

Proceedings

First Regional Conclave of State Disaster Management Authorities (SDMAs)



NATIONAL DISASTER MANAGEMENT AUTHORITY (NDMA)
Government of India
NDMA Bhawan, A1, Safdarjung Enclave
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ABBREVIATIONS

ACS	: Additional Chief Secretary	DRO	: District Revenue Officer
ADCIRC	: Advanced Circulation	DRR	: Disaster Risk Reduction
ADPC	: Asian Disaster Preparedness Centre	DSS	: Decision Support System
ANI	: Andaman Nicobar Island	ECMWF	: European Centre for Medium-Range Weather Forecasts
A&N Island	: Andaman & Nicobar Island	EEZ	: Exclusive Economic Zone
APCCF	: Additional Principal Chief Conservator of Forest	EOC	: Emergency Operation Centre
APSDMA	: Andhra Pradesh State Disaster Management Authority	ERSS	: Emergency Response Support System
ARG	: Automatic Rain Gauge	ERT	: Emergency Response Team
ATI	: Administrative Training Institute	ESCOM	: Electricity Supply Company
AWS	: Automatic Weather Station	ESSO	: Earth System Science Organization
BMS	: Bengaluru Megha Sandhesh	EWDS	: Early Warning Dissemination System
CAP	: Common Alerting Protocol	FAMEX	: Familiarization Exercises
CBT	: Capacity Building & Training	FSI	: Forest Survey of India
CDAC	: Centre for Development of Advanced Computing	GAGAN	: GPS Aided GEO Augmented Navigation
CDOT	: Centre for Development of Telematics	GEDDMP	: Geospatial Enabled District Disaster Management Plan
CDRI	: Coalition for Disaster Resilient Infrastructure	GeM	: Government e-Marketplace
CDRRP	: Coastal Disaster Risk Reduction Project	GFR	: General Financial Rules
CFAN	: Climate Forecast Applications Network	GIS	: Geographic Information System
CMDRF	: Chief Minister's Distress Relief Fund	GOI	: Government of India
CRA	: Commissioner of Revenue Administration	GoTN	: Government of Tamil Nadu
CREDAI	: Confederation of Real Estate Developers' Associations of India	GPS	: Global Positioning System
CRG	: Chemical Reference Guide	GSM	: Global System for Mobile
CRMI	: Cyclone Risk Mitigation Infrastructure	HLC	: High Level Committee
CSO	: Civil Society Organisation	IAG	: Inter Agency Group
CSR	: Corporate Social Responsibility	ICCC	: Integrated Command Control Centre
CBO	: Community Based Organisation	ICZM	: Integrated Coastal Zone Management
CWC	: Central Water Commission	IDRN	: India Disaster Resource Network
CWPRS	: Central Water and Power Research Station	IFS	: Indian Forest Service
DC	: District Collector	IIMP	: Integrated Island Management Plan
DCRA	: Dynamic Composite Risk Atlas	IIT	: Indian Institute of Technology
DDMA	: District Disaster Management Authority	IITD	: Indian Institute of Technology-Delhi
DDMP	: District Disaster Management Plan	IMAC	: Information Management and Analysis Centre
DDNH& DD	: Dadar and Nagar Haveli & Daman and Diu	IMD	: India Meteorological Department
DEOC	: District Emergency Operation Centre	INCOIS	: Indian National Centre for Ocean Information Services
DEWS	: Disaster Early Warning System	INSAT	: Indian National Satellite System
DGP	: Director General of Police	IPCC	: Intergovernmental Panel on Climate Change
DM	: Disaster Management	IRO	: Integrated Regional Office
DMP	: Disaster Management Plan	IRS	: Incident Response System
DRM	: Disaster Risk Management	ISRO	: Indian Space Research Organisation

J&K	: Jammu & Kashmir	PDNA	: Post Disaster Needs Assessment
KSNDMC	: Karnataka State Natural Disaster Monitoring Centre	PMU	: Project Management Unit
KYLA	: Kerala Youth Leadership Academy	PP	: Policy & Plan
LSGI	: Local Self Government Institutions	PPE	: Personal Protective Equipment
MAH	: Major Accident Hazard	PRI	: Panchayati Raj Institution
MCS	: Multi-purpose Cyclone Shelter	PSAP	: Public Safety Answering Points
MFS	: Multi-purpose Flood Shelter	QDA	: Quick Deployment Antenna
MHA	: Ministry of Home Affairs	R&R	: Reconstruction & Rehabilitation
MoEFCC	: Ministry of Environment, Forest and Climate Change	RIMES	: Regional Integrated Multi-Hazard Early Warning System for Africa and Asia
MoU	: Memorandum of Understanding	RSS	: Really Simplified Syndicate
MPCS	: Multi-purpose Cyclone Shelters	RTDAS	: Real Time Data Acquisition System
MRCC	: Maritime Rescue Coordination Centre	SAPCC	: State Action Plan on Climate Change
MRO	: Mass Rescue Operation	SARAT	: Search and Rescue Aid Tool
MSL	: Mean Sea Level	SCADA	: Supervisory Control and Data Acquisition
MSME	: Micro, Small & Medium Enterprises	SDG	: Sustainable Developments Goals
MTU	: Mobile Treatment Units	SDMA	: State Disaster Management Authority
NCC	: National Cadet Corps	SDMF	: State Disaster Mitigation Fund
NCCR	: National Centre For Coastal Research	SDMP	: State Disaster Management Plan
NCRMP	: National Cyclone Risk Mitigation Project	SDRF	: State Disaster Response Force / State Disaster Response Fund
NCSCM	: National Centre for Sustainable Coastal Management	SDRMF	: State Disaster Risk Management Fund
NDMA	: National Disaster Management Authority	SEC	: State Executive Committee
NDMF	: National Disaster Mitigation Fund	SEOC	: State Emergency Operation Centre
NDMP	: National Disaster Management Plan	SFDRR	: Sendai Framework for Disaster Risk Reduction
NDRF	: National Disaster Response Force/Fund	SHG	: Self Help Group
NDRMF	: National Disaster Risk Management Fund	SIDM	: State Institute for Disaster Management
NDVI	: Normalized Difference Vegetation Index	SLT	: Shelter Level Training
NDWI	: Normalized Difference Water Index	SOP	: Standard Operating Procedure
NDZ	: No Development Zone	SRTA	: Special Rescue Training Academy
NE	: North- East	SSEWS	: Storm Surge Early Warning System
NEC	: National Executive Committee	SSS	: Samoohik Saannadha Sena
NEM	: North East Monsoon	TEOC	: Taluka Emergency Operation Centre
NGO	: Non- Governmental Organisation	TNDRRA	: Tamil Nadu Risk Reduction Agency
NIDM	: National Institute of Disaster Management	TNSDMA	: Tamil Nadu State Disaster Management Authority
NIO	: National Institute of Oceanography	TNSMART	: Tamil Nadu System for Multi-hazard potential impact assessment, Alert, Emergency Response Planning and Tracking
NIOT	: National Institute of Ocean Technology	ULB	: Urban Local Bodies
NSS	: National Service Scheme	UNESCO	: United Nations Educational, Scientific and Cultural Organization
ODRAF	: Odisha Disaster Rapid Action Force	UT	: Union Territory
ODRP	: Odisha Disaster Recovery Project	VHF	: Very High Frequency
OFDRA	: Odisha Fire and Disaster Response Academy	XVFC	: Fifteenth Finance Commission
OFDRI	: Odisha Fire and Disaster Response Institute	YMCA	: Young Men's Christian Association
OSCAR	: Operational Ocean Services & Applied Research	YWCA	: Young Women's Christian Association
OSDCP	: Oil Spill Disaster Contingency Plan		
OSWALI	: Odisha Watermanship And Life Guard Institute		

BACKGROUND

Disaster Management (DM) Act, 2005 provides for setting up of a three-tier institutional arrangement for disaster management in the country, at National, State and District levels. Accordingly, National Disaster Management Authority (NDMA), State Disaster Management Authorities (SDMAs) and District Disaster Management Authorities (DDMAs) have been constituted. It is important to work in coherence and close coordination towards developing a disaster resilient India.

There have been many important initiatives and efforts at all levels which have resulted in disaster risk reduction and effective management of many disasters. States also take several initiatives for preparedness, mitigation and risk reduction and have set examples to learn from them. Every disaster results in many good practices and many lessons learnt. Exemplary measures taken by a particular State/ UT in the field of preparedness, mitigation, and risk reduction need to be replicated by other States/UTs.

NDMA is committed towards building capacities at State and local level for effective disaster risk reduction and management of disasters. In order to ensure effective coordination between NDMA and SDMAs and to promote collective learning between different SDMAs, NDMA planned to organize Regional Conclaves of SDMAs, involving States/UTs facing similar kinds of hazards and vulnerabilities with the objective to provide a platform to SDMAs/Institutions to share their best practices, lessons learnt and to discuss other issues pertaining to disaster management in their States/UTs. This would result in enhanced capacity of States, cross learning between SDMAs and strengthening SDMA-NDMA partnership.

The primary responsibility for disaster management rests with the States. SDMAs lead the disaster management system at the State level. However, it is also a fact that barring a few States, the Department of Disaster Management and SDMAs function separately. There is a need for change for greater synergy between these two parts of the disaster management system. Similarly, there are many States/UTs, which are yet to get to that level of preparedness as compared to other States/UTs.

Though there are certain provisions of the DM Act, 2005, assigning the responsibilities to the Central and State Governments both to work in tandem, there is a lot more to be done on the ground for effective coordination between the two for taking effective measures in disaster risk reduction and management. Innovative ideas for adaptation and mitigation to the increased intensity and frequency of disasters owing to climate change impact are also important to capture.

Grouping of SDMAs/Institutions for Regional Conclave:

In order to achieve the desired outcome of the proposed exercise, NDMA has planned for Regional Conclaves, by grouping the States/UTs based on some commonalities of issues, hazards and vulnerabilities. This will help them in sharing their concerns and practices more effectively. The first Regional Conclave was planned to be conducted in Chennai with following States/UTs:

Group – 1: Coastal and Island States (11)

States / UTs - Karnataka, Kerala, Tamil Nadu, Andhra Pradesh, Odisha, West Bengal, Goa, A&N Island, DDNH&DD, Lakshdweep and Puducherry

Venue – Chennai, Tamil Nadu

In this context, the first Regional Conclave of SDMAS was organised in Chennai, in collaboration with the Government of Tamil Nadu involving 11 coastal and island States/UTs of Tamil Nadu, Karnataka, Kerala, Andhra Pradesh, Odisha, West Bengal, Goa, Andaman & Nicobar Island, Dadra and Nagar Haveli and Daman & Diu, Lakshadweep and Puducherry on 8-9 March, 2022.

Need for the Regional Conclaves:

Every disaster results in many good practices and many lessons learned. States also take several initiatives for preparedness, mitigation and risk reduction which have resulted in successful management of disasters and have set examples to learn from them. States have also taken exemplary measures in the field of mitigation and risk reduction which also need to be replicated by other States/UTs.

Similarly, there are many States/UTs, which are yet to get to that level of preparedness as compared to other States/UTs. NDMA decided to provide a platform to SDMAS/ Institutions to share their best practices, lessons learnt and to discuss other issues pertaining to disaster management in their States/ UTs. This will result in enhanced capacity of States, cross learning between SDMAS and efficient SDMA-NDMA partnership.

Scope:

This Conclave was organised, fulfilling the vision of Hon'ble Prime Minister's Ten Point Agenda. Except for a few, almost all agenda points also require participation by States/UTs as well. This conclave also aims at understanding the issues and challenges faced by States/UTs in handling disasters and sharing their best practices. This will help States and UTs in getting benefitted from the experience of other States/UTs. This Conclave also addressed the issue of mutual cooperation and understanding between SDMAS and NDMA.

Issues for Discussion:

In addition to the above mentioned issues, some of the important points of discussion during the conclave were:

- I State's perspective of disaster management in India
- II Progress and achievements vis-à-vis SFDRR
- III Institutional setup and strengthening at the State level (Development and Strengthening of SDMAS)
- IV States' Expectations from NDMA
- V NDMA's Expectations from the States

- VI Issues and challenges in working towards disaster resilient India
- VII Best Practices and Lessons Learnt
- VIII Cross Learning between States – replication of best practices
- IX Scientific & technological advancement by local institutions

Level of Participation:

The Conclave aimed at giving due representation from States/UTs and NDMA/Central Government to discuss issues relevant to NDMA and States/UTs. Participants from following categories were invited to the Conclave:

- i Members/Senior Officials of NDMA/MHA (DM Division)
- ii Senior Officials of NIDM
- iii Senior Officials of NDRF
- iv Members/Senior Officials of SDMA / DM Departments of States & UTs/ SIDM or ATI
- v Senior Officials of other important Central and State Departments
- vi Technical & Academic Institutions / Organizations
- vii Invited Experts

Expected Outcomes:

The Conclave aimed to get results in the following:

- i Better understanding and coordination between NDMA and SDMAS
- ii Roadmap for institutional strengthening
- iii Cross learning between States
- iv Replication of best practices & prototype development
- v Strategies for multiplier effect of lessons learnt
- vi Documentation of Scientific & technological advancements
- vii Resolution of relevant issues, if any

INAUGURAL SESSION

The First Regional Conclave of SDMAS from 11 coastal States /UTs was inaugurated by the **Chief Secretary of the Government of Tamil Nadu, Dr. V. Irai Anbu**. Other dignitaries on the dais included **Shri Kamal Kishore, Member & Secretary (I/C), NDMA, Shri Rajendra Singh, Member, NDMA, Dr. Krishna S. Vatsa, Member, NDMA, Dr. Pradip Kumar Jena, ACS, Government of Odisha, Dr. A. Jai Tilak, Principal Secretary (Disaster Management) Government of Kerala, Shri Dushyant Nariala, Principal Secretary (Disaster Management) Government of West Bengal, Shri Kumar Jayant, Principal Secretary (Disaster Management) Government of Tamil Nadu, Shri Sanjeev Kumar Jindal, Joint Secretary (Disaster Management), Ministry of Home Affairs and Shri Kunal Satyarthi, Joint Secretary (Policy and Plans), NDMA.**

The inaugural session started with presenting the floral bouquet to the Chief Secretary, Government of Tamil Nadu, Dr. V. Irai Anbu and other dignitaries on the dais. This was followed by the State Song and the lighting of Lamp by the Chief Guest and other dignitaries.



Shri Kunal Satyarthi, Joint Secretary (PP), NDMA

In his **Welcome Address, Shri Kunal Satyarthi, Joint Secretary (Policy and Plans), NDMA** thanked the Chief Secretary for taking out time from his busy schedule to give strength to the sector of disaster management. He welcomed other dignitaries on the dais, participants from States/UTs, other agencies, MoEFCC, IMD, NDRF, NIO, INCOIS, NIDM, Navy and Coast Guards, and officials of NDMA and Govt. of Tamil Nadu. He also informed that Andaman & Nicobar Islands' delegates joined the Conclave virtually due to flight issues.



He said that this is the first conclave of its kind where all coastal States & UTs have come to one platform and this would be followed by more conclaves of regional nature with different groups of States & UTs. He mentioned that the idea of such conclave is cross-learning between SDMAs and cross-learning between NDMA and SDMAs. He thanked the Government of Tamil Nadu for taking the initiative to become the first State to host the Regional Conclave. He expressed his hope that the representatives from States/UTs will go back gaining new ideas about schemes, projects and interventions designed by NDMA and also by other States/UTs.

Shri Kumar Jayant, Principal Secretary (Revenue & Disaster Management), GoTN

The welcome address was followed by the **Special Address by Shri Kumar Jayant, Principal Secretary, Revenue & Disaster Management, Government of Tamil Nadu**. In his address, he welcomed all delegates and participants on behalf of the State of Tamil Nadu. He said that we look forward to learn from each other and from experts to ensure that disaster management is managed better. The job of disaster management has become tougher day by day due to climate change which affects disaster management directly. Sighting the examples of prior floods and drought situations in Chennai and other parts of Tamil Nadu, he informed how things evolved and improved over time but lot more is yet to be done. He also mentioned that as a special effort, the Government of Tamil Nadu involves civil society, which was evident in the year 2000 floods and during early part of COVID, when the system was learning how to respond to such disasters and emergencies. Government instituted a system of bringing civil society on board in consultations and meetings. He requested experts to focus not only on what is being faced today but also on what is likely to be faced in future.



