Tamil Nadu State Disaster Management Authority

Standard Operating Procedures for HANDLING DISASTERS

Tamil Nadu Disaster Risk Reduction Agency
Commissionerate of Revenue Administration and Disaster Management
Chennai - 600005

Standard Operating Procedures for

Handling Disasters

October 2021

Tamil Nadu Disaster Risk Reduction Agency

Commissionerate of Revenue Administration and

Disaster Management, Chennai – 600 005.

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The need for Standard Operating Procedure

The lessons of 2019, 2020 and 2021 so far, indicate that the Natural Disasters are not confined to any particular monsoon season. Floods, Cyclones, Drought, Heatwave, Thunder Storm & Lightning, Earthquake, Landslides, Sea Erosion, Sea Water Incursion, Pest Attacks, Forest Fire and Pandemic like COVID 19 and any other emerging Disasters could strike any time. The experience of the past has also shown that Natural Disasters cannot be prevented but with "Preparedness" it is possible to minimize, the loss and damages. The Standard Operating Procedure is to provide a concise list of important and coordinated actions to be taken by the District Disaster Management Authorities for Preparedness, Response, Relief and Prevention& Mitigation.

Standard Operating Procedure (SOP)

The Standard Operating Procedure lays down specific actions to be taken by the DDMAs, Line Departments, Urban & Rural Local Bodies, for responding to all-natural disasters/ emerging threatening disasters irrespective of their magnitude and dimension.

Non-Negotiable Principle:

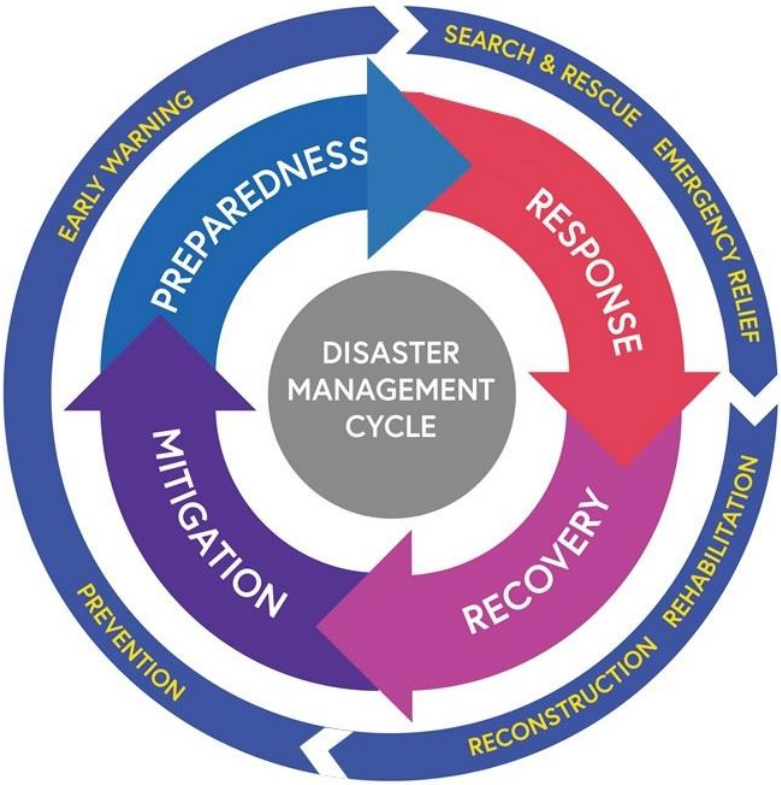
The prevailing COVID 19 pandemic situation demands that the golden rules of Wearing Face Masks, Washing Hands with Soap or Sanitizer frequently, Maintaining Social Distance and Getting Vaccinated have to be strictly adhered to. The message that there can be no compromise has to go deep down to the last person.

Disaster Management Cycle:

The Standard Operating Procedure covers all aspects of the disaster management cycle viz covers Preparedness, Response, Recovery, disaster risk reduction, Prevention & Mitigation and Building Back Better. It

recognizes that effective disaster management demands a comprehensive framework encompassing multiple hazards.

The instructions contained in this SOP should not be regarded as exhaustive of all the actions that might be considered necessary. The DDMAs, Line Departments and the Urban and Rural Local Bodies have to prepare detailed SOPs to translate each action point into many steps required to be taken by each of them.



Preparedness Phase

Meetings

1. The District Collectors in their capacity as Chairman of the District Disaster Management Authority shall convene the meeting of DDMA and District Co-ordination Committee Meeting

ahead of Monsoon Seasons in May/ September of every year and as demanded by arising situations.

2. The DDMP and Departmental Disaster Management Plan should be updated before 31st July of every year. The updated DDMP shall be sent to the Commissionerate of Revenue Administration and Disaster Management for placing it before the TNSDMA for approval.
3. The District Collectors shall ensure that the Revenue Divisional Officers and Tahsildars also conduct Coordination Meeting at sub-divisional and Taluk level with line departments and other stakeholders respectively.
4. The Inter-Departmental Zonal Teams led by Revenue Authority with team members drawn from Police, Fire & Rescue Services, Water Resources, Rural Development, Agriculture Departments etc. shall be formed for every 5-7 vulnerable areas or every 15-20 Firkas.
5. Village level Interdepartmental Teams may also be formed in all the Villages, especially in vulnerable areas, headed by the Village Administrative Officer with Panchayat Clerk, Anganwadi Staff, Noon meal organizers, forest guards etc.,

Multi Stakeholder Participation

Sensitize private institutions, by holding series of meetings at the district level with Hospitals, Educational Institutions, Tele Communication Service providers and Oil Companies to ensure institutional preparedness with strategies to ensure round the clock functioning of emergency services.

Capacity Building

1. Periodical Mock Drills through Fire and Rescue, NDRF, TNDRF, Interactions with Community First Responders, volunteers from NCC, Nehru Yuva Kendra shall be organised.
2. The Mock Drills have to be comprehensive covering various disaster scenarios and demonstrate how people should safeguard themselves. The Do's and Don'ts shall be explained in the local language for the benefit of participants.
3. The focus should be to cover the vulnerable areas and the Community.
4. The instructions issued based on NDMA Guidelines for conducting Mock Drills should be adhered to.
5. A schedule for conducting Mock drills has to be prepared and followed.
6. The Mock Drills have to be well documented. Video and Photographic documentation by professional photographers is recommended. A narrative report capturing the views of the participating community should be part of the documentation. This document will be useful in the capacity building of first responders and the community.
7. The Completion report on Mock Drills shall be uploaded to TNSDMA Website.

Vulnerability analysis

1. The Criteria for classifying areas vulnerable to floods is furnished in Annexure
2. The vulnerable areas already identified in the districts based on legacy data have to be updated in the Maps.

3. The information provided on the backside of each Map should be verified and updated
4. This has to be carried out based on the inspection by the respective Inter-Departmental Zonal Teams and the interaction with the Community First Responders and the local people.
5. The Inter-Departmental Zonal Teams has to make a "Transect Walk" and utilize the opportunity to interact with the Community. This helps to understand the problems of the Community. The community may share solutions out of their knowledge and experience. The traditional wisdom of the community coupled with structural interventions can provide a lasting solution.
6. The mitigation measures initiated during the last 3 years should be incorporated besides updating all the details. This map should reflect the current status of the degree of vulnerability
7. The Vulnerability analysis has to be carried out for all vulnerabilities of the district, for hazards like Cyclone, Tsunami, Storm Surge, Drought, Heatwave, Thunder Storm & Lightning, Landslides/Landslips, Earthquake Sea Water Incursion, Sea Erosion repeated Crop inundation, and Chemical, Biological Radiological and Nuclear Disasters.

Community participation

1. Community participation is to be ensured at the grass-root level through enrolment of volunteers, with skills of swimming

and climbing, as Community First Responders including Women First Responders.

2. The DM Tahsildars and the Head of the respective Inter-Departmental Team shall devote special attention to verify the names and contact details of the First Responders.
3. They should identify their skill sets to perform diverse tasks (like swimming, Climbing, Tree cutting, Electrician, Plumbing, Typing Data Entry, Communication, and such other skills.
4. The willingness to engage in providing Psychosocial Support may also be ascertained so that training can be organised.
5. This database shall be utilised to develop programmes for continuous engagement of the human resources during the Pre-Disaster, during Disasters and Post Disaster period.
6. The native intelligence of these volunteers can also be harnessed to understand the vulnerability of the area and design mitigation measures for every vulnerable location.
7. The District Collector may provide further specific guidelines to the DM Tahsildar and the Head of Inter-Departmental Teams to bring out a precise assessment of the community First Responders. The first responders have to be trained by Fire services / TNDRF.
8. In addition, staff, trained in tree cutting, belonging to TNEB, Highways, Public Works Department, RD and Urban local bodies etc., may be identified and enrolled. They may be constituted as mobile teams to be placed under the command of Interdepartmental Zonal Teams and at the Block level. The

above teams and First Responders - Tree cutting should be deployed both in arterial and non-arterial roads.

9. Mobile teams of first responders may be formed for evacuation of people, for protecting livestock and for tree cutting and Snake catchers at Block / Taluk / Sub-Divisional and District levels for deployment based on need. District Collectors should also have mobile teams under his/her control. Each mobile team should comprise at least 15 to 20 persons for being deployed in affected areas based on need.

Monitoring Mechanism

The Monitoring Mechanism for the preparedness measures and to carry out activities in a time-bound manner in respective vulnerable areas and at the district level has to be very dynamic and responsive. The District Collector shall appoint a Nodal Officer at the District Level / Sub-Divisional / Taluk to co-ordinate with the Interdepartmental Zonal Teams.

District Emergency Operations Centre

1. The Collectors should ensure that District Emergency Operation Centre is functional round the clock with Toll-Free No.1077 and equipped with necessary infrastructure facilities viz., STD Telephone, Fax, Computer with Internet access etc.
2. All the instruments like satellite phones and VSAT phones should be checked and ensured that they are in working condition.
3. Additional Staff from line departments should be posted round the clock in the Emergency Operation Centre based on emerging contingencies
4. Use multiple channels such as print / electronic/social media / wireless systems to spread awareness among the community on

the Do's and Don'ts during disasters, and also about evacuation, Relief centre details and also contact person details.

5. Ensure that the Control Rooms of Police, Health and Fisheries Department and the equipment are functional.
6. The IDRN portal maintained by NIDM shall be updated periodically and should reflect the current status. This will help in mobilizing the required equipment/materials to meet the contingencies in the event of a Disaster.
7. Ensure that the Ambulance, Rescue Boats Fire Services and their contact numbers are functional and responsive.
8. All officials involved in disaster-related activities shall be advised to install the TNSMART Mobile app and utilise the Alerts on Flood, Cyclone, Thunderstorm & Lightning Alerts of IMD pushed in the TNSMART System.
9. All officials of Revenue and line Departments, Urban and Rural Local Bodies shall be advised to download DAMINI Mobile App to receive Lightning Alerts.
10. A What's App Group of officials involved in Disaster Response and Relief and Inter-Departmental Teams may be formed and details should be shared to State Emergency Operation Centre

Safety Audits

1. The School Safety, Hospital Safety, Safety of Electrical Installations, Dam Safety, Building Safety, Fire Safety, Boat Safety, availability and functioning of Lightning Arresters, have to be ensured through respective departments and local bodies periodically according to a prescribed Calendar and more particularly before every Monsoon Season and formation of

Cyclone etc. as per the respective NDMA Guidelines & Building Codes.

2. The dilapidated buildings and weak compound walls should be demolished to prevent any untoward incident.
3. A copy of the safety audit carried out by the respective departments and Urban & Local bodies should be obtained.
4. Preparation of Contact Directory
5. The Directory should be updated with vital information such as contact details of DDMA, Police, Fire services, Line departments, Taluk and Inter-departmental teams, Relief Centres and teams associated with the functioning of Relief Centres such as Food Supply, Water Supply, Health, Psycho-Social support, Ambulance etc.

Prepositioning of Men and Material

1. Deployment plan may be prepared in consultations with Superintendent of Police, Fire Service, Fisheries and others for prepositioning of rescue teams, boats, Armed Reserve Police, Patrol Vehicle etc.,
2. Traffic plan to establish a green corridor for quick movement of rescue teams and relief measures, fuel, LPG and other essential materials in the vulnerable areas.
3. Prepare for patrolling to prevent the possible threat of looting and arson by anti-social elements in areas where evacuation is to be undertaken on a large scale.
4. Generators should be mobilized and kept ready for deployment to the Drinking Water Pumping Stations for ensuring uninterrupted water supply during power failures. Adequate

stock of diesel also should be ensured and both the generators and diesel have to the prepositioned in the vulnerable areas.

5. Identify teams in non-coastal districts for deployment in affected areas.

Arrangements to accommodate TNDRF, NDRF, and Central Forces

1. Arrange proper accommodation for TNDRF, NDRF and Central Agencies.
2. Ensure better coordination between Central and State Agencies as well as unified action by multiple agencies of Government of Tamil Nadu
3. Appoint District Revenue Officers as Nodal officer for Supervising arrangements for TNDRF, NDRF & Central Forces.
4. District Collectors should ensure that forces are not kept idle and appropriately deployed.
5. Appoint escort officers to guide the forces during their movement to vulnerable areas and oversee the arrangements made for their stay.

Arrangements in Transport Sector

1. Advice all Transport Corporations to sensitize their drivers/conductors regarding their role during flood situations not only to safeguard their interest but also to offer better service to the public during an emergency.
2. Advice all Transport Corporations that not to ply transport vehicles 3 hours before and after cyclone landfall in general and in case of cyclone landfall during the night, vehicles movement should be stopped from 6 P.M to 6 A.M.

Periodic maintenance of existing infrastructure & equipment

1. Ensure proper maintenance of the Rain Gauge stations
2. Ensure that all department vehicles are roadworthy
3. Ensure that the VHF / HF sets are functioning properly.
4. Sensitize the Government and private health institutions to ensure that the ICU / CCUs function without interruption by making power backup arrangements. Each institution has to prepare its Disaster management plan to ensure the safety and wellbeing of patients.
5. Ensure that generator sets are located at elevated locations to prevent submergence during floods. Ensure that the equipment of the line departments which are involved in Search, Rescue and Relief operations are in working condition.

Periodic maintenance of Water Ways / Bodies

1. Minor irrigation tanks, supply channels & distribution channels should be desilted before the onset of the Southwest / Northeast Monsoon to harvest rainwater as well as minimize risks due to floods.
2. The Municipalities and Corporations should undertake a massive drive for desilting the stormwater drains, channels before the onset of the monsoon.
3. Create recharge pits, recharge wells and convert defunct bore wells as recharge wells especially in areas prone to drinking water shortages and in areas where drinking water sources are located.
4. The vulnerable points in the downstream area of Dams and reservoirs, River courses and other waterways have to be

identified, inspected and necessary arrangements have to be made to ensure the uninterrupted surplus flow of rain/flood water.

