructure improvement and

development programmes. Streamlining disaster management into these regular programmes will help in better preparing to meet the emergency challenges.

Several NGOs, Corporate Social Responsibility (CSR) in the UT have exclusive social development projects. The UT shall reach out to these sectors to impress on them in integrating disaster management efforts as core objectives of their social development projects and also involve them in the state sponsored capacity building initiatives.