He said that we don't have capability to predict what nature will do. As his final submission, he said that we should be humble as humanity. We should not dare to claim that we are here by all our efforts to try to save the earth. The danger is to us, to humanity. So we should not claim that we are saving the earth but we should rather say that we are saving living conditions where we are trying to save humanity and trying to live with nature. He requested all the participants to give their frank feedback at the end of the conclave so that the State of Tamil Nadu can learn better and also NDMA can learn better for future conclaves.

Shri Kamal Kishore, Member & Secretary (I/C), NDMA

Shri Kamal Kishore, Member & Secretary (I/C), NDMA said that this is the first in-person event outside Delhi that he is attending in two years. He commended the leadership of the Government of Tamil Nadu to make this happen on a short notice. He praised the Government of Tamil Nadu for various initiatives taken by them in the field of disaster management and said that there is a lot that can be learned from the Tamil Nadu experience. Mentioning the Tsunami Recovery Programme, he said that it was one of the most successful programmes in the country and with a dedicated window under Finance Commission to support reconstruction and recovery, there is a need to look at it closely to learn from the recovery programme after the Tsunami and what elements of those can be institutionalised. He also talked about other innovations in Tamil Nadu, including TNSMART, which looks at the innovative use of climate forecasting applications.

He said that there are a lot of similarities and a lot of differences between States and UTs in terms of disaster risk management and challenges are really unprecedented. He cautioned that there is a new climate regime that we are living with, where we are not just dealing with risks, but we are also dealing with uncertainties and we should know how to deal with them.



He said that despite the challenges, at the level of governance, we are faced with unparalleled opportunities as well. India is one of the few countries, which has earmarked such large amount of resources. We have \$1b to work on disaster risk reduction over the next five years but we don't have experience of doing it at this scale. If we do not do it right, this opportunity is not going to come to us again. We have money now for doing systematic recovery and reconstruction, while earlier entire funding was focused on immediate response and relief. We can also invest in capacity development. But all of these things will not happen automatically. Getting money allocated is one and easy part of it. The difficult part is to have capacities, mechanisms, systems and processes to actually make good use of that money through results and that responsibility is collectively with all of us.



Regarding the Regional Conclave, he said that we want to exchange horizontally between the States/UTs about what others are doing but we should also ask ourselves tough questions and have a reflection. He

further said that at the moment 22 colleges or Universities in the country are offering Master's Degree courses in disaster management. Are we absorbing those professionals in to our professional system? Is the supply of capacity matching the demand? Is the demand absorbing that supply in a meaningful way, making the system more professional and more efficient? How are we making the most of the Geo-spatial technology? India is a country that aspires to be a knowledge superpower and information technology superpower and hence we need to see whether this aspiration is translating in to actions at district level or not.

Referring to the Hon'ble Prime Minister's Ten Point Agenda for disaster risk reduction, he said that there is lots of guidance on what needs to be done. We have to ask ourselves, whether we are delivering satisfactorily against the Ten Point Agenda. He said that we are not here just to talk but also to listen. He also mentioned that this day is International Women's Day and we cannot do a good job in disaster management, if we do not involve half the population of the country. This is one of the agenda points in Prime Minister's Ten Point Agenda as well that we meaningfully increase the participation and leadership of women in disaster risk management. So if we do not create space for women leadership, we will never succeed fully in disaster management.

Dr. V. Irai Anbu, Chief Secretary of Government of Tamil Nadu

In his inaugural address, the Chief Secretary of Government of Tamil Nadu, Dr. V. Irai Anbu said, "I am sure that this conclave will be extremely useful to all the participating States in structuring their future disaster management plans".

He said that existence is dynamic and we expect existence to be static. It changes every moment. Existence adjusts itself and that adjustment is called as disaster by us. Actually the earth belongs to future generations, not to us. Today saving the habitat, preserving the habitat and living with disasters, instead of managing the disasters, have become the prime questions. There are three types of disasters. One is a natural disaster, the second is man-made disasters and the third one is when some men themselves are disasters and sometimes they happen to be in the management of disasters and that becomes worst.



Natural disasters occur and men have understood it to some extent and they have learned the skills to cope with natural disasters. But by virtue of various developmental programmes, man-made disasters have also become common. We have read in the history that wild fire is common but fire accidents are man-made. We have read in the Roman history about the fire accident at the time of Nero. The fire broke out in the Circus Maximus and it is not true that Nero was playing fiddle during the fire. It is a propagated lie because of the personality of Nero. When the fire broke out in Circus Maximus, Nero rushed to the place, organised relief measures, brought some people to his own Palace and made them rest there.

Regarding the Conclave, he said that we are extremely happy that NDMA has chosen Tamil Nadu to organise this regional workshop to share the lessons learned and to discuss the issues relating to coordination between NDMA and States. South India is unique in certain aspects related to disasters. Peninsular India is vulnerable to hazards like Cyclones, Tsunami, Floods, Urban Floods, Landslides; particularly in the hilly areas, Forest Fires, Heat Waves, Sea Erosion, Drought, Chemical and Industrial disasters; etc.

He said that the warning of the Sixth Assessment of the Inter Governmental Panel on Climate Change applies to the southern states in the context of sea level rise and submergence, loss of livelihoods, large scale migration, droughts, floods and flash floods. All these things are occurring in some region or other. Rainfall is not only unreliable and uncertain, it has also become unpredictable. In this situation, this Regional Conclave will help if the discussions held here are taken seriously and if NDMA follows up the discussion and deliberations to help the States to prevent, mitigate and respond to disasters effectively.

Giving the example of Mamallapuram, 55 km from Chennai, he said that it is known as a museum of Indian Architecture. He explained how Cholas, Pallavas, Cheras and Pandyas took several measures on flood and water management.

Referring to the situation during Tsunami, he said that one of the main reasons for the setting up of NDMA was Indian Ocean Tsunami. No one knew about Tsunami till 2004. But the disaster that occurred due to Tsunami affecting the coastal regions not only left indelible imprints in terms of loss of physical properties and lives but also the psychological impact that it created in the minds of the people. The fishermen, who were living on the banks, suddenly saw the sea waves rising and they could not expect anything about those waves and the fear was lingering for quite some time in the minds of the people.

He said that ever since the formation of NDMA, it has contributed a great deal to disaster response and management. NDRF, set up by NDMA, has evolved as a pre-eminent force for disaster response in the country. Formulation of policy, guidelines, conduct of mock drills, the NCRMP and National Plan have helped the State and other stakeholder to prepare and respond to disasters effectively. NDMA, as Nodal Agency for disaster management in the country, has the responsibility of formulating policies and guidelines. NDMA is well within its rights to expect States to implement the policies and guidelines.

He expected this conclave to provide an opportunity to bridge the gap between the policies and the practices. The responsibility for disaster management is now mainly with the State Governments. We are the people who face the reality on the ground and with limited funds and other resources, we manage disasters. NDMA has issued more than 30 guidelines for managing and mitigating all types of disasters.

These guidelines are of immense value. NDMA has meticulously gone in to each and every aspect of disaster risk reduction pertaining to all major hazards and provides us the action plans. The National Disaster Management Plan is another invaluable and guiding document, which outlines the roles and responsibilities of the Union Government, State Governments as well as district administration. The disaster mitigation has cost implications. The XV FC has allotted money, for mitigation, but we are yet to receive any funds. The guidelines for the administration of funds have been formulated very recently but unless we get the funds, we will find it difficult and it will only remain normative.



The next important thing is that policies and directives of NDMA should be formulated through a consultative process. I feel that NDMA can have a Council in which both the representatives of NDMA and SDMAs can be there. In that case, the consultative process can happen very well and they can work through coordination, consultation, collaboration and cooperation. In order to provide organic linkage between NDMA and SDMAs, a Governing Council type of institution in NDMA may be created, which will include the representation of States by rotation to ensure that the decision making process is inclusive and not top driven. The other important area is strengthening the capacities of local institutions. NDRF, despite its expertise and number, cannot reach all the places. It has its own difficulties. Therefore, it is very important that capacity building is done at district level, so that they can respond to an emergency situation instantaneously without expecting any extraneous help.

As far as disasters are concerned, a regional approach will be more beneficial than States working in silos. In addition, hazards and disasters don't have political and administrative boundaries, particularly in case of floods, hence regional plans and programmes can be more beneficial. The indicators based on which the allocations of SDRF and NDRF are done also need to be reconsidered. The risk index based on 4 main hazards is no longer sufficient, particularly in the context of the changing climate. More consultations and discussions with the experts and States are required and the same needs to be revised.

Tamil Nadu is always receptive to ideas and it assimilates ideas, suggestions, and advice from all quarters. I am reminded of the saying in Tao teaching – the ocean is the mightiest and largest of all water on the earth because it lies low and it is ready to receive water. As we are by the side of the ocean, we also expand like oceans to accept the water from all areas so that we can expand ourselves. So the ideas and suggestions in this conclave will be extremely useful and it will also help us in avoiding the duplication of efforts and reinvention of the wheel, for example, if some State comes forward with the best practices that they have adopted at the time of a natural disaster, our colleagues can learn from them and they can incorporate it in our State Disaster Mitigation Plan.

Therefore, we are very happy to have you here and I am sure that this workshop is the first of its kind but it will always provide impetus for many more regional workshops and we may have to learn something from the people of North. It should also have exchange of ideas from various areas so that we can learn more and we can become self-reliant in managing the disaster. Cross-pollination of ideas is extremely useful in this kind of Conclave and I am once again thankful to NDMA, the people who have come from GoI and other dignitaries who have come here to participate in the workshop. I wish this workshop a grand success. Thank you very much.

Vote of Thanks by Dr. Pawan Kumar Singh, Joint Advisor, NDMA



Joint Advisor NDMA, Dr. Pawan Kumar Singh proposed the vote of thanks for the inaugural session. He thanked Chief Secretary of Government of Tamil Nadu for taking time out of his busy schedule and providing an insight on the subject. He thanked Shri Kamal Kishore, Member & Secretary (I/C), NDMA for highlighting the purpose of this regional conclave and the issues to be focused. He also thanked Shri Kumar Jayant, Principal Secretary (Revenue & Disaster Management), GoTN, Shri Kunal Satyarathi, Joint Secretary, NDMA and other dignitaries and participants for their participation in the conclave.

Scientific & Technological Innovations

Chair – Shri Rajendra Singh, Member, NDMA
**Co-chair – Dr. Pradip Kumar Jena, Additional Chief Secretary,
Government of Odisha**



Shri Kunal Satyarthi, Joint Secretary, NDMA.



Shri Kunal Satyarthi, Joint Secretary, NDMA highlighted the objectives of the first Regional Conclave of SDMAS. He also emphasised on the need for strengthening of disaster management institutional structures at State and District level for effective disaster risk reduction.

Dr. K. S. Vatsa, Member NDMA

Dr. K. S. Vatsa, Member, National Disaster Management Authority, New Delhi focussed on contexts for the conclave by highlighting three critical issues in the foreground that need to be discussed in order to evolve the “Way Forward”. The DM Act 2005 became more visible during COVID – 19 pandemic management and got the nation wide acceptance of its various provisions for setting up empowered groups and imposing restrictions. It is the right time to discuss now the provisions of the Act with regard to the disaster management functions, like preparedness, response, recovery, and mitigation which have not been fully utilised yet. So discussing more extensive use of the DM Act 2005 is an important first step and foremost task ahead of us.



The second task will be to focus on the 15th Finance Commission recommendations of “Four Funding Windows” at the National and State levels for Response, Recovery, and Preparedness & Capacity-building within NDRF/SDRF and independent window for National Disaster Mitigation Fund /State Disaster Mitigation Fund. There are several other recommendations by the Finance Commission like new tools for Rapid Assessment, Post Disaster Need Assessment etc., as we may not perhaps be preparing memorandums in future, and needs focused discussions. There are earmarked allocations for National Programmes that need a better understanding of how they make a difference from the way we have been handling disaster management functions.

The third task will be to focus on Climate Change and its impact. Extreme rainfall, increased incidence of floods, landslides, urban floods affecting cities, and cyclonic disturbances have become far more frequent.

In the above contexts and demanding tasks, there are issues that need to be discussed in great detail:

- 1 The duality between the Department of Disaster Management and State Disaster Management Authorities (SDMAs) as a result of the DM Act, 2005 and how these two arms at the State level can be more integrated.

- 2 Improving professional/ technical support to the SDMAs. How can SDMAs support the function of preparedness, response, recovery & reconstruction, and mitigation? How do we get more technically and professionally experienced people to serve SDMAs to make it a professional body and How the SDMAs in terms of staff, capacities, and resources be strengthened?
- 3 How do we improve State-level response to a disaster? Presently there is more reliance on NDRF. How do we set up SDRF Battalions in each state and how do we create a multi-tier response structure at the State level?
- 4 How do we operationalize the response and mitigation funding windows? How do we decide upon the priorities? How do the States get the technical and professional capacity to utilize these funds?
- 5 How are Disaster Management Authorities more accountable for the funds that are spent? How can we develop and implement projects that are technically appropriate and cost-effective? How do we measure the impact of various interventions funded by funding windows?
- 6 How do we make DDMA's more effective than keeping them just as district-level committees?
- 7 How do DDMA's implement all the four functions of disaster management i.e. preparedness, response, recovery, and mitigation?
- 8 It is essential that the DDMA is strengthened with professional and technical people. What kind of staff and technical support the DDMA's must have?
- 9 In respect of decentralising funds how can DDMA's have access to funding? Can we activate District Disaster Response Fund and District Disaster Mitigation Fund? How can DDMA's have access to funding?
- 10 It is very important to integrate Disaster Management into Municipal Councils and PRIs. Both Municipal Councils and PRIs supported Covid-19 management by State Governments. The Anganwadi workers, Asha workers and health workers played a crucial role. How can these people from local body institutions become volunteers and perform disaster management functions on a regular basis? How they can be trained to become better resources to support disaster management?
- 11 It is important to discuss how the nationally funded programmes like Mitigation Programmes for Earthquakes, Landslides, Drought and Urban Flooding, Preparedness Programme for Fire Management and Mitigation and Rehabilitation for Erosion-affected people are going to be handled by the States. Will the States remain as recipients or going to play an active role? How do we implement these programmes at the State and District levels?
- 12 In respect of Capacity Building, How do we develop a responsive capacity-building programme, which supports all the functions– preparedness, response, recovery and reconstruction, and mitigation?
- 13 How do we seek broad-based support from various sources for capacity-building– NIDM, Asian Disaster Preparedness Centres (ADPC), RIMES and other International Agencies, etc.?
- 14 Community based disaster risk reduction with particular emphasis on role of women has to be evolved. How do we sustain DRM at the community level? How do we transfer more resources– money, skills, and technologies– to the people? How to develop a program

specifically for women? How do we get the concept of ‘resilient communities’ on the ground?

- 15 How do we monitor the Sendai Framework? What kind of monitoring arrangements we must have? How do we identify a few indicators where we can have more success? How should it also have some linkage with the SDGs and Paris Agreement? This is a commitment, we have signed the agreement so we are accountable.
- 16 What will be the take-aways from this conclave, few big ideas, resolutions, and an indicative action plan that we have to focus on? These questions will arise during all the presentations and the take-aways are important to energise States/Districts and make them proactive.

Take Away from Presentation

The joint presentation by Shri Kunal Satyarthi, Joint Secretary (PP), NDMA & Dr. K. S. Vatsa, Member, NDMA on Objectives of the Conclave and Strengthening of Disaster Management Institutional Structure was aimed at setting the tone of the Regional Conclave and Dr. K. S. Vatsa, Member, NDMA shared certain issues to be discussed during the Regional Conclave in two days.

Dr. Hemanth Kumar IFS, APCCF, IRO, Chennai

Dr. Hemanth Kumar IFS, APCCF, IRO, Chennai explained the purpose of Coastal Zone Regulations (issued in 1991 and subsequently revised in 2011 and 2019) and the role of Mangroves in the protection of coastal zones. The main objective of the Act is to conserve and protect coastal stretches, their unique environment, and their marine area and promote development in a sustainable manner based on scientific principles, taking into account the dangers of natural hazards in the coastal areas and sea-level rise due to global warming.