5. Restoration and deepening of tanks, River courses which can flood National & State Highways, Rail tracks and other major roads during monsoon.
6. Encroachment Removal in Water Ways
7. Protect the water bodies from encroachments and carry out massive programmes for eviction of encroachments.
8. The entire River courses should be widened to the original size, desilted and encroachments removed especially in vulnerable areas.
9. Major Irrigation canals should be desilted & free from encroachments.

Rainwater Harvesting

1. Promote Rain Water Harvesting by excavating recharge pits at suitable locations, with a special focus on Villages prone to drinking water problems/floods and also in areas near drinking water sources.
2. Convert defunct bore wells into recharge wells.
3. Launch a mission for tapping rainwater from rooftops - both in residential and institutions buildings.

Road and Rail Infrastructure over waterways

Identify bridges and culverts with special focus on major roads and Railway tracks & remove the blockages besides clearing 1000 metres on either side viz., in the upstream & downstream.

Updation of e-Adangal

To ensure a transparent and accountable methodology in the event of crop damages, updating of entries in the Adangal has been made mandatory during cultivation season The instructions issued in Letter No N.C.1(4)/3770/2021-I dated 5-10-2021 specifically mentions that if there is no entry or correlation with data in e-adangal the claim for input subsidy for crop damages shall not be recommended by district Collectors.

Response during and after disasters

Arrangements at Relief Centres

1. Identify additional buildings that are suitable for organizing relief camps in village / Town Panchayats / Municipalities with necessary contact details, in addition to the regular cyclones centres and Multipurpose Evacuation Shelters because of the current COVID – 19 situations as physical distancing will reduce the capacity of the shelters.
2. Inspect and carry out necessary repairs to keep the cyclone shelters and Multi-Purpose Evacuation Shelters (MPES) ready for organizing relief camps. Identify 3 to 4 Collection points for easy and efficient collection and local distribution of Relief materials. Follow the shelter management guidelines for upkeep and maintenance of MPES and send compliance reports.
3. Ensure proper safety arrangements in Relief Centres. Additional toilets & other arrangements also need to be made in the existing shelters to ensure that COVID – 19 spread does not happen in the cyclone/flood shelters or relief camps.

4. Ensure Generators are ready to be used for relief operations and in relief camps as it is advisable to switch off the power supply during extreme weather events.
5. Register of persons accommodated in the Relief Centers along with photos, gender, age, address and Aadhaar no shall be maintained.
6. Ensure regular medical checkups at relief camps to ensure that people with symptoms are isolated & treated so that COVID – 19 spread can be prevented.

Water, Sanitation and Hygiene

1. Ensure adequate supply of drinking water of good quality in the Relief Centers.
2. Ensure adequate no. of toilets are available. If not make arrangements for temporary toilets. Also, ensure periodic emptying of septic tank/pit and safe disposal. Collectors should have a list of such vehicles available in Urban Local Bodies (ULB) or with private operators

Public Health

1. Ensure adequate stocks of essential medicines, life-saving drugs, etc.,
2. Make prior arrangements for the scheduled visit of Doctors and display their contact numbers for any emergency
3. Compile a list of ambulances of both Government Agencies and the Private Sector
4. To arrange medical camps to treat minor ailments, provide health education and referral of sick cases to higher centres

5. Chlorination Teams to be formed for proper chlorination of drinking water at OHT, GLR, Bore wells etc.
6. Rapid Response Teams are to be formed to ensure chlorinated drinking water and to prevent the outbreak of diseases.
7. Vector Control Teams consisting of Entomologists and Field Workers to be formed to carry out anti-adult and anti-larval works.
8. Food safety teams to be formed and Designated Officers and Food Safety Officers should be in the field to check chlorination and food hygiene.

Special Care for Pregnant Women, Lactating Mother, Senior Citizens and Differently abled in the Relief Centres

1. Ensure proper arrangements for vulnerable sections like differently-abled, Senior Citizens Pregnant Women, Lactating Mother and children etc.
2. Providing Warm and inner clothes and additional clothes to Children, sick, elderly, women and widows.
3. Dignity Kits for women/girls should be provided with disposable paper bags.
4. For pregnant women, necessary basic arrangements should be made by the local administration for safe delivery. A separate enclosure shall be provided to ensure their privacy.
5. Static and Mobile Health teams to attend to the inmates.
6. For lactating mothers, special care may be taken to provide milk powder etc.,
7. Wheelchairs should be kept ready at relief centres to help aged, differently-abled persons.

Shelters for Animals & Care

1. Identity existing cattle pounds and grazing poramboke lands as Animal Shelters.
2. Ensure the availability of adequate stocks of veterinary medicines in Veterinary Hospitals and also ensure the availability of essential drugs.
3. Ensure availability of adequate stock of fodder & water in cattle camps/shelters.
4. Preparation of First Responders for Animal Protection to evacuate the animals to designated shelters.

Ensuring essential supplies and services to people in disaster-affected areas.

Restoration of Power supply or alternate arrangements for the functioning of drinking water pump houses through Generators, supply of milk, milk powder, providing Food through Community Kitchens medicines, should be organised immediately

Monitoring the movement of Fishermen

The Fisheries Department monitors the movement of mechanised Fishing Boats and fishermen into the Deep Sea. The District Collector should monitor this closely.

Water Quality Surveillance

1. To avoid water-borne diseases and outbreaks of any epidemics, it is highly important that the properly treated water only is supplied. The community should also be advised to boil the water before drinking.
2. In respect of areas where private tanker services are organised for the supply of drinking water, it should be ensured that

tankers are properly cleaned and chlorinated before they are put into use.

3. In individual houses and apartments (particularly in urban areas) where Ground level Reservoirs / underground storage, there is every possibility of contamination due to inundation and seepage. The necessary advisory should be issued to the community to clean the storage structures and chlorinate the water to prevent the spread of epidemics.
4. A special Team for "Water Quality Surveillance" for conducting water quality testing may be formed exclusively for each affected area. They must be provided with the "Testing kit" and "Chlorine Tablets."

Clearance of affected Areas:

1. Removal of debris; Clearing the fallen trees; Restoring power lines; Restoration of basic Infrastructure - requires a massive effort and will need the mobilization of extra machinery and manpower. Therefore, teams are to be formed well in advance.
2. Separate teams should be formed for disposal of dead bodies and disposal of carcasses following NDMA guidelines / State Government guidelines.
3. First Responders Teams for evacuation should be involved to evacuate the people from low lying areas to relief centres.
4. First Responders Teams - Tree cutting should be involved for tree cutting and removal of fallen trees, including in non – arterial roads.

Assessment of damages to life & Property

1. After the disaster, it becomes necessary to assess the damage as per the guidelines in force.
2. Hut damages upto 50 huts in a village can be assessed by Village Administrative Officers assisted by Panchayat clerks. A Team of officials from different departments is to be constituted by the District Collector for assessment of damaged huts if they are more than 50 in a village.
3. Proper Documentation of the damaged houses, Crops and Cattle loss with geo-tagged photos/videos capturing date & time should be done.
4. Constitute/Designate Engineers/Teams of Engineers from different departments for assessment of damages of pucca buildings and other infrastructure.
5. District Collectors should position drones in the district. When there is large scale damage, these drones should be engaged immediately for visual assessment of the damages, date and geo-tagging should be done.
6. To oversee the relief and restoration activities, one Deputy Collector should be made in charge of a Taluk. Under him/her, various teams should function for relief and restoration activities.
7. Staff from unaffected areas should be diverted to affected areas based on need.

Relief

Based on the contingencies and need to evacuate people to safe places, immediate action should be taken to operationalize the Relief centres in areas that are likely to be affected.

Relief Disbursement

All the District Collectors are instructed to provide immediate relief in respect of Human Loss, Cattle Loss and Hut damages as per the norms of assistance ordered in G.O.Ms.No.380, Revenue Department, dated 27.10.2015.

Management of the dead in the aftermath of disasters

1. Disposal of the dead will be made an integral part of "all hazard" District Disaster management Plans and SOPs on the subject will be prepared by the District Authorities, based on the National Guidelines, their experience and best practices available.
2. Establishment of Dead Body Management Group in the Incident Response System.
3. India Disaster Resource Network, displaying the availability of forensic experts and those associated with DNA profiling.
4. Based on their Disaster Management Plans, Authorities should acquire equipment for various components of the disposal of dead bodies.
5. Surge capacity in hospital mortuaries to be explored.
6. The Animal Husbandry Department should arrange for the post-mortem of deceased animals expeditiously and send reports to the District Collector. The carcass has to be disposed of safely.

NGO Coordination Centre

1. The NGO Coordination Centre has to enable the registration process of willing NGOs and CSOs.
2. Grouping of their services and preferred area (Village, Firka, Taluk and District) helps to avoid overlapping.
3. Familiarization of the norms and Guidelines prescribed by Government is necessary
4. The Grass root level presence of NGOs & CSOs and their local knowledge has to be utilized in all phases of disaster.

Financial Management

The District Collectors should ensure to get a report from various units under them, on funds made available, expenditure incurred under various components and balance available at the end of the day. The PA (Accounts) shall be made responsible to complete this task and send a periodical report to the Commissionerate of Revenue Administration with the approval of the District Collector.

Transparency in Relief operations

A list containing the details of the beneficiaries with their names and address along with quantity/volume and quality of relief distributed should be prepared and made available on the District Website.

Reporting system

The daily situation report shall be sent through the website https://tnsdma.tn.gov.in / TNSMART and major events should be reported to the Commissionerate of Revenue Administration and Disaster Management then & there and details of rainfall before 8.00 A.M. during Disaster periods.

Identification of teams and materials for deployment in other districts

1. Identify Private Buses and Trucks / Lorries for transport not only for staff deployed for rescue work but also to transport relief materials to the identified shelters in other districts, if necessary, within short notice.
2. Identify the list of officers, vehicles, equipment for deployment in other districts in case of need

General

The specific actions to be taken up by the DDMA Line Departments, Urban & Local Bodies in respect of concurrent Disasters like Floods, Cyclones, Drought, Heatwave, Thunder Storm & Lightning, Earthquake, Landslides, are furnished in Annexure

Media Management and Visibility

1. The Government of Tamil Nadu has declared the Media Persons as Front-Line Workers.
2. District Collectors may brief the press on various measures initiated by the Government. Need to interact proactively with public and media during and after the disaster on rescue and relief work.
3. All the vehicles engaged in relief work should have banners and stickers of the Government of Tamil Nadu emblem and the logo of TNSDMA for visibility.
4. Arm Bands / Badges with Government of Tamil Nadu emblem (for visibility) may be provided to all Civilian Staff and Volunteers engaged in preparedness, rescue and relief work

5. Department officers/staff drafted for Disaster-related works should be provided with Armbands with Emblem of Government of Tamil Nadu, Department name & Tamil Nadu State Disaster Management Authority (TNSDMA) to make better visibility and thereby making the public aware about their services.
6. All the District Collectors and the Commissioner, Greater Chennai Corporation are also instructed to give wide publicity in the newspapers about the state of preparedness of the district administration, line departments and local bodies thereby creating awareness in the minds of the public.

Check List

A 61 point Checklist provided in the Annexure points out the action to be taken. The District Collectors are welcome to improve upon the checklist according to the needs and circumstances and send it to the Commissionerate by highlighting the addition or improvements made by them.

Sd./- K. Phanindra Reddy
Additional Chief Secretary/
Commissioner of Revenue Administration &
State Relief Commissioner.

ANNEXURE - I

Check List

Sl. No.	Details	Remarks
Preparedness		
1	Preparation of Perspective District Disaster Management Plan. (2021 - 2022)	
2	Taluk level Disaster Management Plan.	
3	Identification of vulnerable areas.	
4	Preparation of digital maps of vulnerable areas.	
5	DDMA Meeting	
6	District Coordination committee meeting with line departments.	
7	Formation of Inter-departmental Zonal Teams including local community at vulnerable locations.	
8	Zonal Teams i) Visit Relief Centres ii) Source of Vulnerability iii) Mitigation measures iv) Had interaction with first responders v) Check the Inventory vi) Check measures in place for the differently abled and other vulnerable sections.	
9	Appointment of : I. Early Warning Committee II. Search and Rescue Committee III. Evacuation Committee IV. Relief Centre / Shelter Management Committee	
10	Identification of First Responders including women First Responders for i) Evacuation ii) Protecting Livestock iii) Cutting and Removing Wind fallen trees	

Sl. No.	Details	Remarks
11	Appointment of Nodal officer at the District level, Sub - Divisional level and Taluk level	
12	Training of Nodal Officers.	
13	Meeting with First Responders by Collectors / Participation of Sub-Collectors / RDO's during Training of First Responders.	
14	Co-ordination Meeting with DRGs / NGOs / Red Cross / Service Organisation etc., & assign specific roles	
15	Meeting with Private Institutions / Hospitals / Educational Institutions, Oil Companies and Mobile Services Providers for Sensitising on their preparedness	
16	Implementation of School Safety Guidelines	
17	Preparation of Hand book (Telephone Directory & Inventory).	
18	Preparation of deployment plan for rescue teams based on vulnerability mapping.	
19	Preparation of list of inventories / machineries required for the vulnerable area.	
20	Preparation of traffic plan by police to establish green corridor to highly vulnerable areas.	
21	Arrangement to accommodate T.N.D.R.F, N.D.R.F, D.R.G and Central Agencies.	
22	Identification of cyclone/safe shelters - Relief Centres.	
23	Inspection of Multi-Purpose Evacuation Shelters and Relief Centres to check their readiness.	
24	Review of arrangements for emergency supply of safe drinking water including transportation of drinking water, Fuel, generator sets, pump sets, boats, power saws ,etc.,	
25	Drawing up evacuation plan for the low lying areas including identification of places, means of transportation, evacuation routes.	
26	Plan for putting up temporary shelter in case of additional requirement.	

Sl. No.	Details	Remarks
27	Review of availability of essential medicine needed during flood period	
28	Special arrangements for women, Senior Citizens and Differently abled in relief centres	
29	Data base on the availability of Medical Officers & Paramedical staff with a view to earmark medical teams for providing medical cover in case of emergency.	
30	Planning to ensure the availability of required resources for maintaining hygiene and sanitation in a flood situation in the flood prone areas.	
31	Planning of control measures to prevent the outbreak of any epidemic in case of flood situation	
32	Arrangement for Animal Shelters and procurement of medicine, fodder by Veterinary and Animal Husbandry Department.	
33	Compile list of ambulances with Government Agencies & Private Sector	
34	Formation of Chlorination Teams and Rapid Response Teams to ensure chlorinated drinking water and to prevent outbreak of diseases.	
35	Vector Control Teams consisting of Entomologists and Field Workers to be formed to carry out anti-adult and anti-larval works.	
36	Food safety teams to be formed and Designated Officers and Food Safety Officers should be in field to check chlorination and food hygiene.	
37	Check arrangements in place for supply of food, Warm clothes, etc., and air dropping of food and essential commodities.	
38	Whether advance storage points/ location for Milk, food items (Civil Supplies), boats (fire service, fisheries) identified for vulnerable locations in consultation with Civil Supplies/ Fisheries / Fire Service	
39	Strengthening of DEOC & Proper working of Communication equipment.	