Mangroves serve as a buffer between marine and terrestrial communities and protect shorelines from damaging winds, waves, and floods. Mangroves are the first line of defense for coastal communities. They stabilize shorelines by decelerating erosion and provide natural barriers protecting coastal communities from increased storm surges, flooding, and hurricanes. The National Environment Policy,

2006 recognizes that mangroves & Coral Reefs are important coastal environmental resources and underlines the need to adopt a comprehensive approach to Integrated Coastal Zone Management.

The Government of India, through its Integrated Coastal Zone Management (ICZM) Project, launched in 2010 with the assistance of the World Bank, has completed 16000 ha of Mangrove plantation, shelterbelt plantation, installation of Geo -Tubes embankment for erosion protection at Pentha village, Odisha amongst others. The policy interventions and financial assistance to coastal States and UTs by MoEF&CC, from time to time, have helped the area under mangroves increase from 946 sq.km (since 1987) despite repeated disasters like cyclones/super cyclones and pressures from developmental activities.

Dr. R. Mani Murali, Principal Scientist, NIO

Dr. R. Mani Murali, Principal Scientist, National Institute of Oceanography, Goa presented the NIO's Research on Natural Disasters. NIO is the premier multi-disciplinary oceanographic institution in the Indian Ocean engaged in research on Physics, Chemistry, Biology, Geology/Geophysics of the ocean as well as Marine Instrumentation and Ocean Engineering. The mission of the institution is "to continuously improve the understanding of the seas around us and to translate this knowledge to benefit all".



The post-tsunami surveys such as inundation distance, run-up, etc. are carried out as per UNESCO- IOC guidelines. They simulated the tsunami wave propagation using numerical modeling over the 2004 Tsunami of the Indian Ocean and the 1945 tsunami of the Arabian Sea.

The Bay of Bengal receives 4 cyclones/per year which leads to low salinity. Salinity stratification inhibits vertical mixing and reduces cyclone and cold waves in the post-monsoon season. The Storm surge is an abnormal rise of water generated by a storm over and above the predicted astronomical tides. Storm surge analysis by IITD was carried out with different return period and different climate change scenarios. The Spatial map of Sea level rise trend from 1993-2012 has estimated from satellite, measurements of annual mean sea level anomalies. The global mean sea level rise scenarios are readily available and are

regularly updated by the IPCC. The sea-level rise of different climate change scenarios has been carried out and predicted the probable inundation area. The highly localized heavy rain causes urban floods in Chennai and Mumbai. The growth of urbanization changes the natural lands to impervious lands which do not allow water to percolate easily. The space-based technique for measuring sub-centimeter ground displacement is the Differential Synthetic Aperture Radar Interferometry (D-InSAR), which was used to assess the potential land subsidence phenomenon of Kolkata city. Composite vulnerability mapping is very important in the coastal zones as it is exposed to many natural forces.

Dr. Balakrishnan Nair, Group Director, INCOIS

Dr. Balakrishnan Nair, Group Director, INCOIS presented about the oceanographic hazards and the work of INCOIS that helps to build resilient coastal communities. Most of the coastal areas are low-lying and vulnerable to oceanogenic disasters such as Tsunamis, Storm Surges and Sea-level rise. The outcomes of the INCOIS services are also contributing to the National Coastal Mission & Deep Ocean Mission, the Sendai Framework for Disaster Risk Reduction and SDGs.

INCOIS has set up the Storm Surge Early Warning System (SSEWS) for the Indian coasts using ADCIRC model. SSEWS utilizes the automated Decision Support System (DSS) based on Geographic Information Systems (GIS) and database technology. INCOIS has generated an online Oil Spill advisory based on the parameters of wind speed and ocean currents to predict the oil spill trajectory.



Coastal multi-hazard vulnerability assessment was generated based on a composite of coastal flooding due to oceanogenic hazards: tsunami, cyclone, floods, sea-level rise, and erosion. These maps represent the coastal flooding by extreme events in a 100-year return period considering the implications of future sea-level rise.

The socio-economic risk assessment up to building level within these flood zones was assessed as a resilience measure. A dedicated 3D visualization application was developed to view and analyse the data. Coastal Vulnerability Atlas covering the Indian coast comprising 156 maps on 1:1 lakh scales has been prepared and released in 2012.

Search and Rescue Aid Tool (SARAT) is developed by Scientists of the Indian National Centre for Ocean Information Services. ESSO-INCOIS (under the MoES) has successfully developed a Search and Rescue Aid Tool (SARAT) for facilitating search and rescue operations in the seas to locate individuals/vessels in distress in the shortest possible time. This has been initiated and developed under the Make in India program. The tool uses model assembling that accounts for uncertainties in the initial location as well as the last known time of the missing object, to locate the person or object with high probability. The movements of the missing objects are governed mainly by the currents and winds. The tool is based on model currents derived from a very high resolution Regional Ocean Modeling System run operationally on High Performance Computers at INCOIS. The Coast Guard used SARAT to restrict the search area and found the dead body of a fisherman within the highest probability area predicted by the model.

With the purpose to reduce the number of accidents caused by capsizing of vessels, Indian National Centre for Ocean Information Services (INCOIS) has designed and developed an advisory and forecast services system for the Indian Ocean regime, which warns users against potential zones three days in advance.

Dr. S. Balachandran, Head, Regional Meteorological Centre, Chennai

Dr. S. Balachandran, Head, Regional Meteorological Centre, Chennai presented how the Indian Meteorological Department is leveraging science and technological innovations in weather forecasting. The scales of weather systems both Temporal and Spatial were explained. Observations from atmosphere, Sea and Earth are obtained from a number of observational tools. The IMD draws data from 670 Surface Observatory Networks across the country that record Temperature, Atmospheric Pressure, Wind Speed, Surface Moisture, etc. The southern region has 118 Automatic Weather Stations and 265 Automatic Rain Gauge stations.

The upper-air measurements are observed using balloons. There are 35 weather RADAR observatories established in the country. INSAT 3D and INSAT 3DR are geostationary satellites used for weather monitoring of the country.



The satellite-based observations are cloud observations, radiation, wind, temperature humidity, rainfall, and ocean observations. Data Buoys with sensors are used to monitor and collect atmospheric and oceanographic conditions. High speed wind recorders are established in Nagapattinam, Kanyakumari, Athirampattinam, Pamban, Chennai, Tondi, Puduchery Karaikal and Cuddalore.

There are different types of forecast such as now-cast, short-range, medium-range, extended-range, long-range, etc. District level impact-based weather forecast is being issued from October 2020. Hydromet bulletins are issued with spatial rainfall distribution and intensity for various sub-basins for next 5 days with heavy rainfall warning for various sub-basins for next 5 days. This is issued to the departments concerned.

IMD warnings are disseminated through print and visual media, mobile apps such as MAUSAM, MEGHDOOT, DAMINI and social media like Facebook, Twitter, etc. IMD has published Standard Operating Procedures for “Weather Forecasting and Warning Services”, “Hydro-meteorological Services” and “Cyclone Warning”. IMD has now prepared a web version of the Climate Hazards and Vulnerability Atlas of India for the thirteen most hazardous meteorological events, viz. Cold wave, Heat Wave, Flood, Lightning, Snowfall, Dust Storm, Hail Storm, Thunderstorm, Fog, Strong winds, Extreme Rainfall, Drought and Cyclone that cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption or environmental damage.

Ms. Rekha Nambiar, Commandant, 4Bn NDRF

Ms. Rekha Nambiar, Commandant, 4Bn NDRF, Arakkonam, (TN) presented the functions and future engagements of NDRF in disaster risk reduction. NDRF plays an active role in preparedness & mitigation, rescue & relief stages of disaster management. NDRF plays a major role in rescue and relief operations. In a short span of 16 years of existence, NDRF has rescued 146319 lives and evacuated 713635 people.



NDRF has collected detailed data of 21 layers such as flood-prone areas, landslide areas, Major Accident Hazard Units, Fire Stations, Govt. Hospitals & Primary Health Centres, Relief Shelters, etc., located

in vulnerable areas and coastal areas. Vulnerability mapping helps in better response and effective decision-making during a disaster.

Identification of Major Accident Hazard (MAH) units, analysis of probable risks and threats, and generating possible threat zones using hazard models are done by NDRF. NDRF has developed Chemical Reference Guide for the chemicals used in MAH units – Integration of CRG with Geo- Tagging for identification of these chemicals.

Mock exercises are held to improve coordination among sister agencies, clarity in the role of each stakeholder, and familiarization of the area and possible risks associated with it. The future engagements of NDRF will employ crowd sourcing and social networking services, simulation training i.e. Virtual Reality Training by digital simulation of lifelike scenarios for training purposes. Applications and use of Drones, SONAR (Sound Navigation Ranging), seismic sensors to locate the victims and transport of relief materials to inaccessible locations and Robotic science in complex rescue operations are other important features of NDRF.

Dr. Surya Prakash, Professor, NIDM

Dr. Surya Prakash, Professor, NIDM presented the role of National Institute of Disaster Management (NIDM). The National Institute of Disaster Management was established in 2006 by the Ministry of Home Affairs, Govt of India. Subject to the provisions of the DM Act 2005, the NIDM functions within the broad policies and guidelines laid down by the National Authority and is responsible for planning and promoting training and research in the area of disaster management, documentation and development of national level information base relating to disaster management policies, prevention mechanisms and mitigation measures.



The role of NIDM encompasses, developing training modules, undertake research and documentation in disaster management, organize training programmes and formulate and implement a comprehensive human resource development plan covering all aspects of disaster management. The NIDM provides assistance in national-level policy formulation.

NIDM also provides the required assistance to the training and research institutes for development of training and research programs for stakeholders including government functionaries and undertakes the training of faculty members of the State level training institutes.



Besides, NIDM develops education materials, promotes awareness among the stakeholders, undertakes, organizes and facilitates study courses, conferences, lectures and seminars within and outside the country.

In order to benefit Coastal Disaster Risk Reduction, NIDM has developed 3 training modules, conducted 15 National Level Training, 5 Workshops, 47 Webinars and Virtual trainings. NIDM is publishing bi-annual journal “Disaster & Development.

NIDM has received the Skoch Order of Merit for Awareness Creation & Sensitization in Disaster Management through E-Learning for Qualifying in India’s Best Governance Projects in the year 2014 (jointly with CDAC Noida).

Q & A and Discussions:

Presenting the summary of the Session, Co-chair Dr. Pradip Kumar Jena, Additional Chief Secretary, Government of Odisha said that all the presentations called for better coordination between these agencies and SDMAs. SDMAs need to be guided on what is to be done and how it is to be done. So if all the scientific agencies can help SDMAs to improve. There is also need for better technologies to tell SDMA where to concentrate or where to pass on the warning messages. He also appreciated that there have been lots of improvements as well.

Principal Secretary (Disaster Management), West Bengal Shri Dushyant Nariala requested INCOIS to start sending again the messages about threat of tsunami, following an earthquake warning message. This was being done earlier but later stopped. INCOIS representative agreed to the request and assured that this request will be considered and incorporated. INCOIS proposed to hold a meeting with all coastal SDMAs where such kind of technical issues can be resolved.

Chair of the Session, Shri Rajendra Singh, Member, NDMA requested all States to establish and strengthen their SDRF, if not done so far, so that they don’t need to always depend on NDRF. He also advised NIO and INCOIS to organize a regional conclave on technical issues with regional SDMAs. He also suggested that NIDM should write to all States to create SIDM.

Institutional and Financial Framework of Disaster Management

Chair: Dr. K. S. Vatsa, I.A.S., (Retd.), Member, NDMA

Co-Chair: Dr. A. Jaythilak, I.A.S., Additional Chief Secretary, Government of Kerala



Shri Ravinesh Kumar, Financial Advisor, NDMA

Shri Ravinesh Kumar, Financial Advisor, National Disaster Management Authority presented “XV Finance Commission Recommendations for Disaster Risk Management”. The XV Finance Commission presented two reports, one for the year 2020-21 and Final Report for the period 2021-22 to 2025-26. Successive Finance Commissions up to XIV FC followed an expenditure-based approach for determining the allocation of funds for disaster management to State Governments. The XV Finance Commission adopted a new methodology that has the combination of Capacity (reflected through past expenditure) Risk Exposure (area & population) and Hazard & Vulnerability (disaster risk index).

The salient features of XV Finance Commission:

XV Finance Commission has recommended State contribution of 25% for the State Disaster Risk Management Fund. The Northeastern Hill States, will contribute 10%. From the total earmarked grants for disaster management for both National & State Corpus 20% is earmarked for Mitigation Fund and the remaining 80% for Response fund.



The Response Fund has been further distributed into following three windows:

- (i) Response & Relief (40%)
- (ii) Recovery & Reconstruction (30%)
- (iii) Preparedness & Capacity Building (10%)

The Funding Windows of NDRF and NDMF are not interchangeable, though there is flexibility for re-allocation within three sub-windows of NDRMF/ SDRMF.

On the occasions of availing funds from NDRMF the States should contribute 10 percent for assistance up to Rs. 250 crore, 20 percent for assistance up to Rs. 500 crore and 25 percent for all the assistance exceeding Rs. 500 crore.

The National Disaster Mitigation Fund has earmarked four priorities:

- (i) Catalytic assistance to develop district-level drought mitigation plans (12 most drought-prone States) – Rs. 1200 Crore,
- (ii) Reducing the risk of urban flooding (7 most populous cities) - Rs. 2500 Crore,
- (iii) Managing seismic & landslide risks (10 hill states) – Rs. 750 Crore,
- (iv) Mitigation measures to prevent erosion – Rs. 1500 Crore

Two priorities are earmarked under NDRF

- (i) Resettlement of displaced people affected by erosion – Rs. 1000 Crore
- (ii) Expansion & modernization of fire services – Rs. 5,000 Crore

NDMA is running three projects under Preparedness & Capacity Building funding window:

- (i) Upscaling of Aapda Mitra (Rs.369.41cr)
- (ii) Emergency Response Support Services (Rs.41.75 cr)
- (iii) Common Alert Protocol (CAP) (Rs.353.83 Crore).

The XV Finance Commission has recommended that State Governments must allocate resources to districts for preparedness and mitigation on an annual basis. The district administration needs to be empowered which is essential for improving disaster preparedness at local level. Without the devolution of funds, the district administration and local governments would find it difficult to undertake disaster functions. State Governments should themselves develop a methodology through which they allocate these resources to the districts.

XV Finance Commission is of the view that PRIs can play a pro-active role in all stages of disaster management, Relief, Recovery and Reconstruction, and Mitigation activities to be undertaken by the Panchayats.

XV FC has proposed four insurance interventions:

- (i) National insurance scheme for disaster-related deaths
- (ii) Synchronising relief assistance with crop insurance
- (iii) Risk Pool for infrastructure protection & recovery
- (iv) Access to international reinsurance for outlier hazard events

Shri Sanjeev Kumar Jindal, Joint Secretary (DM), MHA

Shri Sanjeev Kumar Jindal, Joint Secretary (Disaster Management Division), Ministry of Home Affairs made a presentation on Mitigation Fund Guidelines and explained the features of NDMF/SDMF. The XV FC in its interim Report for 2020-21 and the final report, recommended for establishment of NDMF and SDMF and made fund allocations. NDMF was constituted by MHA through a notification. States were advised to constitute SDMF. Mitigation Funds are to be supervised by the NDMA at the National level and by SDMA at State level.



Central contribution to SDMF to be released in 2 instalments:

- (i) 1st in June, subject to the certificate on crediting State share and NDMF releases in SDMF.
- (ii) 2nd in December, subject to furnishing the annual report on expenditure of SDMF.

The total allocation for State Disaster Risk Management Fund is Rs. 1,60,153 Crore, out of which State Disaster Response Fund (80%) is Rs. 1,28,122 Crore and State Disaster Mitigation Fund (20%) is Rs. 32,031 Crore, which are not inter-changeable.

The total allocation for National Disaster Risk Management Fund is Rs. 68,463 Crore out of which National Disaster Response Fund (80%) is Rs. 54,770 Crore; and National Disaster Mitigation Fund (20%) is Rs. 13,693 Crore, which are not inter-changeable.