Sl. No.	Details	Remarks
40	Inspection of Tanks / water bodies, supply channels / canals/ river courses by PWD officials.	
41	Inspection of the water bodies / supply channels under the control of local bodies by Engineers of local bodies.	
42	Whether blockages under all culverts / bridges are cleared. (Upstream 1,000 mtrs, downstream 1,000 mtrs).	
Inspection of Lifeline & Critical infrastructures by Line Departments		
43	Dams / Water Storages, Schools, Hospitals, Power Plants Roads & Bridges, Monuments, Tourism infrastructures	
Capacity Building		
44	Mock drills in vulnerable areas.	
45	Training of First Responders (Volunteers)	
46	Check maintenance of infrastructure / equipment as per circular	
Mitigation Measures		
47	Whether cleaning / desilting of natural water reservoirs and drainage channels have been done in the flood prone areas?	
48	Whether encroachments /obstructions on ponds/tanks have been removed?	
49	Whether embankments along rivers and nallahs, ring bunds and other bunds have been inspected and strengthened?	
50	Whether necessary maintenance of sluice gates, barrages, embankments, etc. are being done by PWD?	
51	Whether defunct bore wells have been converted into recharge pits?	
52	Whether storm water drains in urbans have been inspected and desilted for safe outflow of surplus runoff of flood water?	

Sl. No.	Details	Remarks
53	Whether percolation ponds / check dams / Recharge pits with shafts or ring wells / sub surface dykes are constructed in vulnerable areas	
54	Whether bridges and culverts with special focus on major roads and Railway tracks & remove the blockages besides clearing 1000 metres on either side viz., in the up-stream & down-stream have been identified?	
55	Whether Piped culverts have been converted into box type?	
56	Whether bed level cause ways & low level bridges have been converted into elevated bridges wherever necessary? If yes, indicate no.	
57	Whether action has been taken to plant tall trees and create shelter belts in the 13 coastal districts in consultation with Forest Department.	
58	Whether action has been taken to plant tall trees along with river courses in all Districts in consultation with the Public Works Department (PWD) & Forest Department.	
59	Whether Adangals have been updated properly? (Azmoish entries)	
60	Whether reconciliation with Agriculture Department crop wise are done periodically and report sent to Government / Department?	
61	Enrolment of farmers in Fasal Bheema Yojana Scheme.	

Annexure II

Vulnerability Analysis

Classification	Criteria
Areas of Very High Vulnerability.	a) Inundation of water and water level was **more than 5 feet.** (or) b) Rescue operations carried out with the help of Central forces / SDRF. (or) c) Areas which are cut-off and became inaccessible. (or) d) Loss of lives or large-scale evacuation carried out.
Areas of High Vulnerability.	a) Inundation of water and water level was 3-5 feet. (or) b) Rescue operations carried out only by local police or Fires services.
Areas of Medium Vulnerability.	Inundation of Water & Water level was 2-3 feet.
Areas of Low Vulnerability.	Stagnation of water was below 2 feet.

ANNEXURE - III

Guidelines for conducting Mock Drills

Mock Drills form part of the Disaster Preparedness and inculcate a culture of preparedness among officials, Community and first responders. They facilitate the DDMAs to review the adequacy and efficacy of the disaster preparedness and to identify gaps in resources, communications and other systems. The Govt of Tamil Nadu provides the budgetary support to organise Mock Drills to the Revenue Administration Disaster Management and Mitigation Department.

The Mock Drills are organised by the District Disaster Management Authority with the assistance of National Disaster Response Force, Tamil Nadu Disaster Response Force, Fire Safety & Rescue Services Department, and Indian Red Cross Society. The National Disaster Response Force conducts Mock Drills on the request of the State Administration wherever necessary. The Industrial Safety personnel organise Mock Drills in Major Hazardous Industries every year. The National Disaster Management Authority, in coordination with vulnerable States, takes the initiative of conducting Mock Exercises on various types of natural and manmade disasters.There is no practise to empanel /accredit/approve or authorise any individual to conduct Mock Drills by the NDMA or State Government.

As per the National Disaster Management Authority, Mock Exercises are to be conducted in the following systematic step-by-step approach:

Planning Mock Exercises;

Step 1. Holding a **Coordination and Orientation Conference**.

During this Conference the aims and objective of the exercise are explained to the participants and their roles are delineated. The conduct of the Table Top and Mock Exercise is explained and dates for Table Top and Mock Exercise are finalised.

Step 2.Conducting the Table Top Exercise.

key stakeholders first present their status of preparedness. The worst case scenarios are thereafter simulated from **preparedness to early warning to rescue and relief phases** of Disaster Management (DM) through injects for various key stakeholders. The response of each stakeholder is elicited followed by detailed discussions. Independent observers are detailed and safety during the Mock Exercise is taken into consideration.

Step 3. Conducting a Mock Exercise.

Observers are briefed on their roles. Thereafter, they take over and start painting situations in a bottom-up approach with specialized inputs from nodal agencies. The situations are conceptualized to derive certain lessons and find gaps, if any, in the resources/systems. Mobilization of resources takes place on orders of respective department heads to mitigate the situation. The concept of Incident Response System to manage the disaster is practised. At the end of the mock exercise, a detailed debriefing takes place to consolidate the good practices and lessons learnt.

Conducting Orientation-cum-Coordination Conference.

As per the approved calendar, the Orientation-cum-Coordination Conference takes place at a mutually decided place and date. This conference is attended by Senior Specialist (Training and Capacity Building) from NDMA. It is occasionally attended by the Chief Secretary of

the State and generally by the Revenue-cum-DM Secretary, Secretary Health, DG Police/IG (Law and Order), Chief Fire Officer, DG Health Services and Collector/DC, SSP, District Medical Officer, Fire Officer, Supply Officer, RTO, DGM MTNL/BSNL, NGOs, Home Guards, representatives of Armed Forces, Para Military Forces located in the area, representatives of the IMD, CWC and other technical institutions and the concerned Commandant NDRF Battalion. In cases of industrial (chemical) disasters, Chief Inspector of Factories/Director of Factories and Boilers, the concerned Joint and Deputy Chief Inspectors of Factories, Inspectors, and MD/Chief of Operations of shortlisted industries take part. The objective, scope, roles and responsibilities of each stakeholder and coordination between them during emergencies are delineated. Participants and media coverage campaign for general awareness are also firmed up. Dates of the Table Top and Mock Exercises are finalized and the State and District nodal officers are nominated along with their contact details. The district/s and industries where a Mock Exercise is to be conducted are decided during the conference, if this has not already finalized. After the conference, the Senior Specialist, NDMA visits the area where the Mock Exercise is undertaken to formulate the scenarios.

Table Top Exercise.

Preparations for the Table Top Exercise start by conceptualizing and preparing scenarios in a bottom up approach. This is done by surfing the internet, getting relevant information from the States/UTs, consulting concerned experts, gathering information from stakeholders and field visits after the Coordination Conference; and recounting experiences. Scenarios are also formulated to derive certain lessons and discover critical gaps in manpower, systems, communication and equipment. At

the Table Top Exercise, initially the key stakeholders, such as DM Secretary, Collector, District Medical Officer, SSP, District Fire Officer, Chief Inspector of Factories and GMs of concerned industries for Chemical (Industrial) Disasters make presentations delineating the emergency response plan of their departments. Thereafter, Senior Specialist (Training and Capacity Development) conducts the Table Top Exercise by describing the scenarios and eliciting responses from concerned stake holders through injects. The Exercise is professionally conducted by enlarging its scope and span, according to what the situation demands.

Injects are given to cater to all stakeholders, the aim being to test the system under pressure. The reactions of stakeholders are deliberated in detail with the opinion of the DM Secretary/Collector/GM of Industrial units also being sought. Senior Specialist, NDMA facilitates the conduct, ensuring participation of every stakeholder. Thereafter, details of actions to be taken by the State/District/Industries between the Table Top and Mock Exercises are distributed. Observers are nominated by the State from outside the district, where the Mock Exercise is being conducted. Director of Factories of the State similarly nominates observers from other similar type of industries from within/outside the district.

Mock Exercise.

Before the Mock Exercise, observers detailed by the State and CIF are briefed by the Senior Specialist, NDMA on their roles and responsibilities. They are given a format for observation. A form of self-assessment is also given to all stakeholders. The exercise starts with simulations such as smoke coming from an affected area, shaking being depicted by the sound of sirens and earthquakes being felt at the community level. Reactions of the first responders from the community

upward actually take place by moving resources (men, machines, material and equipment). Additional simulations are created by the observers.

The district machinery comes into motion after the community/representative reports to them as per SOP. In the case of a Chemical (Industrial) Disaster, firstly the 'on site' emergency is activated and responses of the workers at the operational level, supervisory level, in the control room, at the main gate, fire services and at the management level are reviewed. When the emergency gets enlarged to an 'off site' one, the Collector/DC, takes over as Incident Commander. The Incident Command Post is established and all concerned stake holders report there to finalise the course of action, on the directions of the Incident Commander. Media persons also take part in the Exercise. Establishment of temporary relief camp/s and nomination of hospitals (Government and Private) for receiving casualties is ordered by the Collector/DC/Incident Commander. The Evacuation of the affected population is also ordered by the Collector/DC. PHC/medical posts are established at critical places to give first aid and for 'triage', to prioritize evacuation of casualties. The Exercise is developed by moving various resources physically from outside the district, if required. After the Mock Exercise, a Media briefing is organized and media persons are allowed to field questions pertaining to the exercise. Thereafter, a Debriefing Session takes place where the Observers give their unbiased, free and frank observations and stakeholders offer their versions of various actions taken by them and their learning experience. The good practices, gaps and weaknesses are thus identified in a transparent manner.

After Action Report.

Based on the outcome of deliberations of the debriefing, a final report on the Exercise is prepared by Senior Specialist (TCD) and put up along with photographs and press cuttings. The Report, after approval by the Vice-Chairman, is sent to the Chief Secretary of the State as lessons learnt for taking follow up remedial/corrective actions.

Mock Exercises in Schools

The Mock Exercises in Schools are conducted in two steps:

Step 1:It is conducted as a presentation. The School DM Framework, making of School DM Committee, outline DM Plan, suggested School DM team composition and how the Mock Exercise would be conducted are all delineated. A short documentary on School Safety is also shown.The Principal, Vice Principal, selected teachers, prefects, monitors and the school head boy/girl attend the meeting that is usually held in a hall.

Step 2:The Mock Exercise is conducted on the designated disaster. Independent observers are detailed for each class from within the school/neighbouring schools. In the Mock Exercise, the first responders of the school, such as evacuation teams, SAR teams, first aid teams, etc. are checked for their actions, with the aim of empowering the schools, to face such disasters on their own before the specialist response from the district reaches them.A School Control Room is also activated. The Principal/Vice-Principal is usually the Incident Commander.A detailed debriefing takes place after the Mock Exercise. Thereafter, an Action Report is sent to the school for follow up action.

With a view to build in opportunities for reinforcing safety awareness among children, **NDMA's School Safety Policy contemplates**

Regular mock drills and follow up of lessons on school safety; practical demonstration on the use of safety equipment, etc. including designation of School Safety Day /DRR Day annually and Training of peer educators on dos and don'ts of disasters, mock drills etc

Under this policy which is applicable to all Educational Institutions the Guiding note for Mock drill says that,

Mock drills are the ways of rehearsing the preparedness plan. It is one of the last steps in preparedness. The mock drill on earthquake, fire etc. may conducted at periodic interval preferably once in every six months and the deficiencies may be assessed for updating of the plan. This section of the plan should clearly indicate the steps to be followed to conduct the mock drills and the responsibilities of the teachers, non-teaching staff and students. If required School should invite the Fire Service Officers and trained Civil Defence volunteers for support. The steps to be followed for earthquake drill are mentioned below.

Earthquake drill:

i. Practice drop, cover and hold.

ii. Evacuate classroom in less than 1 minute without pushing and falling.

iii. Evacuate school in less than 4 minutes.

iv. Lookout for friends.

v. Stay away from weak areas/ structures.

vi. Help those who need assistance *(identification of task force in advance for rescue of special children)*.

Fire/ Chemical Accident/ Drill:

i. Evacuation from classroom

ii. Ensure safe storage of inflammable liquids/ chemicals

iii. Put off electricity and remove or close down gas connections.

The objective of carrying out Mock Drills in educational institutions is to familiarise the School authorities, the teachers and faculty and students about the institutional safety plan and their preparedness to act in the event of an Emergency.

The Mock Drills will infuse a sense of confidence and safety in the minds of participants and observers when they are conducted systematically and professionally. The Mock exercises are to be conducted only by the Fire Safety and Rescue Services Department, Police, Indian Red Cross Society, NDRF, SDRF and with the prior approval of the District Collector.

The NDMA has no practise of approving any individual as a Trainer and the State Administration also has not approved any individual as a Trainer to carryout mock drills in his /hers individual capacity. The authorities must exercise prudence and be vigilant to verify the credentials/ authorisations they produce in such instances and desist from encouraging them.

These Guidelines should be circulated widely among the departments, and Education, Health & Industrial Institutions and Establishments both (Government & Private).

Standard Operating Procedure for conducting Mock Drills in School/Colleges

The objectives of conducting Mock Drills in Schools/Colleges:

(a) Educating and training staff, teachers and students to react for any unforeseen emergency situations specifically like Earthquake & Fire,

mainly because they have a quick onset and hardly have any warning signs.

(b) Mock exercises and evacuation to build up courage and confidence in staff, teachers and students.

(c) To teach Life Saving and Rescue techniques to school staff, teachers and students and to enable them to be life savers at the time of emergencies.

(d) Testing the efficacy of Disaster Management Plan and improving it further so that it becomes do-able.

(e) To have clarity and better understanding of the roles and responsibility of all stakeholders.

The mock drills can be classified into two types:

(i) **Pre-announced Drills:** When the staff, teachers and students are expecting a mock drill, it is called as Pre-announced Drills. The objectives of Pre-announced Drills are:

To ensure everyone has read and understand new evacuation procedures.

To Test how everyone reacts to a more specific hazard (like a predetermined blocked exit route).

To determine people's ability to locate and operate fire extinguishers.

(ii) **Unannounced Drills:**

Unannounced drills are a good way to test people's ability to react to a hazardous situation they weren't expecting. The institution should conduct unannounced drills once the understanding about mock drills is clear and a certain level of proficiency has been attained. The objectives of Unannounced Drills are:

To ensure everyone in the premises can clearly hear the alarms.

To discover if the staff, teachers and students know the exit routes to take.

To determine whether staff and teachers with special roles (in the case of an emergency) know what steps to take and

To find out how long it takes to get everyone out of the building.

NOTE: To begin with, all educational institutions are advised to conduct pre-announced mock drills till they attain proficiency in it. It is also necessary to avoid injury to any student. In the end of the drill, debriefing by the Drill In-charge or the Principal should be done to review and suggest any changes in the Disaster Management Plan.