The contribution to SDMF will be in the ratio of 90:10 for NE & Hill States and 75:25 for other States. The closing balance as on 31st March of each financial year in the SDMF shall become the opening balance for the next financial year till 2025-26. NDMA should develop a disaster database for both preparedness and mitigation plans.

NDMA has to develop an outcome framework against annual allocations, expenditures, key achievements and results for both NDRMF and SDRMF. The SDMF can be invested in 3 instruments: Central Government dated securities; Auctioned Treasury Bills; and Interest earning deposits and certificates of deposits with Scheduled Commercial Banks.

As part of mitigation strategy, the States have to undertake the following non-structural measures for flood mitigation:

- (i) Adopting an 'Integrated Flood Management' approach by considering the river basin as a hydrological unit.
- (ii) Real-Time Hydro-meteorological Data Acquisition Network coupled with Decision Support System for integrated or stand-alone operation of reservoir(s).
- (iii) Delineation and demarcation of flood plain zones on certain notified stretch(es) of the river(s) within the State and regulation of various activities permissible therein.

The projects having the jurisdictional and technical complexity that can be addressed through national-level technical assistance or require national agencies to collaborate.

Research and studies related to disaster mitigation can be taken up through the Small Grants window. Up to 5% of the NDMF and SDMF may be earmarked for small grants window for research/ studies.

The mechanism for processing of funding proposals from NDMF/ SDMF:

- (i) NDMA/SDMA to constitute a committee headed by a Member of NDMA/SDMA with Members from line Departments and other stakeholders.
- (ii) Central agencies/ States to send a proposal to MHA/ State DM Department.
- (iii) Proposal after appraisal by NDMA/ SDMA Committee to be considered by SC-NEC/ SEC.
- (iv) Proposal to be approved by HLC for NDMF and SEC for SDMF.
- (v) On approval, funds to be released to States as per practice for NDRF/ SDRF.
- (vi) Procurement of goods and services in accordance with the latest GFR and from the GeM portal, to ensure transparency in procurement.
- (vii) NDMA should develop a disaster database for both preparedness and mitigation plans.

- (viii) NDMA will develop an outcome framework against annual allocations, expenditure, key achievements, and results for both NDRMF and SDRMF.

Dr. S. K. Jena, Joint Advisor (R&R), NDMA

Dr. S. K. Jena, Joint Advisor (R&R), National Disaster Management Authority, Government of India made a presentation on Recovery and Reconstruction Guidelines.

The salient features of the Recovery and Reconstruction Guidelines are:

The XV Finance Commission has earmarked an allocation for 'Resettlement of Displaced People affected by Erosion' under the Recovery and Reconstruction Window of NDRF and escorted the Union and the State Governments to develop a policy to deal with the extensive displacement of people caused by erosion. NDMA has constituted a Working Group comprising relevant Ministries/ Departments and States to deliberate on this issue.



NDMA has also prepared the Guidelines covering financial, operational, and programmatic details of Recovery & Reconstruction, which is at the final stage. The prime objective of the guidelines is to establish the processes and mechanisms of a recovery programme in adopting the Build Back Better approach. The other objectives are to

- a) Guide in organizing recovery and reconstruction programmes to address post-disaster damages, losses, and needs;
- b) Guide the planning and implementation of recovery programmes, including financial planning and institutional arrangements in consultation with disaster-affected people;
- c) Recommend policies, strategies, areas of technical assistance and monitoring support needed for recovery programmes;

- d) Suggest ways to optimize the use of national flagship programmes and other schemes and resources for implementing post-disaster recovery.

The Guidelines suggest items and norms of Recovery and Reconstruction assistance to individual beneficiaries for recovery and the State Govt. to implement the reconstruction programmes.

The Guidelines focus on the importance of Post-Disaster Needs Assessment (PDNA) to ascertain damage and loss in a post-disaster scenario with sector-wise recovery and reconstruction needs. NDMA and SDMAS have to invest in capacity-building activities as part of recovery preparedness programmes.

NDMA has initiated the process of formulating a **National Policy on 'Resettlement of displaced people affected by Coastal Erosion and River Erosion'**. Grassroots level consultation through a household survey is being taken up in the blocks and districts of the identified States to understand the problem, issues, and losses, for preparing a holistic National Policy.

Shri Nawal Prakash, Joint Advisor (CBT), NDMA

Shri Nawal Prakash, Joint Advisor (CBT), National Disaster Management Authority, made a presentation on Preparedness and Capacity Building Guidelines and Aapda Mitra Scheme.

XV Finance Commission has recommended an allocation of 10 percent of each of the National Disaster Response Fund (NDRF) and States Disaster Response Fund (SDRF) as a Funding Window of Preparedness and Capacity-Building. At the central level, this funding window shall be created within the NDRF and will be utilized towards preparedness and capacity building of national agencies like the National Institute of Disaster Management (NIDM), etc. At the state level, this funding window shall be exclusively utilized for preparedness and capacity building of State Disaster Management Authorities (SDMAS), State Institutes of Disaster Management (SIDM), training and capacity-building activities, procurement of emergency equipment and emergency response facilities.



The Preparedness and Capacity Building funding window will support and provide funds to the following types of projects at the National and State level:

- (i) Projects of National/ State-level significance and hazard-specific significance.
- (ii) Projects to strengthen early warning systems, preparedness, and response mechanisms across the States.
- (iii) Projects to promote disaster awareness, education, research, and use of technologies
- (iv) Preparedness and capacity building of Response Forces and Institutions at National and State level.

The Aapda Mitra Pilot Project is implemented in 8 districts of 6 Coastal States/UTs, 1600 volunteers were trained including 254 Women Volunteers. The Upscaled Aapda Mitra scheme will be covering 11 coastal States where 31,600 volunteers will be trained.

Shri Rajeev Sharma, Project Manager (NCRMP), NDMA

Shri Rajeev Sharma, Project Manager (NCRMP), National Disaster Management Authority New Delhi made a presentation on National Cyclone Risk Mitigation Project (NCRMP). The NCRMP is a World Bank assisted flagship programme being implemented by NDMA in 8 cyclone-prone coastal states in two phases, with four components – (1) Early Warning Dissemination System (EWDS), (2) Cyclone Risk Mitigation Infrastructure (CRMI), (3) Technical Assistance for Capacity Building on Disaster Risk Management and (4) Project Management and Monitoring. At the State level, the existing nodal agencies for disaster management, SDMAS are functioning as State Project Implementation Units (SPIUs) and are responsible for implementing the project in their States in coordination with the Project Management Unit (PMU) at NDMA.



The EWDS, the state-of-the-art multi-technology option (Alert Siren, Satellite Radio, Mass Messaging etc.) which provides reliable communication and ensures last-mile connectivity during disasters has been commissioned and is operational in Andhra Pradesh and Odisha.

The CRMI enhances the preparedness and mitigates the vulnerability of coastal communities through investments in the construction of multi-purpose cyclone shelters (MPCS), roads, bridges and saline embankments.

The accomplishments of the project are:

- 1921 Capacity Building Training (CBT)/ Shelter Level Training imparted to 31502 Govt. Officials/Community Members in NCRMP.
- A Web based Dynamic Composite Risk Atlas (Web-DCRA) and Decision Support System (DSS) Tool for Cyclone and associated impacts forecasting, including Storm Surge and Inland Flooding for the area falling within 10 m elevation above MSL in 13 Coastal States/UTs of the Country has been developed under NCRMP Phase II.

Col. Dheeraj Chandola, Consultant (IT & Communication), NDMA

Col. Dheeraj Chandola, Consultant (IT & Communication), NDMA made a presentation on CAP & ERSS projects of NDMA under implementation.

Common Alerting Protocol (CAP) based on Integrated Alert System: Automatic dissemination of Alerts generated by all alert generating agencies to geo targeted population over multiple media in regional vernacular using CAP technology. Following are the important features of the project:

- Common Alerting Protocol (CAP) Project (Cost - Rs 355 Cr.) sanctioned from the funding window under Preparedness and Capacity Building of National Disaster Response Fund (NDRF)
- Integration of Alert Generating Agencies (IMD, CWC, INCOIS, DGRE, and FSI) with Disaster managers, SDMAS and Telecom service providers for dissemination of geo-targeted alerts in regional vernacular by SMS in near real-time with least human intervention.
- Integration with GAGAN & NavIC Satellite terminals for alert dissemination.
- Dissemination of alerts on social media over the mobile application, website, browser extensions, and RSS feed.
- Seamless web-based integration of all stakeholders for speedy notification, approval, and dissemination of alerts.
- Near real-time dissemination of geo-targeted alerts in regional vernacular to citizens and responders thereby ensuring preparedness mitigating loss of life and property.
- Web-based dashboard for disaster managers for approving/editing alerts and choosing media for dissemination.



Extension of Emergency Response Support System (ERSS) for Disaster Emergencies

- Rs 42 Cr. sanctioned from the funding window under Preparedness and Capacity Building of National Disaster Response Fund (NDRF)
- The single number '112' for all emergencies across the nation will facilitate citizens in seeking assistance for all emergencies including disaster-related emergencies.
- Seamless integration of PSAP/Police control room with SEOCs and Disaster responders.
- Powerful GIS-enabled tools to ensure faster response time and tracking of relief/assistance activities of responding agencies.
- Powerful GIS-based analytic tools for Disaster managers.

Q & A and Discussions:

Dr. Pradip Kumar Jena, Additional Chief Secretary, Government of Odisha said that there may be certain programmes which are very important for mitigation, which should be driven from central level, e.g., lightning. Lightning prediction is a very difficult job. IMD is giving predictions but those predictions are not qualitatively very high. With the help of a private network, Earth Network System, lightning deaths have been reduced considerably in Odisha. The same company is trying to sell this product in all States. This product is very useful for the country. If this can be driven out of National Mitigation Fund, these companies will not be able to make huge money out of this.

Dr. Jena expressed the concern that the message generally received after the Madent happens and this limits the purpose of the CAP.

Responding to this Col. Dheeraj Chandola, Consultant, NDMA said that for Lightning and Tsunami, there is a provision that the alert generating agency can bypass the SDMA and raise an alert. This can be done through an SOP between the State and the alert generating agency. Self-broadcast is coming in phase – II.

Dr. Nagaraju from Andhra Pradesh SDMA said that they had a meeting with C-DAC. In that meeting they were told that SDMA has to appoint a person to attend 112 toll-free calls. They were advised to keep this person in DGP office. So why do we need to place them in DGP office to attend disaster management calls?

Responding to this Col. Chandola said that Andhra Pradesh and Punjab are very special cases, where we found that the load on existing PSAP is very high. So it was decided that for Punjab, 3 Operators positions and for Andhra Pradesh, 5 Operators position in PSAP would be manned by NDMA. Hence, Andhra Pradesh got 15 Operators for PSAP and 6 Operators for SDMA. So when they hire these Operators, who are paid by NDMA, they have to keep 15 in PSAP so that PSAP is not burdened and rest will be deployed in SDMA.

Shri Kamal Kishore, Member & Secretary (I/C), NDMA talked about NCRMP. He said that for last 6-7 months, I have had the opportunity to engage with the project more closely and it is very difficult for us to ensure that States actually implement the project. So it is important to know whether it is working or not at the State level. Whether NDMA is doing the right thing? This is important to know from States because NDMA is developing a similar project for earthquakes, on the lines of NCRMP. We want to know your challenges. How the impact of the project is being felt at the State level?

Responding to this Principal Secretary (Disaster Management), West Bengal, Shri Dushyant Nariala said that the issue we face is that lot of technicalities were raised. Secondly, since it is World Bank driven, lot of procurement, it is difficult to get approval as per World Bank procedures. There has also been lack of clarity on whether we need to directly talk to World Bank or through NDMA. This led to a lot of delays. End is more important than the means. He also suggested that in the next project on Earthquake, this model should not be followed because State has decided to go by its own Financial Rules and not by those of the World Bank. It should be left to the State Governments to follow their own tender norms. On this Dr. P. K. Jena, ACS, Odisha said that World Bank rules are very difficult but also superior to State rules, when it comes to implementation.

Best Practices, Lessons Learnt and Technological Innovations by States / UTs

Chair: Shri Dushyant Nariala, Principal Secretary (Disaster Management), Government of West Bengal

Co-Chair: Prof. Surya Prakash, NIDM, New Delhi



Dr. Manoj Rajan, Commissioner, KSDMA & Director KSNDMC

Dr. Manoj Rajan, Commissioner, Karnataka State Disaster Management Authority (KSDMA) & Director, KSNDMC, Government of Karnataka, made a presentation on “Leveraging Geospatial Technologies in Disaster Management-Karnataka”. Geospatial technology is an emerging field of study that includes Geographic Information System (GIS), Remote Sensing (RS) and Global Positioning System (GPS) that enables us to acquire data which are referenced to various parts of the earth and use it for analysis, modelling, simulations, and visualization. The Karnataka State has leveraged the Geo Spatial technology to collect data on rainfall, weather parameters, seismic activity, water level, lightning & thunderstorm etc. integrated into the system, analyse them and generate maps charts and alerts for the use of policy makers and administrators. There are 7400 stations (ARG and AWS) sending data every 15 min to the GIS server and through the GIS-enabled web applications, report maps are generated.



The State has established a dense network of telemetric rain gauges with a density of 1 in 7 Sq. km and telemetric weather station with an average density of 1 in 59 Sq. km., 132 water level sensors have been installed to record the inflow and outflow from the lakes and reservoirs. GIS-enabled weather dashboard has been established and continuously displays data such as rainfall, temperature, humidity, wind speed and wind direction. The system auto-generates maps for District Disaster Management Plan (DDMP) using field resource and personnel information with geo-mapped resources.

The advantage of geospatial enabled DDMP is that it provides accurate, authentic & tamper-proof data, and provides auto-generated analysis which helps the State to channelize the mitigation efforts straight to the area affected. The database archive is available for future disaster mitigation. Through the Geo-Spatial platform collection of authentic data using surveys for each district and department along with geo-stamped photos, resource assets such as hospitals, schools, buildings, vehicles, open grounds, ambulances, fire engines, PPE kits, food and medicines etc., which are important for disaster management, have been collected through Mobile App. Data of resource personnel like any officer, security, army, media, public representatives, NGO, Volunteers, who is involved in DM and/or is directly/indirectly responsible for resource, checklists, SOP's have been collected with provision for periodic updates.

The KSDMIS is a Geospatial Web Application for collecting data on disaster events with real-time infrastructure to collect & store data, analyse, communicate and auto-generate event-based reports/memorandums. KSDMIS provides a Geospatial view of damaged areas and helps to plan appropriate mitigation measures. Field data has been collected through the mobile app by 18 departments such as Revenue, PWD, RDPR, PRED, Irrigation, ULB, Agriculture, Horticulture and Animal Husbandry, Veterinary, WCD, Health, Hand looms (Textile), ESCOM, Fisheries, Panchayath Raj, Education, and Zilla Panchayat. The KSDMA has established Disaster Early Warning System (DEWS), a centralised wireless public broadcasting system to reach out with warnings to the Gram Panchayat level.

Shri Faisal T. Illiyas, APSDMA

Shri Faisal T. Illiyas, from Andhra Pradesh State Disaster Management Authority, Government of Andhra Pradesh made a presentation on the Early Warning System and its improvements. The State Emergency Operation Centre was built in 2017. Like any other SEOC the alerts and Warnings issued by IMD, CWC, and INCOIS are picked up and transmitted across the State. Besides that, rainfall data from a network of 1800 Automatic Weather Stations, reservoir levels, IMD Data in 3x3 Sq. Km Grid, Data received from European Centre for Medium-Range Weather Forecasts (ECMWF) and Climate Forecast Applications Network (CFAN) data are utilised to automate alerts from hazard models which provide potential impacts.



The AP-ALERT Public Warning System is a State-wide early warning dissemination system to deliver Cell Broadcast based, Geo-tagged and real-time alerts. The alert delivery time is 2-3 min across the State. The Alert System captures the location & mobile number of respondents and maps in a Graphical User Interface. It works even when the network is jammed. It provides an option to report safe conditions to friends & family on social media automatically.

It also sends alerts from the nodal agencies (IMD, CWC, INCOIS, etc.). The Alert System sends the messages through BSNL bulk SMS, Savdhan Messaging System and also through WhatsApp. In critical situations they send Letters via emails to Collectors, DROs, D-section, SDRF, NDRF, Fire and line departments.

Dr. Pradip Kumar Jena, ACS, Government of Odisha

Dr. Pradip Kumar Jena, ACS, Government of Odisha gave a focused presentation on State Disaster Response Force and other best practices. Odisha is subjected to flood (11 major river systems), cyclone (480 Km Coastline), drought, earthquake, tsunami/ storm surge, landslides, heat wave, thunderstorm/ lightning, chemical disasters, coastal erosion, snakebite, and manmade disasters.

The Odisha Disaster Rapid Action Force (ODRAF) is the first disaster response force in India with presently 20 ODRAF units in operation. The ODRAF was constituted out of the state police forces. About 1000 ODRAF personnel are part of the operations. 120 types of emergency equipment have been provided. The OSDMA meets the operation and maintenance costs of the equipment. The main aim of ODRAF is to reduce disaster mortality & morbidity, rescue from immediate danger, respond to disasters rapidly & effectively, clearance of channels of communication, minimize expenditure and time lag and reduce dependence on Army/Paramilitary Forces.



Odisha Fire Services is considered one of the finest in the country with 339 Fire Stations. Each Fire Station is developed as a multi-hazard & disaster response centre, which is unique in the country. The response forces have battled 7 cyclones in the last seven years including extending help to neighboring Andhra Pradesh Hudhud Cyclone (2014), Kerala Flood (2018) & Meghalaya Mine Rescue (2018), West Bengal (Amphan-2020).

The Odisha Fire and Disaster Response Academy (OFDRA), Bhubaneswar/RTC Bhubaneswar, Odisha Fire and Disaster Response Institute, Naraj, Cuttack (OFDRI) and Odisha State Watermanship and Life Guard Institute, (OSWALI), Ramchandi, Puri are the three training institutes functioning in the State to impart training.

Disaster risk reduction is incorporated in the fields of infrastructure, livelihoods and social development. Disaster Management Plans at the Village, Gram Panchayat, Block, District, and State levels have been prepared. 879 multipurpose cyclone and flood shelters were established, with taskforce teams constituted at the shelter level. 122 Alert Siren Towers across the coastline, 58 Satellite phones to DMs, response forces & key stakeholders, 14 Early Warning Dissemination Systems/ Satellite-Based Mobile Data Voice Terminal, Quick Deployment Antenna (QDA), Alert Mass Messaging System (Group/ Location), 168 Digital Mobile Radio and Decision Support Systems have been established.

The mass awareness is created through NGO coordination, improvising preparedness & awareness on disaster management, training of community-level volunteers, mock drill & simulation exercises,

observance of Disaster Preparedness Day & National Day for Disaster Risk Reduction, video films short films, IEC with information & safety tips, and conduct of school safety programmes.

Dr. A. Kowsigan, Commissioner (DM), Kerala SDMA

Dr. A. Kowsigan, IAS, Commissioner Disaster Management, Kerala State Disaster Management Authority made a presentation on Civil Society and Volunteerism. The major disaster events in Kerala are tsunami, Sabarimala tragedy, drought, Puttingal fire tragedy, cyclone, Nipah virus outbreak, and floods. Volunteers are the first informants, or responders from the immediate neighbourhood of a disaster event. They are invariably on-site in ground zero at the golden hour when lives can be saved most. They help to decrease the death toll.



Training & DM literacy, engaging every household/community, is considered a worthwhile investment in disaster preparedness. The volunteers hold critical knowledge which is unavailable to outsiders. They have the local domain and terrain knowledge, knowledge of who's who in the locality, knowledge of the lie of the location & structures prior to the disaster (esp. landslide locations), knowledge of quick local resources and have valuable local contacts.

- Help identify the deceased, inform relatives, console the survivors and provide psychosocial support, offer first aid (physical and psychological) and volunteerism offers the speed of spontaneity and thus saves precious time that can otherwise be lost in search of resources and services.
- As a fallout of altruistic collective action, they foster peace, social
- Harmony and social cohesion.
- Volunteerism triggers a virtuous cycle that reinforces social capital and dissolves divisive tendencies.
- Key players from the civil society are:

- Charitable Trusts
- Farmers' Organizations
- Journalists, Press Clubs,
- Parent-Teacher's Associations
- Churches, Temple Trusts, Madrassas, and faith-based religious organizations
- Students Police Cadets, NCC, NSS, Bharat Scouts and Guides, Rangers and Rovers, Red Cross, YMCA, YWCA,
- Elephant Owners' Association
- Clubs (sports, arts, culture, etc)
- Sports Associations (Football, Cricket, Chess, etc)
- Association of Plantation owners
- Aapda Mitra
- Library Council
- NGOs (with Inter-Agency Group)



- Institutional Mechanism for volunteer engagement by the Government of Kerala:
 - Samoohika Sannadha Sena (SSS),
 - Civil Defence Force,
 - Aapda Mitra,
 - Emergency Response Teams,
 - Kudumbashree - SHGs,
 - Student Police Cadets/NCC/Scouts-Guides in the schools,
 - NSS / Youth Clubs,

- Kerala Youth Leadership Academy (KYLA)
- CMDRF (to receive donations)
- They received a donation from the CMDRF (Distress Relief Fund) and private corporate CSR
- 3.8 lakh volunteers were enrolled Samoohika Sannadha Sena and 6500 Volunteers trained for the civil defence force
- Aapda Mitra- 200 skilled volunteers in Kottayam, now being scaled up to cover all districts

There are about 42000 volunteers in Emergency Response Teams (ERTs) in every LSGI. The state has 421 NGOs working for disaster risk reduction. Each District has IAG formed under DDMA. IAG members assist the district administration in disaster relief, rehabilitation etc. All the IAGs were actively engaged in the COVID response.

The KSDMA has included, disability inclusive disaster risk reduction, transgender inclusive DRR, children/women/palliative care, and tribal communities in to the DRR. The initiatives taken by KSDMA are capacity building, mock drills, disability inclusive DRR, school safety, etc.

Q & A and Discussions:

One of the participants wanted to know how the services of Aapda Mitra are being used. Kerala presenter responded that it is volunteerism based only and no payment is done for that. Another submission was by Dr. Manoj Rajan from Karnataka who appreciated the Kerala model of volunteerism and shown interest in getting training materials from Kerala. He said that Karnataka has also created Gram Panchayat Disaster Management Committees and they also have their plans. He also raised the issue of the insurance of volunteers / Aapda Mitras. He also suggested that something more can be given to them as honour, like a certificate etc. Dr. Balakrishnan from INCOIS praised the Kutumbshree initiative of Kerala. He wanted to know that in addition to volunteerism, whether Kerala has also developed some SOP for them. Kerala responded by informing that Kutumbshree is basically a women self help group and had started as a poverty alleviation mission but now it has diversified into several things. Their reach is quite good. He also informed that for every situation, there is a set of instructions which are followed.

Another question was asked by a participant to Andhra Pradesh presenter about alert SMSs. We asked that when we are bombarded by so many SMSs these days how to believe that any SMS is a reliable SMS from an authenticated source? On this Andhra Pradesh presenter responded by informing that any SMS from SDMA goes with a tagline and a signature of an Authority. In self broadcasting system, the SMS lands on your phone's screen and it will not disappear until it is seen, so it forces you to see the message.

SESSION IV

Best Practices, Lessons Learnt and Technological Innovations by States / UTs (Contd.)

Chair: Shri Kamal Kishore, Member & Secretary (I/C), NDMA

Co-Chair: Dr. C. Nagaraju, Executive Director, APSDMA



Shri M. S. Vaidyanathan, TNDRA

Shri M. S. Vaidyanathan, Watershed Management Expert, Tamil Nadu Disaster Risk Reduction Agency, made a presentation on TNSMART - Tamil Nadu System for Multi-hazard Potential Impact Assessment, Alert, and Emergency Response Planning & Tracking. TNSMART is a Web GIS based platform developed by the Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES), is an international and intergovernmental institution with headquarters in Bangkok, Thailand in partnership with Tamil Nadu State Disaster Management Authority (TNSDMA). TNSMART was the Co-creation of RIMES and successive Commissioners of Revenue Administration and customised to the operations of TNSDMA. It has a Mobile App for Android users. The Mobile App for IOS has been developed and is about to undergo Security Audit. Presently there are about 2.50 lakh active users.



TNSMART - is an operational information-driven decision-support system which serves the policymakers, disaster managers, and communities and helps to manage disaster risks holistically by transforming generic weather forecast data into actionable, impact-based early warning information. TNSMART has 12 modules for strengthening preparedness, response, recovery and mitigation.

The database module has tank level monitoring, vulnerability profile, reservoir monitoring rainfall, response Resources such as relief centres, evacuation routes, phone numbers of nodal officers, phone numbers of first responders, etc. The module on thresholds has the rainfall thresholds that triggered floods in the past, the preceding day's water levels/ rainfall and forecasts and the extreme rainfall events in a day that caused flooding. In the hazard forecast module, it uses IMD, ECMWF, Rimes models and ensemble and gives extended and seasonal forecasts. In the forecasting module TNSMART uses 3 parameters i.e. IMD rainfall forecast to predict flood levels in vulnerable areas, rainfall received during the Northeast Monsoon season, and the water level in the reservoir and tanks.

The Lightning Forecasting System, developed with an MOU with IITM Pune, provides a lightning alert for the registered and favourite locations 5 min in advance and provides the thunderstorm alerts over polygon received from Earth Networks Sensors and integrates IMD Now-cast Products.

The flood risk advisory Module, gives flood forecasts based on rainfall status, water body status, and rainfall forecast. It is very helpful for the District Collectors to take up pre-emptive evacuation of people to shelters. The Module – Response Planning gives Response Resources, Evacuation routes, Relief shelters, Details of response forces, first responders, equipment, machinery, ambulance, etc. The Module– Risk Communication, enables Communication of risk through email, SMS, App message with alarms, social media, and websites. The Module on Emergency call and Message Registry 1070/1077/ via mobile App to attend to calls/information needs from the community. This information is forwarded to the concerned focal point (DM Tahsildar) and followed up by DRO, PA (G) and the District Collector. The Module 9 - Alert call/ Distress call - Response Tracking enables to track the action taken on distress calls through feedback mechanism integrated with the emergency call registry.

The Module on Tracking Risk Reduction helps to review the reduction of vulnerable locations annually based on mitigation measures taken. The Module on Drought Monitoring is under development, to monitor rainfall deviation based on a percentage of normal and actual rainfall on a monthly, fortnightly & weekly basis, dry spells, area sown against normal area Ground Water Drought Index, Reservoir Drought Index and stream flow data. The NDVI, NDWI, Moisture Adequacy Index information will be used to assess the drought. The TNSMART is being developed as a 'One Stop Solution' for all the disaster management functions to which the State database on emergency management, Storm Surge Modelling and Real Time Flood Forecasting Systems will be embedded.

Dr. Julius Edward, Department of Fisheries & Fishermen, GoTN

Dr. Julius Edward, Deputy Director (Marine), Department of Fisheries and Fishermen welfare, Government of Tamil Nadu presented on the Deep-Sea Communication.



The present communications and vessel monitoring system has three tiers:

Tier 1: Mobile (GSM) communication through Thoondil Mobile App - The Thoondil has a Navigation system, PFZ/Tuna Advisory Data, Navigational Compass, Weather, Cyclone/Heavy Rains info etc. Trip declaration/ data and rescue plan. Thoondil App was developed with the assistance of the National Centre for Coastal Research INCOIS, IMD.

Tier 2: 0 to 50 NM using VHF devices communication -DAT/Transponder - The department has already distributed VHF devices to 20,930 boats. There is plan to convert analogue to digital signal and monitor via a web portal.

Tier 3: > 50 NM cluster-based approach using 3 NaviC,1 Navtex, 2 Sat Phone for a unit of 15 Boats - In addition, 486 Satellite Phones are given to an individual under CDRRP – FIMSUL scheme. The department is in the process of installing 4997 ISRO Transponder in all Mechanised Fibre Boats. G-Sat 6 provides connectivity to the transponder developed by ISRO and covers the entire EEZ surrounding the Indian subcontinent.

1. Developing a Common National Platform by integrating various communication systems,
2. Ensuring affordability- reducing the user fee/import duties/WPC charges and
3. Ensuring the safety of fishermen by integrating communication systems with the Maritime Rescue Coordination Centre (MRCC) of the Indian Navy and Indian Coast Guard, National Security-Linking Monitoring, Control and Surveillance with National Security Network - Information Management and Analysis Centre (IMAC) are few suggestions for further improving the deep sea communication which need to be considered.

Shri Dushyant Nariala, Principal Secretary (Disaster Management), Government of West Bengal

Shri Dushyant Nariala, Principal Secretary, Department of Disaster Management and Civil Defence, Government of West Bengal gave a presentation on 'Ecological Solutions for Disaster Risk Reduction'. Ecosystems contribute to reducing disaster risk in two important ways, first, by reducing physical exposure to natural hazards by serving as natural barrier or buffer and second, by reducing socio-economic vulnerability.



Ecosystems are central to disaster risk reduction because they provide multiple livelihood benefits. Ecosystems such as wetlands, forests, and coastal systems provide cost-effective natural buffers against the impacts of climate change. Healthy and diverse ecosystems are more resilient to extreme weather events. Ecosystem degradation reduces the ability of natural ecosystems and the impact of climate change related disasters. Human conflicts can cause devastation to communities similar to the effects of natural hazards. The ecosystem is protecting from flooding, landslide and avalanches, drought, fire, cyclones, climate change impacts. The flooding during the aftermath of the Cyclone Amphan was considerably lower in the houses along the vicinity of the mangrove plantation cover. The mangrove bio-shield checked the breaching of earthen embankments by 60% and led to lesser flooding. The Department of Agriculture, Govt. of West Bengal took a noble initiative to introduce NONA SWARNA group of paddy varieties to check its adaptability in the saline water inundated areas of Sundarban

blocks during the post-Amphan reformation period. It matures within 115-120 days. 5 crore Mangrove sapling planting in the coastal belts of West Bengal is being done till now for rebuilding the natural barrier of mangroves. Vetiver grass weaving is done on the slopes of embankments of the coastal belt and on the slopes of landslides in the hilly region. The reforestation measures in the western districts were taken up for preventing flash flood situations. Dredging of the riverbed and reservoirs was done for desiltation. Rainwater harvesting is promoted by “Jal Dharo Jal Bharo” programme.

The Chief Engineer, Water Resource Department, Government of Goa

The Chief Engineer from Water Resource Department of Government of Goa made a presentation on National Cyclone Risk Mitigation Project (NCRMP) funded by World Bank. The state has a wetland ecosystem called KHAZAN LANDS. These lands are the reclaimed lands from inter-tidal zones, they being low-laying they are defended by the marginal bunds and sluice gate system, which in turn. They protect the low-lying fields and habitation. National Cyclone Risk Mitigation Project (NCRMP) funded by World Bank strengthened the rescue and response system. Early Warning Dissemination System (38 towers), cyclone risk mitigation infrastructure - multipurpose cyclone shelter (12 nos) and underground cabling works in coastal village panchayat of angina (23 km), capacity building training (48 programs), project management and implementation support were the components of the project. The National Hydrology Project, funded by the Ministry of Water Resources, GOI, wherein “Real-Time Data” on river flow, rainfall data, and all-weather station data is being acquired (RTDAS). The state is also acquiring data on reservoir monitoring, filling and flood routing through SCADA.



Shri Vikrant Raja, Secretary (Power & Education), Government of UT of Lakshdweep

Shri Vikrant Raja, Secretary (Power & Education), Government of UT of Lakshdweep made a presentation on ‘Coastal Erosion’. The Lakshadweep Archipelago consists of 15 atolls. These atolls contribute 10 inhabited islands, 16 uninhabited islands, and 3 submerged reefs the total lagoon area

for this atoll is 4200 Sq. Km. Lakshadweep coral reef ecosystems and their associated biodiversity also support the country's two main industries: tourism and fisheries. The islands have fragile ecosystems, highly vulnerable to climate change, remoteness, and livelihood based on natural resources. Community income is purely nature-based. They earn from copra production, fishing, and tourism.