Mock Drill *Participants:* (School/College Disaster Management Committee) Teachers, Students and support staffs of the School/College

Incident Commander:

1. Principal/ Head Master of the School/College

Incident Management Team Leaders (On-Site)

2. Class Teacher of each class (Site 1 – inside the class room)
3. Teacher No. 1– to be identified by the School/College Authority (Site 2 – during safety evacuation)
4. Teacher No. 2– to be identified by the School/College Authority (Site 3 – at assembly-open field)

Evaluation Team: Principal (Over all)

5. Teacher No. 3- (Inside the class rooms and office rooms during drop cover hold positions)
6. Teacher No. 4- (During Evacuation)

7. Teacher No. 5- (During Assembly at open field)
8. Teacher No. 6- (During Search and Rescue and First Aid)

Role and Function of Participants/ Teams

1. Incident Commander: The incident commander's role is to supervise the overall conduct of the exercise, to make sure that the exercise proceeds as planned and that the objectives are achieved. The Incident Commander is to give signal of the initiation of the simulation, monitors the sequence of events, and conducts a de-briefing and critique (verbal and written) with all personnel involved.
2. Incident Management Team Leaders: The role of the incident management team leader is most crucial at the site of the incident. All teams working on-site will act on his/her command. He/she will decide the exact timing when any team working on-site will take action and will report to Incident Commander (Principal/Head Master).
3. Evaluation Team Members: They will present themselves at the sites and follow the action from thereon. They will evaluate the event as per the sequence and timings.

Preparation of School/College authority before the Mock Drill:

1. A round of Sensitization meeting with the Teachers and Students on the type of Disaster and identifying/ clarifying of the roles and responsibility of each individual.
2. Preparation of School/College Safety Plan is mandatory to conduct the drill.
3. Constitution of at least two teams and training i). Search and Rescue Team and ii). First Aid Team by the senior class students consisting of 10-15 students both boys and girls incaseof co-education School/College.

The training will be provided by the Police, Fire Service personnel, Doctors and Paramedical staff with the assistance from block / sub-division administration.

4. Pre-identification of willing students (in a confidential manner) in a class to remain inside the class as injured victim.

5. To make a drill by the School/College administration themselves before showing to other authorities

Model Sequence of Earthquake Drill:

S.No.	Time.in Minutes	Event	Action By	Actual time taken
1	00:00	Incident Commander gives instruction to the Office Assistant to ring the bell with unusual sound for one minute (60 seconds)	Incident Commander	
2	00:00-00:01	All teachers, students and other staffs will make drop cover hold position till the end of bell. Drop (kneel) down to the desk/table, hold one leg of desk/table tightly and put one palm/bag/book on back of the head.	Teachers/Students/ other staffs	
3	00:01-00:06	Safety evacuation of the students as per the instruction of the Teacher No-1 and Class teacher with a planned and disciplined manner by putting bag on the head to pre-identified open field and stand class wise queue.	Teacher No. 1 and Class Teachers	
4	00:06-00:08	Class teacher will make the head count and tally with the attendance sheet and inform to Teacher No.-2 if anybody absent in the field.	Class Teachers and Teacher No. 2	
5	00:08	Teacher No. 2 will give command to Search & Rescue Team (to be	Teacher No. 2 and Search &	

		formed by senior students consisting of 10-15 members of both boys and girls in co-ed School/College) for rescue of the missing students from the particular class.	Rescue Team	
6	00:08-00:13	Rescue operation by the S&R team. (The team may split to different classes as per the requirement). The S&R Team will	Search & Rescue Team	

Annexure IV

Minimum Standards of Relief

The National Disaster Management Authority has released the Guidelines for providing Minimum Standards of Relief to the victims of disasters. The District Collectors are to follow the guidelines for setting up of relief centre which are detailed below:-

Relief Camps

- Steps to be taken to identify buildings like schools, anganwadi centres, cyclone shelters, community centres, marriage halls etc., which can be used as Relief Shelters for accommodating the people affected by disaster.
- Availability of adequate water supply, generators with fuel for power back up bed sheet, sufficient number of toilets including mobile toilets should also be ensured.
- In areas where permanent structures are not available to avoid delay in setting up of temporary camps and exorbitant billing of essential supplies, MoU may be entered with manufacturers / suppliers for supply of factory made fast track pre-fabricated shelters / tents / toilets / mobile toilets and urinals which can be dismantled and taken back by the supplier after the closure of the camp.
- 3.5 Sq.m of covered area per person with basic lighting facilities shall be catered to the inmates of relief camps. In mountainous areas, minimum covered area shall be relaxed.
- High Mast lights, emergency lamps, search lights and candles are to be arranged.

- Special care should be taken for the safety and privacy of inmates, especially women, widows and children.
- Special arrangements should be made for differently-abled persons, old and medically serious patients.
- All the electrical installations to be checked for safety issues.

Food

- Milk and other dairy products shall be provided to the children and lactating mothers.
- Steps should be taken to ensure hygiene at community and camp kitchens.
- It should be ensured that men and women are supplied food with minimum calorie of 2,400 Kcal per day and for children / infants the minimum calorie should be 1,700 Kcal per day.
- The date of manufacture and the date of expiry on the packaged food items should be verified before distribution.

Drinking Water

- Minimum supply of 3 litres of drinking water per person per day should be provided to the inmates of the camps. For providing safe drinking water double chlorination of water has to be ensured.

Sanitation

- 1 toilet per 30 persons should be arranged in the relief camp.

- Separate toilet and bath area should be catered for women and children.
- Toilets shall not be more than 50 m away from the relief camps.
- 15 litres of water per person to be arranged for toilets / bathing purpose.
- Dignity Kits for women should be provided with sanitary napkins and disposable paper bags with proper labelling.
- Diapers should be provided to the children.
- Necessary arrangements for clearing the solid waste and for keeping the premises clean should be made.

Medical Health

- Mobile Medical Teams should visit relief camps to attend the affected people. Steps should be taken to avoid spread of communicable diseases.
- Necessary basic arrangements should be made for pregnant women for safe delivery.
- Arrangements to be made well in advance to ensure the availability of Doctors / Para Medical Staff from Government / Private Hospitals to attend to the affected people in relief camps.
- Transportation of the affected people for further treatment / operation etc., should be arranged.
- Advance contingency plans for management of multiple casualties shall be derived.

Relief for Widows and Orphans

- Special care to be given for widows and orphans who are separated from their families.
- Certificate to the widows stating that she lost her husband should be issued within 15 days of disaster. Similar certificate to the Orphaned children should be issued.
- Relief given to Orphaned children by Government should be deposited in a PSU Bank in a Joint Account where the Collector shall be first account holder of the Bank Account. Interest received should be given to the child / guardian every month for his / her proper upkeep.
- Ex-gratia assistance for loss of life, assistance on account of damage to houses should be given as per the norms already communicated in **G.O.Ms.No.380, Revenue Department, dated 27.10.2015.**

All the District Collectors shall ensure the implementation of the above guidelines for providing minimum standards of relief to the victims affected by disasters. Also refer to the guidelines issued in **G.O. Ms. No.279, Revenue and Disaster Management Department, dated 01.08.2018** for maintenance of Multi-Purpose Evacuation Shelters.

Annexure V

Drought Monitoring

District Drought Monitoring Centre (Constituted as per G.O Ms No 38 Revenue and Disaster Management (DM III) Department dated 18-1-2018)

The District Drought Monitoring Centre functions under the Chairmanship of the District Collector. The Members are

1. District Revenue Officer
2. Project Director -District Rural Development Agency
3. Superintending Engineer Water Resources Department
4. Joint Director Agriculture Department
5. Joint Director Animal Husbandry Department
6. Joint Registrar of Co-operative Society
7. Deputy Director, Horticulture
8. Sub Collectors / Revenue Divisional Officers of the District.
9. Any other Department / Officer the Chairman feels necessary.

Drought being a creeping Disaster, rigorous monitoring of the Rainfall Deviation, Dry Spell, Area sown under Agriculture / Horticulture Crops, Reservoir Storage, Ground water availability Fodder availability, Availability of Agricultural inputs have to be monitored on a weekly basis. (please refer Drought Management Guidelines 2016).

The District Collectors has to periodically review the drinking water supply with reference to the Demand & Supply position.

A report on the Ground situation is to be sent to the Commissionerate of Revenue Administration and Disaster Management.

Annexure VI

Heat Wave Management

Vulnerability of Tamil Nadu

In the recent years, due to rising temperatures during the summer/ pre-monsoon months several places are subject to 'Heat wave' conditions. Heat wave is emerging as a major phenomenon that affects the day to day life of elderly people, children and those who have prior illness and other medical conditions and who are engaged in the work in open environments.

- Tamil Nadu has a long coastline where the humidity goes up during summer months.
- Within Tamil Nadu, cities like Madurai, Trichy, Vellore Namakkal, Dindigul, and Krishnagiri have barren rocky hillock which absorb and reflect heat even during nights.
- Vulnerable region-The risk of heat waves are high for vulnerable region. For example, urban regions are having higher population concentration. Urban heat affect (due to cement / concretes, emissions from vehicle and air conditioners, and others) could aggravate the heat wave conditions caused by atmospheric phenomena.
- Rural regions are having lower population but with poor infrastructure, awareness and capacity
- Vulnerable sectors – poultry and cattle.

Objectives

The objective of heat-wave action plan is to mobilize individuals and communities to help protect their neighbors, friends, relatives, and

themselves against avoidable health problems during spells of very hot weather with a focus on the vulnerable people.

Severe and extended heat-waves will cause disruption to general, social and economic services. Government departments have a critical role to play in communicating the alerts issued by IMD and preparing and responding to heat-waves at a local level, working closely with health and other related departments on long term strategic plan.

This Heat Wave Action Plan is a compilation of those Guidelines and Action Points issued for adoption by all the Urban and Rural Local bodies and other departments

Key Strategies

i. Establish Early Warning System and Inter-Departmental Coordination to alert residents on predicted high and extreme temperatures. Who will do what, when, and how is made clear to individuals and units of key departments, especially for health.
ii. Capacity Building / Training Programme for health care professionals at local level to recognize and respond to heat-related illnesses, particularly during extreme heat events.
iii. These Training Programmes should focus on medical officers, paramedical staff and community health staff so that they can effectively prevent and manage heat-related medical issues to reduce mortality and morbidity.
iv. **Public Awareness and community outreach Disseminating public awareness** messages on how to protect against the extreme heat-wave through print, electronic and social media and Information, Education and Communication (IEC) materials such as

pamphlets, posters and advertisements and Television Commercials (TVCs) on Do"s and Don"ts and treatment measures for heat related illnesses.

v. Collaboration with Civil Society: and Non-Governmental Organizations to improve Bus stands, Building Temporary Shelters, wherever necessary, improved water delivery systems in public areas and other innovative measures to tackle Heat wave conditions.

vi. Establishing Bio Shields, enhancing the storage of water bodies, disposal of Solid Waste without accumulating them, are the Long-term mitigation strategies.

Roles and Responsibilities of Managing Heat Wave

Roles	**Responsibilities**	
	State Level	**District Level**
Preparation of Heat Wave Action Plan	TNSDMA, Commissioner of Revenue Administration, Commissioner of Municipal Administration, Director of Town Panchayats, Director of Rural Development & Panchayat Raj Department, Director of Public Health, Director Labour & Employment, Director of Agriculture, Director of Animal Husbandry, Chief Conservator of Forests, Director of School Education, Commissioner of Food Safety and Drug Administration, Director of Industrial Safety, Commissioner HR&CE, Director of Tourism	DDMA and respective line departments

Early Warning	IMD, SEOC, through DEOC, Media including Social Media	DDMA DEOC, through Media including Social Media.
Mitigating Heat Waves- Short Term	Commissioner of Municipal Administration, Director of Town Panchayats, Director of Rural Development& Panchayat Raj Department, Director of Public Health, Director Labour & Employment, Director of Agriculture, Director of Animal Husbandry, Chief Conservator of Forests, Director of School Education, Commissioner of Food Safety and Drug Administration, Director of Industrial Safety, Commissioner HR&CE, Director of Tourism	
Monitoring	Commissionerate of Revenue Administration, Municipal Administration, Director of Town Panchayats, Director of Rural Development& Panchayat Raj Departments, Director of Public Health,	DDMA and respective line departments
Capacity Building		
Response		
Media Campaigns		
Documentation & Data base Management		
Medium-& Long-Term Mitigation Measures	Commissioner of Municipal Administration, Director of Town Panchayats, Director of Rural Development& Panchayat Raj Departments, Director of Public Health, Director Labour &	

	Employment, Director of Agriculture, Director of Animal Husbandry, Chief Conservator of Forests, Director of School Education, Commissioner of Food Safety and Drug Administration, Director of Industrial Safety, Commissioner HR&CE, Director of Tourism	

The above is only illustrative and not exhaustive. The list of Roles and Responsibilities prescribed by the NDMA is furnished in Annexure

Early Warning

- DEOC with inter-departmental personnel with vide publicity of Toll Free No: 1077.
- Issue of heat alert when extreme heat events are forecast by IMD to all key Departments / Agencies through DEOC.
- Dissemination of heat alerts/advisories through local print, electronic and social media

India Meteorological Department (IMD) criteria for Heat Wave and Severe Heat Wave:

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, and at least 30°C or more for Hilly regions.

The following criteria are used to declare heat wave:

Based on Departure from Normal	**Heat Wave**: Departure from normal is 4.5°C to 6.4°C **Severe Heat Wave**: Departure from normal is >6.4°C

Based on Actual Maximum Temperature (for plains only)	**Heat Wave**: When actual maximum temperature ≥ 45°C **Severe Heat Wave**: When actual maximum temperature ≥47°C

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

High Risk Groups

- Infant Children, Pregnant women & Senior citizens
- Labourers including those at construction sites/Outdoor workers/Farmers/MNREGS workers
- Police personnel/security staff
- Industrial workers working at High Temperatures
- Street hawkers/Salesmen
- Riksha pullers/auto drivers/Travellers/bus drivers
- Petty Workers/Slum residents/Beggars/Homeless
- Chronically sick/indoor cases
- Patients on drug treatment
- Addicts (Alcohol, drugs etc.)

The above list is only indicative and not exhaustive. Hence, District Collectors are advised to update the above list of the groups/localities that are vulnerable to heat wave based on local situation.

Heat-wave Management

The following measures have to be initiated by the DDMAs to tackle the Heat wave conditions and its effect during summer 2021. In addition, any additional measures that may be required based on the past experience in the district should also be put in place.

Preparedness measures

- District Administration should advice the public to take precautions in the context of a concurrent COVID-19 disaster, including physical distance and availability of face mask, soap, water and sanitizing stations.
- Ensure drinking water supply to all habitations.
- Local bodies shall identify the areas to provide shelters and drinking water during heat alert period such as bus depots/stops, markets, railway stations, pilgrimage, tourist, industrial areas etc.
- District Administration have to prioritize maintaining power to critical facilities such as hospitals and Primary Health Centres. (PHC)/Urban Health Centres. (UHC)
- Ensure the services of 108 with adequate supply of IV fluids.
- Checking of inventories of medical supplies including IV fluids, cooling packs or ice, Oral Re-Hydration Solutions (ORS) powder in PHCs, UHCs, and 108 emergency ambulances.
- Adequate arrangements for treatment of heat stroke patients round the clock.
- Display of prevention measures to overcome HEAT WAVES.
- Establish mobile Health teams to cover major bus stands / Terminals, pilgrimage, tourist centres and other public places.

- Labour department to enforce better working conditions for workers such as provision of sheds, safe drinking water, bathing facilities etc. as per the Labour Act.
- Fire and Rescue Services Department has to ensure the readiness of vehicles and firefighting equipment to face any emergency.
- Police personnel on duty in the open, to be educated on precautionary measures to be taken during heat wave.
- Shelters for traffic police may be provided, wherever feasible.
- To collect information on the works sanctioned under MGNREGS programme in High risk areas to plan for mitigation effort during heat period.
- MGNREGS workers shall be educated in following the do's and don'ts. Adequate water, shelter should be provided as per the rules prescribed under MGNREGS. It is to be ensured that the children of MGNREGS workers are also adequately taken care of and not exposed to sun.
- Rescheduling of Working hours to avoid intense heat timings in all the works

Animal Care

- Poultry and cattle will also be adversely affected during heat wave. Cattle and poultry owners to be cautioned accordingly.
- Ensure adequate stock of medicines in all veterinary hospitals for treatment of cattle /poultry birds.
- Ensure provision of water in veterinary dispensaries

Wildlife

- Provision of water supply to animals in reserved/protected areas and in Zoo's

Public Awareness and community outreach measures

- Release of messages on DOs / Don'ts to the general public and vulnerable groups about Heat wave.
- Utilize local radio, FM broadcasts, cinema theatres, print and social media to disseminate heat protection tips and high temperature warnings to the vulnerable sections.
- Preparation of Posters & pamphlets with tips to take care of cattle and poultry during heat waves.
- Local bodies to take a lead role in creating awareness.
- Public should be cautioned not to venture into the forests without permits, since forests are prone to fires during summer

Capacity Building/ Training programmes

- Medical & Health Department officials shall be advised to conduct training programs/orientation course on heat illness for medical staff.
- Training of school teachers to equip them with knowledge of heat protection tips and activities which they can disseminate in classrooms.

Involvement of Governmental and Non-Governmental Organisations

- Actively involve NGOs/Voluntary Organisations and Corporate houses as part of Corporate Social Responsibility to provide shelters, drinking water (Thaneerpandal) during heat days.

Forest fires:

Forest fires are caused especially during summer due to extreme dry conditions and also are man-made.

Causes of forest fires

- **Natural causes**- Many forest fires start from natural causes such as lightning which set trees on fire. High atmospheric temperatures and dryness (low humidity) offer favorable circumstance for a fire to start.
- **Environmental causes** are largely related to climatic conditions such as temperature, wind speed and direction, level of moisture in soil and atmosphere and duration of dry spells.
- **Man-made causes**- These can be intentional or unintentional. Fire is caused when a source of fire like naked flame, cigarette or bidi, camp fires, electric spark or any source of ignition comes into contact with. Intentionally forest fires can be caused due to the old practice of shifting cultivation, the use of fires by villagers to ward off wild animals, fires started accidentally by careless trekkers/visitors to forests who discard cigarette butt etc.
- **Hence, public shall be adequately educated on the causes of forest fire and may be advised not to venture into forests during summer**

The list of Do's and Don'ts related to heat wave is enclosed in Annexure-1 and the Symptoms and First Aid for various Heat Disorders is enclosed in Annexure-2. In addition to the above, NDMA Guidelines for preparation of Action Plan-Prevention and Management of the Heat wave may also be referred for necessary action.

The District Collectors besides taking necessary action have to monitor the situation closely in the event of Heat wave and send regular updates, shall not hesitate to escalate the problem to State level as and

when the situation warrants by bringing it to the notice of Additional Chief Secretary / Commissioner of Revenue Administration, so that assistance can be strengthened from the State level.

Long Term Strategies

- The Urban Local Bodies may adhere to the Policy guidelines issued by the Ministry of Urban Development for strengthening Urban Greens (**Urban Greening Guidelines 2014**)
- **The Energy Conserving Building Code 2017** issued by the Ministry of Power may be followed while new construction/ renovation of existing buildings are taken up.
- The Greater Chennai Corporation, Other Corporations in Tamil Nadu, the Municipalities, Town Panchayats, and Village Panchayats, may have to promote establishment of Bio Shields in their area and increase the Green Cover.
- The National Highways, State Highways, and the Rural Development Department may have to promote Tree planting along the Roads.
- The Educational Institutions both Govt and Private, Govt/Private Office premises, all Industrial Units, Hospitals, Temples and places of Worship, may have to establish Green Cover through Tree planting.
- Greater Chennai Corporation, Other Corporations in Tamil Nadu, the Municipalities, Town Panchayats, and Village Panchayats, may have to enhance the storage Capacity of Water bodies in their jurisdiction and increase the Water availability which indirectly helps mitigation of the adverse impacts of Heat Wave
- Solid Waste Management and removal of dumped wastes can reduce the intensity of heat waves. The Local bodies must ensure

such dumping yards in the vicinity of public places and residential colonies are removed.

- Cool Roof and their extensive benefits may be popularized among people
- In order to reduce the intensity of radiation, the Govt/Private Buildings, Educational Institutions, Hospitals, Temple Premises etc. Chemical Coating may be provided on Roof tops and exposed walking areas.
- The Local bodies may provide shelters in public places with facilities of drinking water.
- The Forest Department may continue to increase the green cover through the various Programmes in collaboration with the Local bodies.

Advisory to People

The adverse impact of heat wave is preventable by educating the public on the preventive actions, following the Do's and Don'ts, reporting early to health facilities and timely diagnosis and treatment. Government of Tamil Nadu has been issuing these advisories since 2017. The Guidelines issued to the District Administration and Advisory to public in Annexure.

1. Nodal Officers

As per the Guidelines of NDMA Nodal officers have to be nominated at the State Level, Department level and at District Level. The District Collector may form a Committee of officers drawing a list of nodal officers from departments within a District.

- The Commissioner Disaster Management, in the Commissionerate of Revenue Administration and Disaster Management department will be the State Level Nodal Officer
- The District Revenue Officer will be the Nodal Officer in respect of all Districts.
- The Departments are expected to nominate a Second Level Officer in respect of their Department as Nodal Officer.

The Complete list of nodal officers their name contact details have to be compiled and sent to Additional Chief Secretary / Commissioner of Revenue Administration and must be available in SEOC and DEOC.

Reporting

The District Collectors shall collect data on daily basis from respective departments in prescribed formats and send it to CRA daily 10.00 AM on the next day for consolidation and reporting to National Disaster Management Authority. The formats prescribed by NDMA are attached.

ANNEXURE – VI (A)

DO's & DON'Ts

Heat Wave conditions can result in physiological strain, which could even result in death. To minimize the impact during the heat wave and to prevent serious ailment or death because of heat stroke, the following measures are useful:

DO's

- ✓ Continue COVID Safety measures to protect against COVID-19
- ✓ Listen to Radio, watch TV, read Newspaper for local weather forecast to know if a heat wave is on the way.
- ✓ Drink sufficient water and as often as possible, even if not thirsty.
- ✓ Wear light weight, light-coloured, loose, and porous cotton clothes. Use protective goggles, umbrella/hat, shoes or chappals while going out in sun.
- ✓ While travelling, carry water with you.
- ✓ If you work outside, use a hat or an umbrella and also use a damp cloth on your head, neck, face and limbs.
- ✓ Use ORS, coconut water homemade drinks like lassi, rice water, lemon water, buttermilk, etc. which help to re-hydrate the body.
- ✓ Recognize the signs of heat stroke, heat rash or heat cramps such as weakness, dizziness, headache, nausea, sweating and seizures. If you feel faint or ill, see a doctor immediately.
- ✓ Urine in darker yellow or orangish yellow indicates severe dehydration.
- ✓ Keep animals in shade and give them plenty of water to drink.

- ✓ Keep your home cool, use curtains, shutters or sunshade and open windows at night.
- ✓ Use fans, damp clothing and take bath in cold water frequently.
- ✓ Provide cool drinking water near work place.
- ✓ Caution workers to avoid direct sunlight.
- ✓ Schedule strenuous jobs to cooler times of the day.
- ✓ Increasing the frequency and length of rest breaks for outdoor activities.
- ✓ Pregnant workers and workers with a medical condition should be given additional attention.

DONT's:

- ✓ Do not leave children or pets in parked vehicles.
- ✓ Avoid going out in the sun, especially between 12.00 noon and 3.00 p.m.
- ✓ Avoid filling vehicle tanks full of petrol
- ✓ Avoid wearing dark, heavy or tight clothing.
- ✓ Avoid strenuous activities between 12 noon and 3 p.m. when the outside temperature is high.
- ✓ Avoid cooking during peak hours. Open doors and windows to ventilate cooking area adequately.
- ✓ Avoid alcohol, tea, coffee and carbonated soft drinks, which dehydrates the body.
- ✓ Avoid high-protein food and do not eat stale food.

ANNEXURE-VI - B

Symptoms and First Aid for various Heat Disorders

Heat Disorder	Symptoms	First Aid
Sunburn/ Heat rash	Skin redness and pain, possible swelling, blisters, fever, headaches.	Take a shower, using soap, to remove oils that may block pores preventing the body from cooling naturally. If blisters occur, apply dry, sterile dressings and get medical attention.
Heat Cramps	Painful spasms usually in leg and abdominal muscles or extremities. Heavy sweating.	Move to cool or shaded place. Apply firm pressure on cramping muscles or gentle massage to relieve spasm. Give sips of water. If nausea occurs, discontinue.
Heat Exhaustion	Heavily drenched in sweating, weakness, chilled body pale, headache and Weak pulse. Normal temperature possible. Fainting, vomiting.	Get victim to lie down in a cool place. Loosen clothing. Apply cool, wet cloth. Fan or move victim to air-conditioned place. Give sips of water slowly and If nausea occurs, discontinue. If vomiting occurs, seek immediate medical attention. Or call 108 for Ambulance
Heat Stroke (Sun Stroke)	High body temperature (106^0F plus). Hot, dry skin. Rapid, strong pulse. Possible unconsciousness. Victim will likely not sweat.	Heat stroke is a severe medical emergency. Call 108 for Ambulance for emergency medical services or take the victim to a hospital immediately. Delay can be fatal. Move victim to a cooler environment. Try a cool bath or sponging to reduce body temperature. Use extreme caution. Remove clothing. Use fans and/or air conditioners.

		DO NOT GIVE FLUIDS.

EMERGENCY TREATMENT

If Heat Stroke is suspected, call 108 immediately. While waiting for the ambulance:

- ✓ Make the victim lie down
- ✓ Take the person's temperature.
- ✓ If possible, move the affected person to somewhere cooler / shaded area.
- ✓ Apply cold compresses with ice cubes
- ✓ Elevate feet
- ✓ Give a cool shower by sprinkling with water or Wrapping in a damp sheet and using a fan to create an air circulation.
- ✓ Encourage to drink fluids, if they are conscious.
- ✓ Do not give aspirin or paracetamol.

ANNEXURE - VI - C

Directorate of Public Health and Preventive Medicine Health Advisory

Prevention and Management of Heat Related Illnesses

The normal body temperature is about 37^{o}C (36.1 -37.8^{o}C). When people are exposed to high temperature heat related disorders occur. Conditions of extreme heat and excessive sweating results in salt and water depletion.

People aged 65 and older, infants and young children, pregnant women, people with chronic medical conditions, outdoor workers are more susceptible to heat related illnesses.

1. Heat Related Illnesses

1.1. Minor Heat Related Illnesses

- Heat Rash
- Heat edema
- Heat tetany (Hyperventilation and heat stress)
- Heat Cramps
- Heat Syncope (Fainting/dizziness)

1.2. Major Heat Related Illnesses

- Exertion associated collapse
- Heat Exhaustion
- Heat stroke

2. Symptoms of Heat Related Illness:

- Hot and Dry skin
- Thirst
- Nausea / Vomiting
- Headache
- Malaise
- Weakness

- Profuse/ Absent sweating
- Muscle cramps
- Light Headedness / Dizziness
- Tachycardia (Heart rate over 100 beats per minute.)
- Tachypnoea (Rapid breathing)
- Oliguria 9Low Urine Output)
- Suncope / Collapse
- Convulsions

3. <u>General precautions:</u>

- **Drink plenty of fluids**: Drink sufficient water as often as possible even if you are not thirsty. Drink water to the point where your urine is light yellow colour. Avoid hot drinks. Drink plenty of buttermilk, rice kanji with salt and buttermilk, tender coconut, lemon juice with salt.

- **Protect yourself outside:** While travelling carry water. Avoid unnecessarily going out in the sun especially between 12 noon and 3 PM. Avoid exercising/ strenuous outdoor activities under hot sun

- **Light clothing:** To help evaporation of sweat, wear light weight, light coloured, loose, porous cotton cloths. Cover the head with cotton cloth/ towel while working will be useful.

- **Keep cool indoors:** Keep your home cool with curtains, shutters on the sunny sides and leave windows open at night. Take bath in cool water.

- **Oral Rehydration Solution:** Drink ORS if one feels exhausted due to hot sun. One packet of ORS should be mixed with one litre of clean water and stirred well till the sediments disappear. Freshly prepared solutions should be used within 24 hours.

4. <u>While at Work:</u>

- The duration of exposure to a hot environment should be minimized.
- Avoid strenuous physical activity under hot sun.

- There should be periods of rest in between work in hot climate. The frequency and length of rest breaks should be increased.
- Cool drinking water should be provided near the working place. Water should be consumed every 20 minutes or more frequently to stay hydrated.
- The temperature and the humidity in the work environment may be controlled by proper ventilation.
- If signs, such as headache and dizziness appear, the person should be removed to a cooler environment, and the necessary treatment including adequate fluids should be given.

5. Onsite Management of Heat Related Illness:

- Try to get help if you feel dizzy, weak, anxious or have intense thirst, headache and any painful muscular spasms, most often in the legs, arms or abdomen
- Move to a cool place as soon as possible and drink water /fruit juice / Oral rehydration solutions containing electrolytes.
- Medical attention is needed if heat cramps are sustained for more than one hour.
- If one of your family members or public presents with hot dry skin and delirium, convulsions and/or unconsciousness, consult the doctor/ call 108 ambulance immediately.
- Unconscious persons to be positioned on their side. Check airway, breathing and pulse.
- While waiting for the doctor/ambulance move him/her to a cool place and put him/her in a horizontal position and elevate legs and hips, remove clothing and initiate external cooling with cold packs on the neck, axilla and groin, continuous fanning and spraying the skin with water at 25-30 C.
- Measure body temperature. Do not give Aspirin or Paracetamol.