The shoreline changes induced by erosion and accretion are natural processes that take place over a range of time scales. Economic impacts, environmental impacts are the major impacts on coastal erosion. Coastal features like dunes and mangroves provide a natural defense against several hazards, including tsunamis and storm surges, so their loss due to erosion may signal an increase in vulnerability from these hazards.

Integrated Island Management Plan (IIMP) applies to the entire Lakshadweep Archipelago including the aquatic area up to 12 Nautical Miles (NM). It conserves and protects the island environment and provides livelihood security and sustainable development. The IIMPs are classified as 1) Preservation Zone, 2) Conservation Zone, 3) Regulated Development Zone I and 4) Regulated Development Zone II.

In order to provide foreshore protection in Lakshadweep under IIMP, the Union Territory of Lakshadweep in consultation with reputed scientific institutions such as Central Water and Power Research Station (CWPRS), Pune/National Centre for Sustainable Coastal Management, Chennai has proposed to undertake erosion control measures in the identified eroding stretches by deploying submerged soft structures (e.g. geo-tubes, artificial reefs) in the coastal region. In the high eroding sites, hard shore protection structures such as tetrapod/groins have to be erected based on micro-level scientific studies with the main emphasis on the protection of corals. As an intermediate intervention, the Union Territory of Lakshadweep has made a series of consultations with NCSCM/NCCR /IIT Madras, and obtained expert opinion (with design methodology and construction methodology) for taking up quick remedial measures for critically eroded location.



Meantime, the NCSCM Chennai has carried out a long-term (1972–2015) and short-term (2000–2015) shoreline change analyses of ten inhabited Lakshadweep Islands. The Satellite-based analysis made by NCSCM revealed erosion at various levels in all the 10 inhabited islands. The data clearly indicate that erosion in the islands has become severe and out of 118.96 km long coast, 33% is still subjected to erosion. Coastal protection measures like seawalls have been provided to protect 51.47 km coast eroded in the past.

Q & A and Discussions:

Chair of the Session and Member & Secretary (I/C), NDMA Shri Kamal Kishore said in his concluding remarks that the Finance Commission has made specific provisions of funds to address coastal erosion and NDMA has been working on developing National Guidelines on Coastal and River Erosion. Some community consultations have also been done in this regard. Lakshdweep's experience can also be used in this. National Centre for Coastal Studies will also be engaged.

Dr. Balakrishnan from INCOIS said that coastal erosion problem is worldwide. He said that INCOIS can work with Lakshdweep Administration. So he requested that INCOIS should also be on board while making this kind of project. He also informed that INCOIS has developed an alert system which can be used in entire Indian Ocean Region. There is a need to put researches and studies in to application and common use.

A participant from TNSDMA asked West Bengal presenter about the strategies and ways for disposal of dredged earth. On this the West Bengal presenter said that in West Bengal, it has been integrated with sand mining policy. Clearance of channel and removal of sand both are integrated.

State Wise Issues & Challenges and Way Forward For Disaster Risk Reduction

Chair: Shri Kamal Kishore, Member & Secretary (I/C), NDMA

Co-Chair: Shri Sanjeev Kumar Jindal, Joint Secretary (Disaster Management), Ministry of Home Affairs (MHA), Govt. of India



Shri T. K. S. Ajayan, Assistant Director (Operations) Andaman and Nicobar Island (ANI)

Shri T. K. S. Ajayan, Assistant Director (Operations), Andaman and Nicobar Island presented the disaster preparedness in ANI. The Andaman Nicobar Island consists of 608 islands in which 36 are inhabited. It has a coastline of 1962 km and is in the Seismic zone V (most Severe). The major disasters include earthquakes, tsunami, volcanoes, landslides, cyclones, flood and storm surges. The Emergency Early Warning System is equipped with 40 ISAT phones. 10 Hotlines were established with INCOIS, ANI, and 6 Emergency Operation Centres. Incident Response Teams have been identified with pre-designated roles and responsibilities to function at the UT, district, sub-division, and tehsil levels as per the Incident Response System of NDMA. An Integrated Command Control Centre (ICCC) with State of the Art Communication System, accommodating all line departments, is being established. MoU has been signed for Common Alert Protocol and Emergency Response Support Systems with NDMA. Under the Aapda Mitra Scheme, ANI has proposed to train 300 Community Volunteers.



Implementing Aapda Mitra Scheme, Disaster Management in the curriculum of Higher Education, updating of IDRN, conducting State level Mock Drills and Table Top Exercises, IRS Trainings, and preparation of Island level Resource Management Inventory, etc. are some of the preparedness initiatives. Installation of Doppler Weather Radar at Port Blair, establishing Emergency Operation Control Rooms in all inhabited islands and construction of Tsunami Relief Centres are other new initiatives.

In future the ANI has proposed for expansion of the range of Radar at the Southern Group of Islands, enlargement, and strengthening of the Air Field of Great Nicobar, imposing restrictions for the oil liners of eastern countries before entering the Sunda Strait and Establishment of Doppler Weather Radar for Nowcasting.

Dr. C. Nagaraju, Executive Director, APSDMA

Dr. C. Nagaraju, Executive Director, APSDMA presented the issues & challenges and way forward for DRR in his State. In Andhra Pradesh, 44% of the state is prone to tropical storms, 34.2 Lakh people in 190 mandals are vulnerable to cyclones, 68% of the area is prone to drought with 454 mandals, five districts are vulnerable, about 15% of the population i.e., 55.8 Lakh in 131 mandals are prone to floods and river erosion.



The State has signed MoU with NDMA to upscale Aapda Mitra, implement Common Alert Protocol, and Emergency Response Support System. The State has drawn up department wise DRR Road Map in consultation with the line departments in line with Sendai Framework. A Senior Consultant has been engaged. For strengthening of DDMA's of hazard prone districts, three Consultants have been appointed. Under the National Cyclone Risk Mitigation Project (Rs.1339.45 Crore) funded by World Bank implemented under phase-I, 219 Nos. Multi-purpose Cyclone Shelters (MPCS), Roads connecting 233 habitations, 236 Roads connecting to Cyclone Shelters, 34 Bridges – 34 Nos., and 2 Saline Embankment have been constructed.

Special training related to WASH, Comprehensive School Safety, COVID-19 management, and Core Commitment to Children during emergencies conducted. The APSDMA developed village-level COVID Preparedness Plan and oriented 200,000 village-level volunteers and village secretariat staff. Based on the directions of NDMA and with the support of UNICEF, it established GO-NGO co-ordination unit in AP with 940 NGOs/CSOs. The EOC ensures effective coordination and timely delivery of early warnings. The Comprehensive School Safety program is to be launched statewide.

Shri Jignesh Yadav, Senior Consultant, Dadra & Nagar Haveli and Daman & Diu

Shri Jignesh Yadav, Senior Consultant from Dadra & Nagar Haveli and Daman & Diu presented the Issues & challenges and the Way forward for DRR in their UT state. Dadra & Nagar Haveli and Daman & Diu area is under Earthquake Zone III, Moderate Damage Risk Zone. The UT is subjected to earthquake, cyclone, flood, forest fire, lightning/thunderstorm, industrial accidents. The UT has signed MoU with NDMA for implementing Common Alert Protocol, Emergency response Support System. Remote Siren Alarm System (from EOC) at Athal Bridge to warn public during release of water in Damanganga river from Madhuban Dam has been set up.



Shri Nitin V. Raiker, Director, Fire & Emergency Services, Government of Goa

Shri Nitin V. Raiker, Director, Fire & Emergency Services, Government of Goa presented the issues and challenges and way forward. During the Nisarga cyclone, the GOA State Disaster Management Authority has received 207 emergency calls and for cyclone Tauktae 1443 emergency calls. The Swift Water Flood Rescue Teams with the assistance of Life Guards & Life Saving Services carried out rescue operations in shifting people from flooded areas to higher grounds as a safety precaution. 158 people in distress were rescued and shifted to a safer area. The Special Rescue Training Academy (SRTA), a training organization of the Drishti Special Response Services Private Limited imparted flood rescue training to the officers and Fire personnel of Goa State Fire & Emergency Services. The Local Fire Station in the respective zone is the first responder in the event of any emergency incident.



Dr. Manoj Rajan, Commissioner, KSDMA

Dr. Manoj Rajan, Commissioner, KSDMA presented the DRR initiatives of Karnataka. Karnataka State is vulnerable to hydro-meteorological & geological disasters such as drought, flood, cyclone lightning and thunderstorm, heat wave, storm surges, heavy winds, landslides earthquake, and tsunami. SDMP and DDMP have been updated for the Years 2020, 2021. Action plan for flood risk management, heat wave thunderstorm & lightning, earthquake, landslide for the year 2022 has been published. DEWS (Disaster Early Warning System) of KSNDMC has to be integrated with CAP SACHET platform for effective dissemination of messages. Mock Drill and hands-on training was provided by CDOT on Common Alert Protocol to KSNDMC officials. MoU has been signed with NDMA for implementation of ERSS and Manpower is kept ready. Aapda Mitra Scheme is implemented in 11 Districts of the State, training to 3400 volunteers. State Fire and Emergency Department is designated as a nodal agency. Tentative Training Calendar, Training Locations are finalised. Aapda Mitra Mobile App has been developed. In respect of Sendai framework, a draft road map for Disaster Risk Reduction (DRR) in the State was prepared and circulated to the line departments.

Under the NCRMP project, 72 nos. of towers have to be established out of which 40 nos. are ready for

installation, 9 Multi-Purpose Evacuation Shelters have been established, 48 km of roads completed, 2 nos. of bridges to be established, in which 70% work completed, 7.8 km of saline embankment has been sanctioned in which 60% of work completed, 45 No. Of CBT's has been completed as planned 7 nos. of Shelter Level Training (SLT) is completed, Hand Book for Management and Maintenance of MPCs Printed in both English & Kannada and distributed to concerned authorities of coastal Districts.



As a DRR initiative, the weather monitoring system has been established which includes 6500 Telemetric Rain gauges, 926 Telemetric weather Stations, 14 Seismic monitoring stations, 11 Lightning & Thunderstorm sensors and 182 Water level sensors.

Under Disaster Management Emergency Response Protocol, Bengaluru Megha Sandesha (BMS) – Urban Flood Management, SIDILU APP – Lightning Alerts, KSDMIS – Karnataka State Disaster Management Information System, GEDDMP - Geospatial Enabled District Disaster Management Plan, GIS Enabled Weather Dashboard have been established.

Panchayat Raj System in Karnataka is functioning effectively and as on date in collaboration with PRI & RD DM plans for 2000 plus Gram Panchayats have been prepared.

Dr. A. Kowsigan, Commissioner (DM), Kerala SDMA

Dr. A. Kowsigan, IAS, Commissioner Disaster Management, Kerala State Disaster Management Authority presented the issues, challenges and way forward in DRR. The Kerala State is a multi-hazard-prone State, which falls under Zone III in earthquake zonation. 55.5% of the coastline is prone to coastal hazards. The major disaster includes cyclone, earthquake, tsunami, landslides, floods, drought, cold/frost wave, cloud burst, fire, hailstorm, avalanche, pest attack on crops. Soil Piping occurs when water erodes soil beneath the surface of the ground creating an underground tunnel known as soil pipe.



Under CAP program orientation and hands-on training have been completed. The physical implementation of 112 ERSS has been completed and 4300 volunteers are added under Aapda Mitra Scheme. A key role has been given to Fire and Rescue Dept. One-week Training Webinar on Sendai Framework Monitor Indicators, SFDRR has been conducted. In Aspirational district extended service of Consultant DM, Wayanad. Action Plan Activities have been initiated.

Under NCRMP, 14 DEOCs, 77 TEOCs, Control Rooms (14 Fisheries, 14 Fire and Rescue, PHQ) etc. – 83/126 locations equipment installation completed, 126 sirens and strobe lights to be established. There has been 72% physical progress and 42% financial progress. 11 out of 17 Cyclone shelters have been inaugurated.

The government created Samoohika Sannadha Sena (Army of Community Volunteers) and established a directorate for the purpose. Under Aapda Mitra, 200 young, enthusiastic, and energetic volunteers were selected from Kottayam district. Intensive 12 days of residential training was given to these volunteers in Thrissur Fire Academy, Viyyoor in 8 separate batches. The State has notified incident response system up to Taluk level vide GO (Rt) No. 442/2021/DMD dated 27-5-2021 and has been laid down in the Orange Book of Disaster Management 2 – Monsoon Preparedness and Response Guidelines.

The Disability Inclusive DRR project is being implemented by KSDMA since 2016. 3000 persons with disabilities were trained. It is the first of its kind in the country. It developed various materials like Braille, sign language, etc. The program has been mainstreamed in the social justice department. transgender inclusive DRR is also being implemented in the state since 2021. The State has 25000 plus transgenders. Inclusive trainings are being organized. School safety programme has been conducted since 2013 onwards. Out of 12896 schools in Kerala 11305 schools have prepared School DM plans. More than 400 NGOs have been identified under GO-NGO coordination. Kerala Water Resources Information System has been established. Virtual cadre training is being organized by KSDMA since 2018. 26 nodal departments have been identified. 15 departments have been trained. 11 more are to be trained. Departmental DM plans are being prepared. Using existing Telecom Towers for Sirens and Strobe lights under EWDS – is a better practice instead of mounting on buildings / standalone towers.

Shri Vikrant Raja, Secretary (Power & Education), Government of UT of Lakshdweep

Shri Vikrant Raja, Secretary (Power & Education), Government of UT of Lakshdweep presented the overview of Disaster Management. Lakshadweep Islands are prone to heavy wind and Cyclonic storms. The India Meteorological Department has measured the degree of cyclone proneness as P2 (Highly prone to Cyclone) in Lakshadweep. Lakshadweep has been classified in the Seismic Zone III with a moderate damage risk zone. However, no major earthquake has been reported in islands. Major hazards are cyclone, coastal sea erosion, Tsunami, Earthquake, oil spill etc. Revision of Lakshadweep State Disaster Management Plan is underway based on National Disaster Management Plan 2019.



For CAP nominated Nodal officers, conducted hands-on training and created and activated user credentials for live access of NDMA CAP alert system. ERSS is under progress. Under Aapda Mitra Scheme Volunteers for 1st round of training is already identified and the list furnished to NDMA. The recruitment process for hiring Consultant / Disaster Management Professionals is commenced for Sendai Framework. Multipurpose Evacuation cum Community shelter construction work has been completed at Minicoy.

Every year Familiarization Exercises (FAMEX) are conducted for the Public, School Children, NGOs, etc with the support of National Disaster Response Force (NDRF) 4th Battalion Arakkonam, Tamil Nadu at various islands for generating cyclone awareness among the public.

The Oil Spill Disaster Contingency Plan (OSDCP) has been prepared and updated to prevent, control, and combat oil pollution of the territorial waters and shoreline and also to Minimize their impact on public health and welfare and on the maritime environment.

Mass Rescue Operation (MRO) Plan has also been prepared to ensure a prompt and coordinated response to mass rescue operation for saving of lives at sea due to ship collision, a downed aircraft, call for the immediate rescue of large numbers of passengers and crew in poor environmental conditions, etc.

A comprehensive Vessel Tracking & Monitoring System including for fishing boats has been proposed under Sagarmala Scheme in consultation with Coast Guard & Indian Navy. Scientific marking of NDZ areas in all inhabited islands completed. Demolition of all unauthorised structures in the NDZ areas in all inhabited islands has been initiated. A New Doppler Radar will be installed at Agatti airport under IMD for specific weather prediction.

Shri Sarthak Sourav Mahapatra, DGM, OSDMA, Government of Odisha

Shri Sarthak Sourav Mahapatra, DGM, OSDMA Government of Odisha presented the issues, challenges, and way forward for DRR. The State of Odisha is facing cyclone almost every year, 98 events occurred since 1891 which is the highest no. of all states in India. SDMP, DDMP, Heave Wave Action Plan, and VDMP have been prepared. Under NCRMP Project 316 cyclone/flood shelters were constructed. Alert Towers at 122 locations within 1.5 km from the coastline for both cyclone & tsunami warnings have been established. 1205 villages in 22 coastal blocks within 5 km from coastline covered. Approach Roads of 218.500 KM has been created for easy access to the MCS/MFS. 12 Saline Embankments of 58.22 km has been developed.