6. For Further Information/Emergencies Contact:

- Ambulance Service - 108
- Health Helpline - 104

Annexure VII

Thunderstorm & Lightning

Risk Communication- Establishment of Early Warning Systems, Reaching out to the person in the last mile

MOU with IITM Pune for getting data from the Lightning Location Networks in Tamil Nadu

The Indian Institute of Tropical Meteorology Pune has installed three sensors in Tamil Nadu at 1) TNAU, Coimbatore, 2) Vellore Institute of Technology Vellore and 3) Thiyagararaja College of Engineering, Madurai. The fourth sensor is proposed to be installed at 4) Central University Tiruvarur. In addition to this, IITM Pune has five sensors in neighboring States at 1) Bengaluru (Karnataka) 2) Puducherry, 3) Nellore, (Andhra Pradesh) 4) Pathanamthitta and 5) Thiruvananthapuram (Kerala). With these 9 sensors it is learnt from IITM Pune that, occurrence of lightning over Tamil Nadu can be detected with utmost accuracy by their network. The Government of Tamil Nadu has entered in to an MOU with IITM Pune to get the data and necessary technical support.

The ESSO-IITM has developed a Mobile App, DAMINI-LIGHTNING. This App gives exact location of current lightning strikes, probable locations of impending lightning around area of 40 sq.km at least 30 minutes in advance and movement and direction of thunderstorm. DAMINI also lists various precautionary steps to be taken during lightning and some general information on lightning.

Early Warning System and SMS based Alert to reach out to the last mile:

Promoting the use of DAMINI App among officials at grassroots

Mobile App DAMINI a product of Indian Institute of Tropical Meteorology (IITM), which provides early, warning for lightning, should be popularized extensively among the department officials and officials of Local bodies. This App gives exact location of current lightning strikes, probable locations of impending lightning around area of 40 sq.km and movement and direction of thunderstorm.

Instructions have been issued to the DDMAs to extensively advise down loading of DAMINI App by the Revenue officials up to the level of Village Administrative Officers, and Rural Development Officials up to Block Development Officers, Village Panchayat Presidents and Panchayat Clerks and persons overseeing MGNREGS Workers , the Inter Departmental Teams so that they can alert the local village community.

SMS based Warning Alert Messages

The lightning strikes affect mostly the farm laborers in rural areas who work in the open fields. Hence it is most important to reach out to them. The forecast messages (received from one to three days in advance) and "Now cast" alerts (received 45 minutes before the strike) will be disseminated to the nodal offices at the Block/Taluk level.

Roles & Responsibilities

The Commissioner for Revenue Administration /State Relief Commissioner will coordinate the services of various stakeholders, including National/State agencies, and Central Government Agencies.

The State Emergency Operation Centre - SEOC will serve as the Command and Control Centre to support, coordinate and monitor disaster management activities at the State level. It will, under normal

circumstances, work under the supervision of the State Relief Commissioner. During an emergency situation, it will work as the centre for decision making as long as the need for emergency relief operations continues or until the long-term plans for rehabilitation are finalised. Respective line departments will manage long-term rehabilitation programmes.

A Standard Operating Procedure will be prescribed for handling Warnings and Alert Messages received from IMD, specifically for rapid dissemination of information of "Thunderstorm & Lightning Alerts" to all stakeholders to enable effective decision-making and quick response during an emergency.

A detailed matrix clearly laying down the roles/responsibilities of all stakeholders is given in **Table 2.**

Capacity Building –

- Institutional Capacity Building i.e. familiarizing roles and responsibilities of departments towards coordinated functioning, Building Capacity of the officials, Disaster Response Guards, Community First responders School Children through training, awareness campaigns and Mock drills etc will be taken up.
- The target groups for capacity building will also include elected representatives, government officials concerned with DM functions, media professionals, urban planners, development experts, engineers, architects and builders, NGOs, community-based organisations (CBOs), social scientists, youth organisations such as National Cadet Corps (NCC), National Service Scheme (NSS), Nehru Yuva Kendra Sangathan (NYKS), school teachers and school

children. Besides, the capacity of police personnel, Home Guards and the SDRFs will also be strengthened.

- Disaster management related course contents have already been introduced in the School syllabus.
- Village Panchayats will be encouraged to undertake Home Campaigns

Information, Education and Communication-

- The Educative Audio Visual materials, Posters, Pamphlets available with NDMA and already with Tamil Nadu State Disaster Management Authority (SDMA), translated into Tamil and shared with DDMAs for wider dissemination of knowledge about the impacts and Do's and Don'ts to be followed by common public.
- The Posters and Pamphlets will be distributed up to the Village Panchayat levels in the focused districts,
- Print and Visual media will be utilized for wider publicity

Mitigation Measures

a. The Pre Monsoon Safety audit shall look into all aspects of Safety including Lightning and Thunder.

   Hazard Resistant Construction: United Nations Development Programme (UNDP) and NDMA, Ministry of Home Affairs, Government of India, released a "Manual on Hazard Resistant Construction in India" for the non-engineered buildings in July 2008. The popular load-bearing masonry building systems, prevalent in different parts of the country, are covered in the manual. Relevant building codes and guidelines of the Bureau of Indian Standards

form the basis for the above manual. **Laying underground electricity cables and telephone lines:** These are best suited, particularly for congested townships where thunderstorms/squall may cause falling of electricity and telephone poles, and snapping of cables.

b. **Mainstreaming Development schemes with Disaster Management Schemes:** This would enable the creation of disaster-resilient localities by way of recommendations by local bodies that quality raw material and technology be used in all infrastructure/ construction projects.

c. **Emergency Plan for Hospitals and Health Centres:** Emergency expansion plan for civil hospitals, community health Centres, Primary Health Centres (PHCs) and additional PHCs, including schemes for mobile medical teams for a post-disaster situation, shall be in place. A list of Govt. Hospitals (both Centre and State), private hospitals and nursing homes in each district should be available with the DDMAs. Phone numbers of all these medical facilities should be available in the District Control Room as well as in the SEOC. Based on the hazard assessment, emergency medicines, Operating Theaters and life-saving drugs should be kept ready. DDMAs have to organize training of doctors and paramedical staff on handing patient inflow and treating them in case of lightning attacks.

d. **Making Disaster Risk Reduction (DRR) a part of school and college curriculum:** Youth and children can be taught about extreme weather incidents and the Do’s and Don’ts to be followed

before, during and after a disaster. They act as agents of change and bring about greater awareness in the neighborhood and society.

Structural Mitigation Measures

The most effective structural measures against thunderstorms, lightning, and strong winds are meant to protect against the strong, high-speed winds and against the electric discharge due to a lightning strike.

(a) **Protection against Strong Winds**

During cyclonic conditions, strong winds are able to reach velocities of more than 200 km/hr. The cyclonic winds are also associated with pressure differentials that can cause a huge pressure difference between the outside and the inside of a building resulting in a higher net effect of the wind storm. These high-velocity winds can cause severe damage to light structural and non-structural systems such as claddings. Since the arrival of cyclonic storms is accompanied by suitable warnings, it is expected that people will not be found outdoor during a cyclonic storm. People are, therefore, safe against the most harmful effects of the high wind velocity provided they are inside cyclone shelters or other well-constructed buildings.

During strong winds associated with thunderstorms the wind velocity is high but it rarely reaches cyclonic levels. Typical wind speeds during thunderstorms are in the range of 50-80 km/hr. During severe thunderstorms, the wind speeds may reach around 100 km/hr. The wind velocity is highest in storms that are associated with extensive lightning activities.

Structures do not require any special protection against storms with wind speeds up to 100 km/hr if they are designed and constructed as per approved standards. Buildings that are constructed informally or those which are made using non-engineered materials may not be able to resist the wind forces. These may get damaged even in low wind speed unless special protection mechanisms are adopted. In general, components that provide large areas for the application of wind forces are the first to be damaged. They can become loose and pose a threat to humans as flying debris. In buildings that use lightweight sheets for roofing, the panels may collapse on occupants.

Protection against the lightweight panels under such wind speeds can be ensured by Local Bodies by providing advisories and notices to establishments for properly securing them with their supporting frames. The connection has to ensure that shearing or punching is avoided. Also, it has to be ensured that the panels themselves have the requisite strength to withstand the wind force. The supporting frames also need to have adequate strength to safely transfer the forces imposed on them.

(b) Protection against Lightning — Lightning Shields

Installation of lightning arrestors and sound earthling for each building is essential. Lightning shields are the most commonly employed structural protection measure for buildings and other structures. The DDMAs shall ensure that all the School Buildings, hospitals and other buildings of Government and Local bodies have a Lightning Arrester.

Documentation and Reporting of Loss and Damages

A database of incidences of lightning strikes, resultant damages, identified and mapped vulnerable areas that experience frequent lightning strikes, the level of preparedness of the local administration and the general public in the vulnerable areas needs to be developed and shared with all stakeholders. This database will help in understanding the frequency and severity of these incidents, and prioritize and develop customized action plans.

Formats for reporting and compiling data at the district, State levels is given at **Annexure VI A to VI B**. DDMAs will collect district-level data and report the same to Commissionerate of Revenue Administration which, in turn, will collate and share the same with the Centre (Ministry of Home Affairs/National Disaster Management Authority). MHA/NDMA will maintain the national-level Disaster Database.

Table - 2

Roles and Responsibilities Matrix for Management of Thunderstorm, Lightning, Dust/Hailstorm, Squall and Strong Winds

S. No	Tasks/ Activities	Central/ State Agencies & Their Responsibilities			
		Centre	Responsibility	State	Responsibility
Understanding Risk					
1	Preparation of policy, guidelines and Action Plans	NDMA	Prepare Guidelines for preparation of State Action Plans	State Governments / SDMAs/ ACS / CRA	Prepare State Action Plan and ensure its implementation. Prepare detailed department-wise SOPs
Inter Agency Coordination					

2	Early Warning and Communication	Nodal Agency: IMD (Ministry of Earth Sciences)	Issue area-specific warnings/ alerts and weather forecasts Strengthen infrastructure for forecast/Early Warning	State Governments/SDMAs/DDMAs /District Admn.	Disseminate information received from the IMD to the public. Create a network of community-based early warning systems. Establish State-level monitoring and warning dissemination system to supplement warning(s) from the IMD. Establishing Lightning Early Warning Systems.
		Early Warning Dissemination Ministry of Information and Broadcasting (PIB, AIR, Doordarshan	In case of forecast / warnings of extreme /severe nature: Dissemination of specific information to the public through print/ electronic and social media	State Governments / SDMAs/ ACS / CRA / Department of Information Public Relations	Dissemination of specific information to the public through print/electronic/social and other mass media at the local level
		Department of Telecommunications	Push SMS by telecom service operators to all active mobile connections in the identified area	State Governments / SDMAs/ ACS / CRA and concerned dept.	Ensure push SMS by telecom service operators to all active mobile connections in the affected

					area.
		Ministry of Power	Dissemination of specific message to concerned power generation, transmission, distribution and supply offices	State Governments / SDMAs/ ACS / CRA /TANGEDCO	Activate all concerned DISCOM office/officials. To ensure cutting off of power supply / and its restoration. Ensure emergency power supply to critical facilities
		Ministry of Home Affairs (MHA)	Send specific message through the control room to all concerned central ministries/departments/State(s) for action	State Governments /SDMAs/ ACS / CRA /DDMAs	Activate the district administration along with line departments as soon as a specific warning is received
		Ministry of Agriculture and Farmers' Welfare (MoA&FW)	Disseminate specific information to its concerned departments and State(s)	State Governments /SDMAs/ ACS / CRA / Dept. of Agriculture/Horticulture, Animal Husbandry	Follow and quickly implement the instructions of central/State govt.
3	Relief &Response	Nodal Agency: Ministry of Home Affairs	Coordination with concerned agencies and stakeholders with clear roles and responsibilities Deployment of	Nodal Agency: State Governments / SDMAs / ACS / CRA (to coordinate with other concerned Department / Agencies)	Designate a nodal officer for emergency response Coordination among all

			NDRF as per requirement		stakeholder agencies with clearly defined roles and responsibilities. Rescue and evacuation operations in coordination with the administration, NGOs and volunteers Emergency medical response Other necessary actions.
4	Monitoring and Review of the Guidelines	NEC NDMA	Implementation of the Guidelines Periodic review / updating	State Government / ACS / CRA / SDMAs/DDMAs	Nodal officer(s) to act as the contact person for each dept. / agency Monitor Stae / Disaster level Plan Collect updated data / information and give feedback for reviewing / updating the State Action Plan and National Guidelines.

5	Prevention, Mitigation and Preparedness measures	Nodal Agency : NDMA (with other concerned Ministries / Departments)	Inter-agency coordination Issue relevant advisories Give directions to concerned ministries / departments.	Nodal agency: State Governments / ACS / CRA /SDMAs / Urban Local Bodies / PRIs (with other concerned Department / Agencies)	Inter-agency coordination and implementation of Central / State directions Implement assessment, preparedness and mitigation measures. Review and update precautionary measures and procedures. Public awareness and education for early warning response. Identify vulnerable places Follow alerts / warnings, advisories. Disseminate Do's and Don'ts for general public and enable them to access safe places. Protect property / infrastructure and environment from damage from a fire. Ensure strict
		1. Ministry of Commerce	Construct shelters / sheds, bus stands as per the BIS code		
		2. Ministry of Rural Development	Disseminate information to public on structural mitigation measures Conduct drives to check the structural strength of trees, old structures, etc.,		
		3. Ministry of Housing and Urban Development			

					adherence to fire safety norms. Ensure essential services and facilities at vulnerable places
		4. Ministry of Health & Family Welfare	Create posts for medical staff for emergency situations Hospital preparedness, including training of human resources	State Governments / SDMAs/ ACS / CRA /Dept. of Public Health & Preventive Medicine	Ensure appropriate medical staff and facilities at the place of incident. Strengthen health centres with a network of paramedical prefessional sEnsure stockpiling of life-saving drugs, detoxicants, anaesthesia, and availability of Halogen tablets in vulnerable areas.
		5. Department of Agriculture Cooperation & Farmers Welfare	Ensure adherence to crop safety norms Construction of safe crop storage shelters for farmers	State Governments / SDMAs/ ACS / CRA / Deptments of Agriculture & Animal Husbandry	Promote crop / animal insurance. Construct thunderstor m safe crop storage shelters for farmers.

		6. Ministry of Environment Forests and Climate Change	Set up awareness programmes	Forest Department		Ensure adherence to fire safety norms. Protect property / infrastructure and environment from damage by a fire.
6	Record of data and Documentation	Nodal agency: MHA and all concerned departments	Collect post - disaster data from States and maintain a national - level database.	Nodal agency: State Govt. / ACS / CRA / SDMAs DDMAs		Assessment of damage from weather related incidents. Collect post-disaster data from field and reporting to State / National level
Investing in DRR - Structural measures						
7	Structural Mitigation Measures		Nodal Agency : - Ministry of Housing & Urban Development - Ministry of Panchayat Raj - Bureau of India Standards and other concerned Ministry / Departments Ministry of Commerce and Industry Department of Telecommunications Ministry of Power Ministry of Road Transport and Highways	Inter-agency coordination , and review and update precautionary measures and procedures to be followed Develop and update relevant Indian standards Comply with Building Bye Laws while installing conductors / arresters	Nodal agency: State Govt. / COR / SDMAs CMDA. (with other concerned Departments / Agencies) DDMAs / Local Bodies	Inter-agency coordination and review and update precautionary measures and procedures to be followed. Ensure Building Bye Laws are complied with and make it mandatory for all G+2 and above buildings to install

		Department of Consumer Affairs	atop buildings Promote installation of lightning arresters Start a drive to check the structural strength of hoardings and similar old structures Start a drive for sample inspection of medical & hospital equipment at places		lightning conductors / arresters Promote installation of lightning conductors / arresters in schools, industries, Government and private buildings. Undertaken drives to check the structural strength of hoardings and old structures.
Capacity Development					
8	Capacity Buidling and Traning	Nodal agency: NIDM (with respective training institutes of all central Ministries / Departments	Training programmes for all concerened functionaries / stakeholders	Nodal agency: State Govt./COR/SDMAs DDMAs	Conduct training programme for all concerned officials / volunteers. Conduct training programme and drills on usage of various fire protection equipment and preventive systems.

9	Mass awareness campaigns and IEC activities	Nodal agency: NDMA and concerened Ministries / Departments, including Ministry of Information and Broadcasting	Extensive IEC campaigns to generate awareness through print, electronic and social media Push SMS by various telecom service operators to all active mobile connections	Nodal agency: State Govt. / COR / SDMAs and Department of Information and Public Relations	Extensive IEC campaigns to generate public awareness through print, electronic and social media. Ensure Push SMS by various telecom service operators to all active mobile connections

Annexure VII A

Thunderstorm & Lightning: Do's and Don’ts

If at home or work

Preparation

Look for darkening skies and increased wind.

If you hear thunder, you are close enough to be struck by lightning. Keep monitoring local media for updates and warning instructions. Stay indoors and avoid travel if possible.

Close windows and doors, and secure objects outside your home (e.g. furniture, bins, etc.). Ensure that children and animals are inside.

Unplug unnecessary electrical appliances (to isolate them from the main power supply which may conduct a power surge during a lightning storm).

Remove tree timber or any other debris that may cause a flying accident.

Response

Avoid taking a bath or a shower, and stay away from running water. This is because lightning can travel along metal pipes.

Keep away from doors, windows, fireplaces, stoves, bathtubs, or any other electrical conductors. Avoid using corded phones and other electrical equipment that can conduct lightning.

If Outdoor

Response

Go to safe shelter immediately – avoid metal structures and constructions with metal sheeting. Ideally, find shelter in a low-lying area and make sure that the spot chosen is not likely to flood. Crouch down with feet together and head down to make yourself a smaller target.

air standing up on the back of your neck could indicate that lightning is imminent. Do not lie flat on the ground; this will make a bigger target.

Keep away from all utility lines (phone, power, etc.), metal fences, trees, and hilltops. Do not take shelter under trees as these conduct electricity.

Rubber-soled shoes and car tyres do not offer protection from lightning.

If travelling

Response

Get off bicycles, motorcycles or farm vehicles that may attract lightning. Get to a safe shelter.

If boating or swimming, get to land as quickly as possible and take shelter.

During a storm, remain in your vehicle until help arrives or the storm has passed (the metal roof will provide protection if you are not touching metal inside); windows should be up; park away from trees and power lines.

Treatment

Take the person who is struck by lightning to a hospital. If possible, give basic First Aid.

People struck by lightning carry no electrical charge and can be handled safely. Check for broken bones, loss of hearing and eyesight.

A victim of a lightning strike can suffer varying degrees of burn. Check the impact point and where the electricity left the body for injury marks.

Note: States may customize the contents of the Guidelines for their own use depending on their local experiences and best practices. Further action needs to be undertaken by respective State Governments.

Annexure VII - B

Format A: For reporting Thunderstorm, Lightning, Squall Dust/Hailstorm and Strong Winds

(District Report to State Government)

Name of the District: ..... Period of Reporting: .....

Sl. No.	Name and address of affected persons (In case of Govt. office – organisation name/ department and place)		Age / Sex (M, F, TG)	Occupation (Farmer, Labourer, Seller, Student, etc.)	Category (BPL/ APL)	Date and time of Incident	Type(s) of Incident(s) (Thunderstorm, Lightning, Squall, Dust/Hailstorm and Strong winds)	Place of Incident (Indoor/ Outdoor / Rooftop /Field)	Injured (Severe / Minor)	Deaths	House damaged/ destroyed (Kutcha / Pucca)	Crop loss (in Hect.)	Livelihood losses			Loss to Govt. Infrastruc ture / Assets	Te esti d co lo
													Livestock affected/ deaths	Kiosk / Shop	Others (Ag. Equip/ machin ery, etc.)		
1	2		3	4	5	6	7	8	9	10	11	12	13	14	15	16	
	Total																

Other relevant information (if any):.....

Name: ..... Designation: ..... Signature with Date:.....

Submitted to:

Annexure VII - C

Format B: For reporting Thunderstorm, Lightning, Squall Dust/Hailstorm and Strong Winds

(To be compiled at the State level and sent to the central Government)

Please **Tick** mark the Type(s) of Incident(s) (Thunderstorm, Lightning, Squall Dust/Hailstorm and Strong Wind)

Note: Please fill a separate sheet for each incident/disaster

	State:	**Period of Incident(s): ..... Date of Compilation: .....**

Sl. No.	Name of the district	Total Affected population					Injured			Total Human loss										Livelihood Losses				Private houses damaged/ destroyed (Kutcha/ Pucca)	Loss to Govt. Infra structure / Assets/ property	Total estimated cost of losses
		Occupations groups					Severe	Minor	**Total**	Sex				Category			Place of Deaths			Total livestock Loss (In Nos.)	Total Crop Loss (In Hect.)	Kiosk /Shop	Others			
		Farmers	Labourers	Hawkers	Others	**Total**				Male	Female	TG	**Total**	BPL	APL	**Total**	Outdoor	Indoor	**Total**							
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**
	Total																									

Other relevant information (if any):.....

Name: …… Designation: …… Signature with Date:……

Annexure VII

Cyclone Warnings

Advisories Issued by INCOIS

Real-time tsunami warnings are issued by INCOIS by first announcing the area of warning, alert and watch based on travel time together with an estimate of the height of the tsunami calculated on pre-run numerical models of tsunami propagations. Based on the hazard - '*warning', 'alert'* and '*watch'* are issued.

Area under Warning: Area that is within 60 minutes from the tsunami generic sources and wave height expected is more than 2 meters.

Area under Alert: Area within 60 minutes travel time of the tsunami and wave height is less than 2m and Area more than 60 minutes travel time of tsunami and the expected wave height is more than 2 m.

Area under Watch: Areas that are outside the 60 minutes travel time of tsunami and are kept under watch when the wave height is expected to be less than 2 m.

INCOIS issues of bulletins over a period of four to five hours as many as six bulletins.

The First Bulletin (Type – I) is issued before the lapse of 20 minutes of the earthquake when the seismic network detects an earthquake occurring in the Andaman Sumatra Subduction Zone (ASSZ). The First bulletin informs that an earthquake has occurred and the preliminary estimates of the location of the epicentre, magnitude, depth of focus and time are informed.

The Second Bulletin (Type – II) is issued not later than 30 minutes of the earthquake in the subduction zone with a magnitude of > 6.3 and the depth of focus is less than 100 km detailing the areas under warning and threat.

The Third Bulletin (Type – II Supplementary) is issued with updated earthquake parameters and revised information on tsunami wave height and accordingly the status of the threat is updated.

The Fourth Bulletin (Type III) is issued when tsunami is confirmed. If the threat is upgraded to **warning** status evacuation will be started immediately.

The Fifth Bulletin (Type – III Supplementary) is issued when the tsunami reaches the coast with hourly updates and also whenever real-time water level information are available.

The Final-"ALL CLEAR" bulletin indicates withdrawal tsunami warning.

In addition, an early warning system for earthquake/tsunami in Indian Ocean is operational at Madras Atomic Power Station, Kalpakkam. This PC-based Earthquake Notification System (ENS) is installed in Control room of MAPS.

Cyclone Warnings by IMD

Pre-Cyclone Watch

The cyclone warnings are issued to state government officials in four stages. The First Stage warning known as "PRE CYCLONE WATCH" issued 72 hours in advance contains early warning about the development of a cyclonic disturbance in the north Indian Ocean, its likely intensification into a tropical cyclone and the coastal belt likely to experience adverse weather. This early warning bulletin is issued by the Director General of Meteorology himself and is addressed to the Cabinet Secretary and other senior officers of the Government of India including the Chief Secretaries of concerned maritime states.

Cyclone Alert

The Second Stage warning known as "CYCLONE ALERT" is issued at least 48 hrs. in advance of the expected commencement of adverse weather over the coastal areas. It contains information on the location and intensity of the storm likely direction of its movement, intensification, coastal districts likely to experience adverse weather and advice to fishermen, general public, media and disaster managers. This is issued by the concerned ACWCs/CWCs and CWD at HQ

Cyclone Warning

The Third Stage warning known as "CYCLONE WARNING" issued at least 24 hours in advance of the expected commencement of adverse weather over the coastal areas. Landfall point is forecast at this stage. These warnings are issued by ACWCs/CWCs/and CWD at HQ at 3 hourly interval giving the latest position of cyclone and its intensity, likely point and time of landfall, associated heavy rainfall, strong wind and storm surge alongwith their impact and advice to general public, media, fishermen and disaster managers.

Post Landfall Outlook

The Fourth Stage of warning known as "POST LANDFALL OUTLOOK" is issued by the concerned ACWCs/CWCs/and CWD at HQ at least 12 hours in advance of expected time of landfall. It gives likely direction of movement of the cyclone after its landfall and adverse weather likely to be experienced in the interior areas.

Different colour codes as mentioned below are being used since post monsoon season of 2006 the different stages of the cyclone warning bulletins as desired by the National Disaster Management.

Stage of Warning	Colour Code
Cyclone Alert	Yellow
Cyclone Warning	Orange
Post landfall out look	Red

ANNEXURE - IX

Advisory for Landslide Preparedness and Prevention

(Source: Geological Survey of India)

Areas that are generally prone to landslides

- Old and/or recent existing landslides
- Base or top of slopes
- Base of minor drainage hollows
- Base or top of an old fill slope
- Base or top of a steep cut slope

Areas generally safe from landslides

- Hard, non-jointed bedrock that has not moved in the past
- Flat-lying areas away from slopes and steep river banks
- The nose of ridges, set back from the tops of slope

Landslide warning signs

- Sticking or jamming of doors or windows
- Appearance of cracks in plaster, tile, brick, or foundations
- Pulling away from the building of outside walls or stairs.
- Slow development of widening cracks on the ground or on paved areas such as streets.
- Breakage of underground utility lines
- Appearance of bulging ground at the base of a slope
- Emergence of flowing ground water in new sites
- Sudden decrease in creek water levels though rain is still falling or just recently stopped
- Tilting or moving of fences, retaining walls, utility poles, or trees.

- Faint rumbling sound that increases in volume as the landslide nears.The ground slopes downward in one specific direction and may begin shifting in that direction under your feet

Immediate steps for imminent Landslide

- Contact your local Fire, Police or Public Works Department
- Inform affected neighbours
- Leave the area quickly

Actions to be taken before Intense Rainfall

- Become familiar with the land around you. Slopes, where landslides or debris flows have occurred in the past, are likely to experience them in the future
- Buildings should be located away from known landslides, debris flows, steep slopes, streams and rivers, intermittent-stream channels, and the mouths of mountain channels
- Observe the patterns of storm-water drainage on slopes near your home, and watch especially the places were runoff water converges, increasing flow over soil-covered slopes. Observe the hillsides around your home for any signs of land movement, such as small landslides or debris flows or progressively tilting trees
- Contact your local authorities to learn about the disaster management response, and develop your own emergency plans for your family and business.

During Intense Rainfall

- Be observant. Many landslide and debris flow casualties occur when people are sleeping. Listen to radio for warnings of intense rainfall. Intense short bursts of rain may be particularly dangerous, especially after longer periods of heavy rainfall and damp weather.

- Unusual sounds might indicate moving debris, such as trees cracking or boulders knocking together. A trickle of flowing or falling mud or debris may precede larger landslides. Be alert for any sudden increase or decrease in water flow in streams or channels. Such changes may indicate landslide activity upstream, so be prepared to move quickly
- If you live in areas susceptible to landslides and debris flows, consider leaving if it is safe to do so. If you remain at home, move to a part of the house farthest away from the source of the landslide or debris flows, such as an upper floor, but keep an escape route open should it become necessary to leave the house.
- Be alert when on the roads. Embankments along roadsides are particularly susceptible to landslides. Watch the road for collapsed pavement, mud, fallen rocks, and other indications of possible landslides or debris flows.

After Intense Rainfall

- Be alert for signs indicating land movement. Landslides can occur weeks or months after intense storms

Things to Remember

- Mudflows tend to flow in channels, but will often spread out over a floodplain. They generally occur in places where they have occurred before
- Landslides and mudflows usually strike without much appreciable warning. The force of rocks, soil, or other debris moving down a slope can devastate anything in its path. Take the following steps to be ready.
- Plant ground cover on slopes and build retaining walls.
- In mudflow areas, build channels or deflection walls to direct the flow around buildings
- Remember: If you build walls to divert debris flow and the flow lands on a neighbour’s property, you may be liable for damages

Precautions to be taken during landslides:

If inside a building:

- Stay inside
- Take cover under a desk, table, or other piece of sturdy furniture

If outdoors:

- Try and get out of the path of the landslide or mudflow
- Run to the nearest high ground in a direction away from the path
- If rocks and other debris are approaching, run for the nearest shelter such as a group of trees or a building
- If escape is not possible, curl into a tight ball and protect your head.

After Landslide

- Stay away from the slide area. There may be danger of additional slides.
- Check for injured and trapped persons near the slide area. Give first aid if trained.
- Remember to help your neighbors who may require special assistance--infants, elderly people, and people with disabilities.
- Listen to a radio or television for the latest emergency information.
- Stay away from the slide area. There may be danger of additional slides.
- Check for injured and trapped persons near the slide area. Give first aid if trained.
- Remember to help your neighbors who may require special assistance--infants, elderly people, and people with disabilities.
- Listen to a radio or television for the latest emergency information.
- Stay away from the slide area. There may be danger of additional slides.
- Check for damaged utility lines. Report any damage to the utility company

- Check the building foundation, chimney, and surrounding land for damage
- Replant damaged ground as soon as possible since erosion caused by loss of ground cover can lead to flash flooding.