Under CAP, 9 Crore of Text Messages have been disseminated during the third wave of COVID19 and 3.5 Crore Text Messages during Jawad Cyclone. 4400 volunteers have been identified under Aapda Mithra scheme. 20 Odisha Disaster Rapid Action Force Units of 1000 highly skilled personnel have been established. Under Odisha Disaster Recovery Project (ODRP) 19,108 disaster-resilient houses have been constructed.

Shri Arjun Sharma, D.C. Karaikal, Puducherry

Shri Arjun Sharma, D.C. Karaikal, from Puducherry presented the issues, challenges, and way forward for DRR. Puducherry is a union territory consisting of Puducherry, Karaikal, Mahe, Yanam. It is highly vulnerable to cyclones floods/urban floods, Tsunami, Heavy and very heavy rainfall, fire, industrial and chemical hazards. The drainage is poor and the encroachments have led to a scenario where, even

rainfalls, which are slightly above normal rainfall can cause floods, disrupting the normal course of work.

State Action Plan on Climate Change (SAPCC) has already been completed and ver 2.0 is under process. SOPs for ESFs / Line Departments are in place and revised periodically. Common Alert Protocol hands-on training and mock drills were conducted. State-level and district-level officers are designated under Aapta Mitra scheme. Fire services sept has been identified as the State Level Training Institute. Building resilient infrastructure, enhancing livelihood and improving the recipient's capacity to respond promptly and effectively to an emergency are some of the DRR initiatives.



Under the CDRRP project, 1148 multi disaster resistant permanent owner build-in houses were constructed, 200 km of overhead cable were replaced to underground, reconstruction of Mairie building (heritage building) and Nehru Market at the cost of 15.49 Crore and reconstruction of Nehru Market were taken up and completed.

Nourishment of Puducherry beach in coordination with NIOT involves carrying out coastal protection measures along the Puducherry beach to solve the severe coastal erosion and restore the beach. Rainbow nourishments and Pipeline nourishments were taken up. The outcome of the project is shoreline protection and restoration, protection of the economic and social sector from rising seas. The Puducherry Government followed risk-based approach for management of COVID. The health infrastructure and logistics were given utmost importance by the govt.

Shri K. S. Kandasamy, Director, TNDRRA

Shri K. S. Kandasamy, Director, TNDRRA made a presentation titled 'Towards Resilient Tamil Nadu': Tamil Nadu has a coastline of 1079 km, facing disasters such as cyclone, floods, drought, COVID pandemic, landslides, earthquakes, sea erosion, heat waves, thunderstorm and lightning. Tamil Nadu State Disaster Management Perspective Plan 2018-2030 has been prepared. TNSDMP 2021 and DDMP 38 Districts have been prepared. 16 messages to reach out 28,91,931 peoples were disseminated during NEM 2021 under Common Alert Protocol.

In Sendai Framework Monitoring, Senior Consultant has been appointed and NDMIS is being updated. 5500 volunteers have been identified under Aapda Mitra. For ERSS, GIS layers shared to CDAC and expected to commission the system in March 2022. In respect of Disaster Risk Reduction, Flood Mitigation Projects in Chennai Basin Phase I with Rs. 100 Crores completed. River basin wise comprehensive flood protection plan has been prepared and shelf of projects for vulnerable and prioritised river basins has been presented to World Bank.



Under the Coastal Disaster Risk Reduction Project, 14347 Multi-Hazard Resistant Houses and 121 multi-purpose evacuation shelters were constructed. 438 Disaster Warning Announcement Systems have been established. The conventional power transmission was replaced with underground cabling in Cuddalore and Nagapattinam districts partially.

Photogrammetric Survey of Coastal Areas with Unmanned Aerial Vehicle was completed for 18 districts and one district is under progress. TNSDMA is establishing Real-Time Flood Forecasting of Chennai basin with data acquisition systems.

The way forward activities for Resilient Tamil Nadu are:

- Multi-Hazard Risk Assessments and Mapping (LiDAR/Drone Survey)
- Multi-Hazard early warning capabilities
- Strengthening institutional & response mechanisms
- Multi Stakeholder Partnership (Industries, CREDAI, NGO, CSO),
- Establishing State Institute of Disaster Management
- Expanding the coverage of Community Based Disaster Risk Management
- Mainstreaming Disaster Risk Reduction and Climate Change Adaptation
- Restoration of Ecosystem Services
- Revisiting Techno- Legal Regime, Land Use Regulations, Flood Plain Zonation
- Expanding risk cover to MSME, small vendors and street vendors

Shri Dushyant Nariala, Principal Secretary (DM), West Bengal

Shri Dushyant Nariala, Principal Secretary (Disaster Management), Government of West Bengal presented the overview of disaster risk management in West Bengal. West Bengal shares international boundaries with Bangladesh in the east, Nepal in the north-west corner, Bhutan in the north border. The districts of West Bengal lie in earthquake zones of III, IV & V. The intensity of extreme rainfall events has increased in West Bengal. In the coastal region, severe cyclonic storms are on the rise and the total number of cyclones is annually increasing. High rate of sea-level rise at the rate of 5.7 mm/yr was observed along West Bengal coast with respect to other stations along the entire Indian coastline. Flash flood occurs due to excessive water release from dams located in adjacent states & country.



Under CAP program, a nodal officer has been identified. Two phases of training of State & District Officials have been completed. MOU has been signed for ERSS and nodal officers have been identified. 1000 community volunteers have been identified under Aapda Mithra scheme.

Bengal Government planted 5 Crore mangrove trees in Sundarbans after Super Cyclone AMPHAN. Desiltation is under process in all major rivers. A program named “Jal Dharo - Jal Bharo” was launched during 2011-12 for rainwater harvesting.

Mobile treatment units - 28 numbers of MTUs, deployed at strategic locations in districts, proactively provide safe & clean drinking water within a short span of time. 28 Multi-Purpose Flood Shelters have been sanctioned. New EOC is proposed jointly with Irrigation Department.



Q & A and Discussions:

Dr. Mani Murli from NIO asked a question to Kerala about soil piping and subsidence. He said that recently NIO started working on subsidence in Godavari and Krishna Delta. He wanted to know how much soil piping was done and at what rate Kerala has observed. Official from Kerala said that these pipes are quite long. One pipeline covers 20 or more households. Kerala did not have any measurement of subsidence. Dr. Mani Murli further said that at every place coastal erosion is a unique situation. He wanted to know if any funds are available with SDMAS or NDMA for research purpose. Responding to this JS (DM) said that XV FC has earmarked allocation on NDMF, about 1500 Cr for Sea and River erosion. We are also earmarking 10% of the fund for non-structural purposes like research etc. Each State can also allocate funds if they have such issue of sea and coastal erosion. SDMAS of the concerned State may be approached for this.

Dr. Balakrishnan from INCOIS said that many SDMAS have expressed their willingness to add oil spill and some other phenomena in their disaster management plans. I would like to inform that oil spills and high wave alerts, as a product we are giving to some of the SDMAS. It is very small programme that can be done with all the SDMAS.

Shri Biswanath Sahu from Disaster Management Department, Odisha said that crop loss assessment, State Government is assessing crop loss for drought, floods and other disasters as per Odisha Relief Code. But for drought, Govt has made it mandatory to follow the provisions of the Drought Management Manual 2016 (revised in 2020) and as per this manual, drought should be declared in a particular administrative unit, Gram Panchayat, Block or District. In this case the scientific parameters described in the Drought Manual must be in that particular administrative unit. We are getting the data block wise. For a particular unit data is not available. So how drought can be declared? Shri Sanjeev Kumar Jindal, JS (DM), MHA advised to discuss it with other States and also with the Ministry of Agriculture.

Shri Harsh Gupta from Government of Karnataka said that NDMA has prescribed lots of institutions and frameworks to be implemented by different States. Whether NDMA is taking some initiatives based on States' inputs to prescribe some sustainable ways of tackling these calamity situations? Shri Kamal Kishore, Member & Secretary (I/C), NDMA said that all the guidelines produced by NDMA are taking us towards that, but the challenge is in implementation.

Disaster Management Planning at District Level

Chair – Shri Rajendra Singh, Member, NDMA

**Co-Chair: Dr. A. Jaythilak, I.A.S., Additional Chief Secretary,
Government of Kerala**

Presentations were made by Collectors from Idukki, Karaikal & Nellore & by Sr. Consultant from Dadra and Nagar Haveli, Daman & Diu. A set of questions were given to Collectors and also some State level questions were displayed on the screen and presenters were asked to respond to them.



Questions for DDMA's and SDMA's:

DDMA's – Future Scenario

- Capacity building and role of volunteers?
- Enabling provisions of DM Act and their possible implementation in future?
- How effective is DDMA's' upward linkages with State/SDMA?
- Issues and challenges for DDMA's?
- How can you enhance the performance of DDMA's?

SDMA's-Future Scenario

- Department of Disaster Management and SDMA's – Effective integration and role clarity?

- Funding Windows – Operationalisation at District level?
- How to strengthen the SDMAS in terms of staff, capacity and resources?
- Integrated and coordinated response – community first?

Collector, Karaikal, Puducherry

On the capacity building of volunteers, he mentioned that Puducherry has been implementing the scheme with respect to civil defence volunteers. The Aapda Mitra Scheme is another very good initiative. In Puducherry, the target of 500 volunteers was given. He suggested that instead of going by numbers, its better to have a smaller set of trained people, who are trained in both technical as well as psychological aspects of handling a disaster, including social aspects and how to marshal resources at village level.



In Karaikal, floods and cyclones are annual features. Government offices at district level are well prepared, so additional support in the capacity building would be needed at village level to handle situation at ground level. A good organised unit of Civil Defence volunteers has been raised in Karaikal and were trained by NDRF, local NGOs and mock drills in different scenarios were conducted.

As regards the DM Act, during COVID times, lots of orders were passed under the DM Act and most of them were also carried out. So the Act is very effective and helps the administration in implementing various things during disasters.

There is an established EOC in the district functioning 24 hours and all the calls are received there. It is still being improvised with new communication systems. Revised DDMP and set protocols are followed in EOC. There is a constant linkage between DDMA and SDMA and there is no major issue between them. Biggest challenge for DDMA is capacity building. Quantum of funds given for rehabilitation and relief purpose is not sufficient and on many occasions State government is not able to provide those funds and cost has gone so high that the quantum of funds received under NDRF is very less. Funds are also required for modernisation of EOC.

Collector, Nellore, Andhra Pradesh:

Regarding capacity building aspect, there is a unique system in Andhra Pradesh, where every 50 households are mapped by a volunteer. So there is a huge network of volunteers who work day and night for all government related activities. They are trained and readily available to the district. They also facilitate in evacuation process following any disaster.



DDMA takes the overarching role of coordination between all 54 government departments. Alerts are received on real-time basis. Instead of taking all the districts under one uniform definition, DDMA should be categorised on the basis of size of population and the area being handled and give them more powers, functionaries, funds and technologies to make them self-reliant and resilient.

Collector, Iduki, Kerala

Regarding capacity building and role of volunteers, almost all the revenue officials, Police, fire officials and field level officers are already trained. Volunteers from civil society are used, especially women volunteers and off-road drivers for rescue and evacuation purposes. Not only during COVID period but under every disaster situation, the provisions of the DM Act can be used. In Iduki, DDMA meeting is convened every week and linkage with SDMA is also very smooth, especially during disasters and we also get instructions from State and SDMA. Regarding challenges, the shortage of staff is the main issue faced. Staffs are arranged from other departments at the time of disasters. It is suggested that DDMA staff should be trained regularly. Iduki district has a very good functional DEOC.



Sr. Consultant, Dadra & Nagar Haveli, Daman & Diu

He said that there is a need to have disaster resilient volunteers, who are available at the time of actual incidents and calamities. Sometimes volunteers also might get affected and hence not available at the time of need. Aapda Mitra Scheme has very well built these provisions for volunteers. Various orders are made under the provisions of the DM Act, e.g., requisition of resources, which is very powerful provision. Regarding issues and challenges, bigger States have efficient systems in Place, but small UTs and districts rely on central agencies. At the time of disasters, evacuation is most difficult task, because affected people are very reluctant to evacuate. EOCs are the nerve centres and well equipped and manned EOCs can solve quite many issues.



Q & A and Discussions:

Dr. A. Jaythilak, I.A.S., Additional Chief Secretary, Government of Kerala said that in most of the States, the Disaster Management Department is very skeletal and the bulk of the activities to be done by SDMAs are carried out by revenue department or some other department.

Shri Kumar Jayant, Principal Secretary, Revenue and Disaster Management, Government of Tamil Nadu said that if money is given to DDMA, there is a possibility of misallocation because resources are always scarce. There is not sufficient money that every disaster can be covered. There are state level imperatives while allocating the funds. There is a serious limitation of availability of funds and it has to be spent very efficiently.



Shri Gauhar Jilani, Sr. Consultant, Goa said that in most States, there is no separate institutionalisation of SDMAs and dedicated staff is possible only with dedicated institutions. Role clarity is required between the Department of Disaster Management and SDMAs. Provisions of the DM Act are very helpful in the functioning of DDMA and SDMAs.



Dr. Pavan Kumar Singh, Joint Advisor, NDMA said that the point mentioned by Shri Kumar Jayant, Principal Secretary, Revenue and Disaster Management, Government of Tamil Nadu is very right that proposals from each and every corner needs to be invited, be it district or some other proposal from some NGOs/CVOs but the funding mechanism has to be controlled and operated through State because there is paucity of funds and also the issue of prioritisation. The second important issue is concurrent disaster. What was seen during COVID was that we had floods during COVID time, so we need to have some leverage at district level with regard to funds and districts also need to gear up two or three disasters at one time.



VALEDICTORY SESSION

Dignitaries on the Dais – Shri Kamal Kishore, Member & Secretary (I/C), NDMA, Shri Kumar Jayant, Principal Secretary (Revenue and Disaster Management), GoTN, Shri M. A. Siddique, Commissioner of Revenue Administration (CRA), GoTN, Shri Kunal Satyarthi, Joint Secretary (PP), NDMA and Shri M. S. Kandasamy, Director (Disaster Management), GoTN.



Summary of Workshop by Shri Kunal Satyarthi, Joint Secretary (PP), NDMA –

Expressing his appreciation for the regional Conclave, Shri Kunal Satyarthi, Joint Secretary (NDMA) thanked the Chief Secretary of Government of Tamil Nadu, Dr. V. Irai Anbu for his very insightful speech and the groundwork by Member Secretary, NDMA, Shri Kamal Kishore, for the one and a half days first Regional Conclave for Coastal States and numerous presentations by States/UTs and many other national agencies. He presented a session wise summary -

- **Technical Session I** – This session had 7 presentations, highlighting different aspects. MoEFCC presentation was on coastal zone regulation and mangroves as very important sector, NIOs presentation was on inundation scenario and the cyclone work that they are doing, INCOIS presentation was on early warning systems, IMD's was on forecasting, NDRF made a presentation on how it can help in developing SDRF, NIDM talked about the training that they do and the trainings they are possibly capable of doing and helping the 11 States and UTs.
- **Technical Session II** – In this session, presentations were made by NDMA and MHA, where speakers tried to apprise the States and UTs about important issues, particularly XV FC, the four funding windows, the guidelines thereof and the opportunities that are available. It was a very interactive session. The Mitigation Guidelines; R&R Guidelines and preparedness

and capacity building guidelines were explained. There were also presentations on three major schemes that NDMA is running, CAP, ERSS and Aapda Mitra Schemes.