ANNEXURE – X

Earthquake Do's & Don'ts

(Source: National Center for Seismology)

Before an earthquake:

- Follow and advocate local safe building codes for earthquake-resistant construction.
- Follow and advocate upgrading poorly built structures.
- Make a plan and preparation for emergency relief
- Identify the medical centres, fire fighting stations, people posts and organize relief centres in of your area.
- Know the electric and water shut off locations in your house.
- Heavy objects, glasses, cutlery should be kept on lower shelves.
- Flower pots should not be kept on the parapet.

During an earthquake:

- Keep calm and reassure others.
- During the event, the safest place is an open space, away from buildings.
- If you are indoors, take cover under a desk, table, bed, or doorways and against inside walls and staircase. Stay away from glass doors, glass panes, windows, or outside doors. Do not rush to go out of the building, to avoid the stampede.
- If you are outside, move away from buildings and utility wires.
- Once in the open, stay there till the vibrations stop.
- If you are in a moving vehicle, stop as quickly as possible and stay in the vehicle.
- Free all pets and domestic animals so that they can run outside.
- Do not use candles, matches or other open flames. Put out all fires.

After an earthquake:

- Keep stock of drinking water, foodstuff and first-aid equipment inaccessible place.
- Do not spread and believe rumors.
- Turn on your transistor or television to get the latest information/bulletins and aftershock warnings.
- Provide help to others and develop confidence.
- Attend the injured persons and give them aid, whatever is possible, and also inform the hospital.
- Be prepared for aftershocks as these may strike.
- Close the valve of the kitchen gas stove, if it is on. If it is closed, do not open. Do not use open flames.
- Do not operate electrical switches or appliances, if gas leaks are suspected.
- Check water pipes, electric pnes and fittings. If damaged, shut off the main valves. Do not touch PVE wires of electricity.
- If needed, open doors and cup boards carefully as objects may fall.

ANNEXURE - XI

Standard Operating Procedure for Utilization of Resources under India Disaster Resource Network (IDRN)

1. Background

1.1 IDRN is a nation-wide web based electronic inventory of resources that enlists critical supplies, equipment and human resources collated from districts, states and national level along with private sector and public sector undertakings through line departments and agencies.

1.2 Primary focus of IDRN portal is to enable the decision makers to find answers on availability of equipment and human resources required to combat any emergency situation. This database will also enable them to assess the level of preparedness for specific disasters.

2. Resources and Equipment

2.1 An inventory list of categories of resources and items have been worked out keeping the varied geo-climatic conditions aligned with various types of hazards, disasters including the pandemics. Similarly, District Administrations shall also compile and update the data related to trained Aapda Mitra Volunteers and Civil Defence Volunteers. Inventories related to essential services and service providers like Health, Water and Sanitation, Power, Telecommunication, Transportation and Civil Supplies etc. must also be updated.

3. Resources available with Private Sector

3.1 District Administration will also include and update data related to the resources (personnel, material and services) available with Private Sector in respective districts.

4. Inventory of Resources

4.1 Collection of Data

4.1.1 District Administration is responsible for collection of data related to resources available in the District which are required during impending disaster situations/ disasters. District Collectors/ Magistrate through DDMAs are responsible to collect the latest information about resources available with various line departments/ agencies and uploaded in the portal, using services of District Informatics Officers.

4.1.2 District Collector /Magistrate will depute a nodal official at district level having access to login ID and Password who will be responsible for collecting, compiling and updating their inventory data on the central server on the information/ data received from various line departments or agencies. Adequate authorization and security needs to be ensured for maintaining the portal to prevent unauthorized access to this inventory.

4.2 Updation of Data

4.2.1 District administration will update the data at regular interval, preferably every month.

4.3 Entry of Data

4.3.1 Officer identified by the District Administration will be responsible for ensuring the entry of data in the portal.

4.4 Validation of Data

4.4.1 Data will be validated by District Magistrate.

4.5 Participation of IDRN resource providers in mock exercises:

It is necessary for the DDMA to see that the resource providers of IDRN, including PSUs and private entities are associated in the mock exercises conducted at the State/ district level, so that the requisition at the time of actual response can be effective.

5. Utilization of Resources

5.1 Requisition of Resources

5.1.1 Section 33 empowers the District Authority that it may by order require any officer or any Department at the district level or any local authority to take such measures for the prevention or mitigation of disaster, or to effectively respond to it, as may be necessary, and such office or department shall be bound to carry out such order.

5.1.2 Section 65 of the DM Act, 2005 mentions about 'Power of requisition of resources, provisions, vehicles, etc., for rescue operations, etc.' It says:

"(1) If it appears to the National Executive Committee, State Executive Committee or District Authority or any officer as may be authorized by it in this behalf that –

a. any resources with any authority or person are needed for the purpose of prompt response;
b. any premises are needed or likely to be needed for the purpose of rescue operations; or
c. any vehicle is needed or is likely to be needed for the purposes of transport of resources from disaster affected areas or transport of resources to the affected area or transport in connection with rescue, rehabilitation or reconstruction.

such authority may, by order in writing, requisition such resources or premises or such vehicle, as the case may be, and may make such further orders as may appear to it to be necessary or expedient in connection with the requisitioning.

(2) Whenever any resource, premise or vehicle is requisitioned under sub-section (1), the period of such requisition shall not exceed beyond the period for which such resource, premises or vehicle is required for any of the purposes mentioned in that sub-section.

(3) In this section, -

a. "resource" includes men and material resources;
b. "services" includes facilities;
c. "premises" means any land, building or part of a building and includes a hut, shed or other structure or any part thereof;
d. "vehicles" means any vehicle used or capable of being used for the purpose of transport, whether propelled by mechanical power or otherwise.

5.1.3 District Magistrate will requisition the required resources available with various line departments and agencies.

5.2 Requisition of Resources available with Private Sector

5.2.1 District Administration will directly requisition the resources available with the Private Sector and Private Sector shall ensure that these resources are deployed effectively and efficiently in a timely manner. Respective Private Sector shall ensure that the resources available with it are deployed with adequate skilled manpower and fuel, if required. Cost of services provided by Private Sector will be considered as part of Corporate Social Responsibility. Normal wear and tear of the equipment shall also be borne by the respective Sector.

5.3 Requisition of Resources from neighbouring Districts

5.3.1 District Magistrate/ Collector being the Incident Commander may requisition additional resources and equipment from neighbouring districts in case of non-availability or shortage of such resources/ equipment.

5.4 Transportation of Resources from neighbouring Districts

5.4.1 District concerned, from which resources/ equipment have been requested from the affected district, shall ensure that the resources/ equipment are deployed along-with skilled personnel to the affected district. The cost of any such deployment will also be borne by the district from which the support has been requested by the affected district.

5.5 Authorization for Requisitioning

5.5.1 District Magistrate/ Collector being the Incident Commander shall requisition the resources/ equipment, however, he/ she may also authorize Officer from DDMA to requisition the resources/ equipment. District Administration may also authorize person deployed at the ground zero to requisition the resources/ equipment.

5.6 Justification of Requisitioning

5.6.1 District Administration shall ensure the justification of requisitioned resources to avoid unnecessary and unmindful requisitioning.

5.7 Deployment of Resources Requisitioned

5.7.1 District Administration shall ensure that all the resources requisitioned are optimally utilized. No resources should be kept unutilized.

5.8 Demobilization of Resources

5.8.1 District administration shall ensure the demobilization of all the requisitioned resource on the recommendations of Incident Commander once the response operation is complete.

5.9 Provision for compensation of wear and tear of resources

5.9.1 Normal wear and tear of equipment shall be borne by the service provider concerned, however, major damage to the equipment shall be borne by the District Administration, who had requisitioned the equipment.

5.10 Coordination between Requisitioner and End Users

5.10.1 Before requisitioning, District Administration shall ensure that there is proper coordination with the end users of those resources. As the resources requisitioned will be operated/ utilized by the first responders (including SDRF, NDRF and others), these personnel/ agencies may also be consulted before requisitioning.

6. Capacity Building for Utilization of Resources

6.1 Assessment of Resources

6.1.1 District Administration will assess the status of availability of resources periodically. During the Mock Exercises an assessment of resource availability shall be done mandatorily.

6.2 Procurement of Resources

6.2.1 Private Sector may be encouraged to procure some resources/ equipment based on the hazard-profile of the district from Corporate Social Responsibility fund. This will help District Administration during disasters or impending disaster situations. District Administration shall ensure that inventory of such resources are properly updated on the IDRN portal.

6.3 Training for utilization of Resources

6.3.1 District Administration will ensure requisite training for response personnel for proper handling, operating and utilization of resources at regular interval.

7. Resources and Equipment required for Disaster-specific Response

A suggestive list of resources/ items required for response activities has been prepared in consultation with National Disaster Response Force and placed as Annexure.

8. Report on utilisation of resources of IDRN

A report will be furnished to the Ministry of Home Affairs under intimation to NDMA by the State/UT on half early basis on the utilisation of IDRN resources as well as use during mock exercises as mentioned in Para 4.5 and Para 6.1.1 above. The reports will also be furnished alongwith the Memorandum whenever the State Governments submits to the Ministry of Home Affairs for assistance in case of severe disasters. The Inter Ministerial Central Team will also review this aspect during their field visits and interaction with the

State

REQUIRED INVENTORY OF RESOURCES/ ITEMS

CSSR			
Resource Type-Equipment			
Category – Cutters			
S.No	**Item Code**	**Item Name**	**Item present in the department/Agency (Yes/No)**
1.		Gas Cutters (Oxy gasoline)	
2.		Chipping hammer	
3.		Rotary rescue saw petrol driven	
4.		Angle cutter (electric)	
5.		Reciprocating saw	
6.		Circular saw	
7.		Rotary hammer drill	
8.		Circular Saw – Bullet & Diamond	
Category – Spreaders			
9.		Spreaders – Hydraulic	
10.		Spreaders – Battery	
Category – Lifting Equipment			
11.		Air Lifting bags (Different Capacity)/Tools	
12.		Jack with 5/10/20 ton lift	
13.		Cranes & Fork lifts	
14.		Skid Steer Loader Machine	
Category – Light Equipment			
15.		Sledge hammer	
16.		Heavy Axe	
17.		Rope Manila and nylon	
18.		Gloves-Rubber, Tested up to 25,00 volt	
19.		Portable Air compressor machine	

20.		Stretcher harness (set)	
21.		Chains – 6 feet (3 tin lift)	
Category – Lighting arrangements			
22.		Inflatable Light Tower	
23.		Light Mast	
24.		Search light	
25.		Electric Generator	
26.		Electric Torch	
27.		Lanterns	
Category – Heavy Engineering Equipment			
28.		Trucks – Aerial Lift	
29.		Bulldozers wheeled/chain	
30.		Dumper	
31.		Earth movers	
32.		Cranes – Heavy Duty, Fork type	
33.		Tipper – Heavy Duty	
34.		Recovery Vans Beam Type	
35.		Snow Beaters Wheeled	
FLOOD RESCUE			
Resource Type-Equipment			
Category Name – Specialized flood/Rescue Equipment			
36.		Diving suit	
37.		Lifebuoy	
38.		Life Jackets	
39.		Come Along (various lengths upto 150 metres)	
40.		Pneumatic Rope Launcher	
41.		Inflatable boat (12 persons)	
42		Fiber boat (12 persons)	
43.		Motor Boats	

FIRE FIGHTING			
Resource Type-Equipment			
Category – Protective Equipment			
44.		Suit – fire entry	
45.		Suit – fire proximity	
46.		Suit - NBC	
47.		Clothing – Chemical protecti8ve (A, B, C)	
Category – Breathing Apparatus set			
48.		Breathing Apparatus - self contained	
49.		Breathing Apparatus	
Category – Pumps			
50.		Pump – high pressure, portable	
51.		Pump – floating	
52.		Drainage Pumps	
53.		Air Compressor	
Category – Ladder			
54.		Extension Ladder	
55.		Rope ladder	
56.		Aluminum ladder	
Category – Fire Extinguishers			
57.		ABC Type	
58.		CO2 Type	
59.		Foam Type	
60.		DCP Type	
Category – Fire/rescue tenders			
61.		Fire Tender	
62.		Foam Tender	
63.		Rescue Tender	
64.		Hydraulic Platform	
65.		Hazmat Vehicle	

MEDICAL FIRST RESPONDER (MFR)			
Resource Type-Equipment			
Category – Health Equipment			
66.		Spine boards	
67.		Stretcher medical evacuation	
68.		First aid kits	
Category – Portable Equipment			
69.		Portable oxygen cylinders	
70.		Portable ventilators	
Category – Lifesaving Equipment			
71.		Mechanical ventilators	
Category – Mobile units			
72.		Mobile lab service	
73.		Mobile medical van	
Category – Hygiene			
74.		Water filter	
75.		Water tank	
SHELTERS			
Resource Type – Equipment			
Category – Tents			
76.		Tent Family Ridge	
77.		Tent Store	
78.		Tent extendable 4 meters	
79.		Tent Arctic	
Category – Sheets			
80.		Tarpaulin	
81.		Plastic Sheet	
82.		Polythene Sheet	
83.		Corrugated Galvanized Iron sheet	
Category – Pre-fab shelters			

84.		Porta Cabins	
TRANSPORTATION			
Resource Type – Equipment			
Category – Light vehicles			
85.		Four wheel drive vehicle (4X4)	
86.		Motor Cycle	
Category – Medium vehicle			
87.		Truck (3/5 tonner)	
88.		Mini Bus (32/52 seater)	
Category – Heavy vehicle			
89.		Bus	
90.		Tractor	
91.		Trailer	
92.		Heavy Truck	
Category – Special vehicles			
93.		Light Ambulance Van	
94.		Water Tanker – Medium/Large capacity	
95.		Road Roller	
COMMUNICATION			
Resource Type – Equipment			
Category – Wireless system			
96.		VHF Sets Static	
97.		VHF Sets Mobile	
98.		Walkie Talkie Sets	
99.		HF Sets Static	
Category – Satphones			
100.		V-SAT	
101.		INMARSAT	
Category – Mobile phones			
102.		Mobile Phone GSM	

103.		Mobile CDMA	
Category – GPS			
104.		GPS Hand Sets	
Category – Video system			
105.		Video Phone Set	
106.		Video Camera Digital	
CBRN			
Resource Type-Equipment			
Category – NBC specialized Equipment			
107.		NBC Suits – Mark V	
108.		A Level suits	
109.		Body bags	
110.		Decontamination kit	
111.		Respirator (Gas mask with canisters)	
112.		Multi gas detector	
113.		Teletector	
114.		GM survey meter	
115.		Contaminator monitor	
116.		Mini Rad meter	
117.		NBC Over boots	
118.		Resuscitator	
MOUNTAIN RESCUE ITEMS			
119.		Sleeping Bag	
120.		Ropes (Climbing/Rappelling)	
121.		Carabiners	
122.		Rock/Ice piton	
123.		Avalanche cord/rod	
124		Ice axe	