- **Technical Sessions III & IV** - These sessions were highlights of first Regional Conclave. A total of 8 presentations were made on different topics. It was great mix of concepts. West Bengal and Goa talked about ecological solutions and NCRMP project. Lakshdweep presentation was very interesting about how the islands have very important effects of coastal erosion. So these were very powerful sessions, which was one of the purposes of the Conclave to enable SDMAs to listen to other SDMAs and capture their best practices. It was also a great learning for team from NDMA.
- We have all tried to very carefully look at the innovations and new schemes and the new initiatives that the States are doing. The second purpose was for NDMA to look at how the Act and the Policies and the Guidelines actually operate and look in the field situation. So we also learned a lot about the best practices show cased by various States.
- On Day 2, there were presentations by all 11 States, which were basically on taking the stock of what all is happening in the States and then very interesting session on the core issue of how SDMAs and DDMA's could be strengthened what is their ground zero reality.



It has been full and very engrossing one and a half day workshop. We all are aware that climate change is going to have the effect on extreme weather events and cyclones, urban flooding, floods, drought, coastal erosion, inundations, thunder storm, lightning are all coming as a package. There was also very important discussion about DM Act provisions that DM Act sections have to be more elaborated and understood by all the stakeholders of this sector.

We are also aware of possibility of involving science and technology in early warning, dissemination of distress and that we have captured. We also understood that national institutions are doing great research with the possibilities of entering in to MoU with each other and with States/UTs.

So it has been rigorous one and a half days and we are happy that we have been able to achieve what we thought we will try to achieve in first regional conclave and it makes us very comfortable and positive about going ahead with this concept of regional conclave and learning from each other.

On behalf of all participating States & UTs and participating 8 national institutions, he extended gratitude to the Tamil Nadu Government led by the Principal Secretary Shri Jayant, Shri Siddique and Shri Kandasamy. So on behalf of all the participants in this beautiful hall and also on behalf of all the Members and officers of NDMA, he thanked Tamil Nadu Government for having supported NDMA for this first Regional Conclave.

Special Address by Shri M. A. Siddique, Commissioner of Revenue Administration (CRA), GoTN

Shri M. A. Siddique said that after a long time we have a live get together in this Conclave, almost after two years. In this Conclave, we had NDMA coming here all the way from Delhi to interact with all of us from States and UTs, to share their knowledge and at the same time create an opportunity for all of us to interact with each other and learn from each other. It has been real great event that not only gives us an opportunity to learn and also to connect. Connecting is very important in these kinds of things, so that we can learn from each other and continue to learn from each other in future.

He thanked Shri Kumar Jayant who has been a source of strong support and guidance. For organising this event, Mr. Kandasamy and his team were very active. In this Conclave we also have has participation from institutions of national importance, MoEFCC, NIDM, NIO, INCOIS, IMD, NDRF, Coast Guards, Navy, which can not be imagined anywhere else.



We have our young officers from districts, who came and shared their experiences and insights about how to manage disasters at the district level. Overall, I just want to say that disaster risk management

is ever changing, the way disasters behave is changing, risks are changing, management styles are changing. All these are changing so we have to continue to upgrade ourselves to handle these situations and we look forward for more such interactions in future in Tamil Nadu or some other place.

Thank you all for this excellent programme and thank you NDMA for this.

Way Forward by Shri Kamal Kishore, Member & Secretary (I/C), NDMA

He said that it was very intense a day and a half consultation. There have been lots of presentations, lots of information, lots of insights, lots of reflections from all the eleven States and UTs, national institutions and we definitely going back home richer.

We have also identified our priorities and problems. In terms of way forward, a lot has been discussed. There are many issues that have come up. **I want to identify five strengths**, that emerged where we need to work more intensely and collectively together and five opportunities that I saw over the last two days.

The first is to have more structured and systematic exchange in terms of making the most of each State's innovation in the space of technology. Each State is different, their capacities are different, their needs are different, so they have to customise the experiences and knowledge from other States as per their needs.



The second thing that came up was how can we begin to work towards ensuring that there is a minimum capacity at the district level. It came up again and again. We talk about localising disaster risk management but we are not putting resources there. There is a need to modernise the set up at the district level, there is a need to have EOC at district level, need to have full time functionaries working at DDMA's.



The third thing, which is very important for the coastal States is last mile connectivity. States are doing a good job of predicting the landfall of cyclones and the timing of cyclones, but there are other aspects of early warning particularly with regard to last mile connectivity, where a lot more work needs to happen.

The fourth is, it appears that there are some hazards that may be locally specific, which can also be called “neglected hazards”. These neglected hazards include coastal erosion.

The fifth one, on which there was hardly any discussion but it is our commitment and we need to bring it back to our active focus which is how are we going to do district, state and national level reporting on progress against Sendai Framework for action. If we don’t know what we are losing in terms of lives, economic losses and critical infrastructures, how are we going to know where to prioritise?

Thank you very much. It has been a delightful one and a half day.

Vote of thanks by Mr. M. S. Kandasamy, Director, TNDRRA, GoTN



Shri M. S. Kandasamy, Director, TNDRRRA, GoTN proposed the vote of thanks in the Valedictory Session. He thanked dignitaries on the dais for their closing remarks. He thanked Shri Kamal Kishore, Member & Secretary (I/C), NDMA for giving way forward which will be very useful for all the States and UTs in near future. He thanked all the States/UTs, NDMA, MHA and other members of organising team from GoTN for making this regional conclave make it successful.

Way Forward:

The two days Regional Conclave has been very useful for the participating States/UTs and also for NDMA. The Regional Conclave resulted in an exchange of information on initiatives taken by States, their programmes and projects, issues and challenges faced and how they resolved, sharing of their concerns with NDMA, etc., which was the primary purpose of organising this Regional Conclave. Some of the important takeaways from the Regional Conclave are:

Shri Kamal Kishore, Member and Secretary (I/C), NDMA cautioned that there is a new climate regime, we are living with, where we are not just dealing with risks, we are also dealing with uncertainties and we should know how to deal with it.

Referring to the Hon'ble Prime Minister's Ten Point Agenda for disaster risk reduction, he said that there is lots of guidance on what needs to be done. We have to ask ourselves, whether we are delivering satisfactorily against the Ten Point Agenda.

In his inaugural speech, Chief Secretary of the Government of Tamil Nadu, Dr. V. Irai Anbu expected this conclave to provide an opportunity to bridge the gap between the policies and the practices.

He said that the other important area is strengthening the capacities of local institutions. NDRF, despite its expertise and number, cannot reach all the places. It has its own difficulties. Therefore, it is very important that capacity building is done at district level, so that they can respond to an emergency situation instantaneously without expecting any extraneous help.

He further said that as far as disasters are concerned, regional approach will be more beneficial than States working in silos. In addition, hazards and disasters have political administrative boundaries, particularly in case of floods, hence regional plans and programmes can be more beneficial.

So the ideas and suggestions in this conclave will be extremely useful and it will also help us in avoiding the duplication of efforts and reinvention of the wheel for example, if some State comes forward with the best practices that they have adopted at the time of a natural disaster, our colleagues can learn from them and they can incorporate it in our State Disaster Mitigation Plan.

Takeaways from different Technical Sessions are as below:

Technical Session - I

- Better understanding and effective utilisation of funds as per 15th Finance Commission recommendations of four Funding Windows at the National and State Levels for Response,

Recovery, and Preparedness & Capacity-building within NDRF/SDRF and independent Window for National Disaster Mitigation Fund /State Disaster Mitigation Fund.

- Presently there is more reliance on NDRF. There is a need to set up SDRF Battalions in each state and create a multi-tier response structure at the State level.
- Need to make DDMA's more effective than keeping them just as district-level committees? It is essential that the DDMA is strengthened with professional and technical people.
- It is very important to integrate Disaster Management into Municipal Councils and PRIs. Both Municipal Councils and PRIs supported Covid-19 management to the State Governments.
- Community Based Disaster Risk Reduction with particular emphasis on Role of Women has to be evolved.
- Mangroves serve as a buffer between marine and terrestrial communities and protect shorelines from damaging winds, waves, and floods. Mangroves are the first line of defense for coastal communities. They stabilize shorelines by decelerating erosion and provide natural barriers protecting coastal communities from increased storm surge, flooding, and hurricanes.
- INCOIS has set up the Storm Surge Early Warning System (SSEWS) for the Indian coasts using ADCIRC model. SSEWS utilizes the automated Decision Support System (DSS) based on Geographic Information Systems (GIS) and database technology. INCOIS has generated an online Oil Spill advisory based on the parameters of wind speed and ocean currents to predict the oil spill trajectory.
- Search And Rescue Aid Tool (SARAT) is developed by Scientists of Indian National Centre for Ocean Information Services. ESSO-INCOIS (under the MoES) has successfully developed a Search and Rescue Aid Tool (SARAT) for facilitating the search and rescue operations in the seas to locate individuals/vessels in distress in the shortest possible time.
- There are different types of forecast such as now-cast, short-range, medium-range, extended range, long-range, etc. District level impact-based weather forecast is being issued from October 2020. Hydromet bulletins are issued by IMD with spatial rainfall distribution and intensity for various sub-basins for next 5 days with heavy rainfall warning for various sub-basins for next 5 days. This is issued to the departments concerned.
- IMD has now prepared a Web version of Climate Hazards and Vulnerability Atlas of India for the thirteen most hazardous meteorological events, viz. Cold wave, Heat Wave, Flood, Lightning, Snowfall, Dust Storm, Hail Storm, Thunderstorm, Fog, Strong winds, Extreme Rainfall, Drought and Cyclone that cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption or environmental damage.
- NDRF has collected detailed data of 21 layers such as flood-prone areas, landslide areas, Major Accident Hazard Units, Fire Stations, Govt. Hospitals & Primary Health Centres, Relief Shelters, etc., located in vulnerable areas and coastal areas. The vulnerability mapping helps in better response and effective decision-making during a disaster.

- NIDM provides the required assistance to the training and research institutes for development of training and research programs for stakeholders including Government functionaries and undertake the training of faculty members of the State level training institutes.

Technical Session - II

- The XV Finance Commission has recommended that State Governments must allocate resources to districts for preparedness and mitigation on an annual basis. The district administration needs to be empowered which is essential for improving disaster preparedness at local level. XV Finance Commission is of the view that PRIs can play a proactive role in all stages of disaster management, Relief, Recovery and Reconstruction, and Mitigation activities to be undertaken by the Panchayats.
- The Projects, which have the jurisdictional and technical complexity that can be addressed through national-level technical assistance or require national agencies to collaborate.
- Research and studies related to disaster mitigation can be taken up through the Small Grants window. Up to 5% of the NDMF and SDMF may be earmarked for small grants window for research/ studies.
- NDMA has initiated the process for formulating **National Policy on 'Resettlement of displaced people affected by Coastal Erosion and River Erosion'**. Grassroots level consultation through a household survey is being taken up in the Blocks and Districts of the identified States to understand the problem, issues, and losses, for preparing a holistic National Policy.
- The Preparedness and Capacity Building funding window will support and provide funds to the following types of projects at the National and State level:
 - Projects of National/ State-level significance and hazard-specific significance.
 - Projects to strengthen early warning systems, preparedness, and response mechanisms across the States.
 - Projects to promote disaster awareness, education, research, and use of technologies
 - Preparedness and capacity building of Response Forces and Institutions at National and State level.
- Automatic dissemination of Alerts generated by all Alert Generating Agencies to geo targeted population over multiple media in regional vernacular using CAP technology.

Technical Session - III

- The Karnataka State has leveraged the Geo-Spatial Technology to collect data on rainfall, weather parameters, seismic activity, water level, lightning & thunderstorm etc. The advantage of geospatial enabled DDMP is that it provides accurate, authentic & tamper-proof data, and provides auto-generated analysis which helps the State to channelize the mitigation efforts straight to the area affected.
- The AP-ALERT Public Warning System of Andhra Pradesh is a State-wide early warning

dissemination system to deliver Cell Broadcast-based, Geo-targeted and real-time alerts. The Alert Delivery time is 2-3 min across the State. The Alert System captures the location & mobile number of respondents and map in Graphical User Interface. It works even when the network is jammed. It provides an option to report safe conditions to friends & family on social media automatically.

- The Odisha Disaster Rapid Action Force (ODRAF) is the first disaster response force of India with presently 20 ODRAF units in operation. The ODRAF was constituted out of the State Police Forces. About 1000 ODRAF personnel are part of the operations. 120 types of emergency equipment have been provided.
- Institutional mechanism for volunteer engagement by Government of Kerala has come up very well. This includes Samoohika Sannadha Sena (SSS), Civil Defence Force, Aapda Mitra, Emergency Response Teams, Kudumbashree - SHGs, Student Police Cadets/NCC/Scouts-Guides in the schools, NSS / Youth Clubs, Kerala Youth Leadership Academy (KYLA), CMDRF (to receive donations) etc. They received a donation from the CMDRF (Distress Relief Fund), private corporate CSR. 3.8 lakh volunteers were enrolled samoohika Sannadha Sena and 6500 Volunteers trained for civil defence force.

Technical Session - IV

- TNSMART of Government of Tamil Nadu is an operational information-driven decision-support system which serves the policymakers, disaster managers, and communities and helps to manage disaster risks holistically by transforming generic weather forecast data into actionable, impact-based early warning information TNSMART has 12 modules for strengthening preparedness, response, recovery and mitigation.
- West Bengal gave a presentation on ecological solution for disaster risk reduction. Ecosystems contribute to reducing disaster risk in two important ways, first, by reducing physical exposure to natural hazards by serving as natural barrier or buffer and second, by reducing socio-economic vulnerability. The ecosystem is protecting from flooding, landslide and avalanches, drought, fire, cyclones, climate change impacts.
- In order to provide foreshore protection in Lakshadweep under IIMP, the Union Territory of Lakshadweep in consultation with reputed scientific institutions such as Central Water and Power Research Station (CWPRS), Pune/National Centre for Sustainable Coastal Management, Chennai has proposed to undertake erosion control measures in the identified eroding stretches by deploying submerged soft structures (e.g. geo-tubes, artificial reefs) in the coastal region. In the high eroding sites, hard shore protection structures such as tetrapod/groins have to be erected based on micro-level scientific studies with the main emphasis on the protection of corals.

Technical Session - V

- The Andhra Pradesh SDMA developed village-level COVID Preparedness Plan and oriented 200,000 village-level volunteers and village secretariat staff. Based on the directions of NDMA and with the support of UNICEF, it established GO-NGO co-ordination unit in AP with 940 NGOs/CSOs.

- Under Disaster Management Emergency Response Protocol, Bengaluru Megha Sandesha (BMS) – Urban Flood Management, SIDILU APP – Lightning Alerts, KSDMIS – Karnataka State Disaster Management Information System, GEDDMP - Geospatial Enabled District Disaster Management Plan, GIS Enabled Weather Dashboard have been established.
- Panchayat Raj system in Karnataka is functioning effectively and as on date in collaboration with PRI & RD DM plans for 2000 plus Gram Panchayats have been prepared.
- The disability inclusive DRR project is being implemented by Kerala SDMA since 2016. 3000 persons with disabilities were trained. It is first of its kind in the country. It developed various materials like Braille, sign language, etc. Transgender inclusive DRR is also being implemented in the state since 2021. Inclusive trainings are being organized.
- In Lakshdweep, every year Familiarization Exercises (FAMEX) are conducted for the Public, School Children, NGOs, etc with support of National Disaster Response Force (NDRF) 4th Battalion Arakkonam, Tamil Nadu at various islands for generating cyclone awareness among the public.
- Oil Spill Disaster Contingency Plan (OSDCP) has been prepared and updated to prevent, control, and combat oil pollution of the territorial waters and shoreline and also to minimize their impact on public health and welfare and on the maritime environment.
- Mass Rescue Operation (MRO) Plan has also been prepared to ensure prompt and coordinated response to mass rescue operation for saving of lives at sea due to ship collision, a downed aircraft, call for the immediate rescue of large numbers of passengers and crew in poor environmental conditions, etc.
- In Puducherry, Under the Coastal DRR Project (CDRRP), 1148 Multi Disaster resistant permanent owner build-in house were constructed, 200 km of overhead cable were replaced to underground, reconstruction of Mairie building (heritage Building) and Nehru Market at the cost of 15.49 Crore and reconstruction of Nehru Market were taken up and completed.
- Nourishment of Puducherry beach in coordination with NIOT involves carrying out coastal protection measures along the Puducherry beach to solve the severe coastal erosion and restore the beach. Rainbow nourishments and Pipeline nourishments were taken up. The outcome of the project is shoreline protection and restoration, protection of the economic and social sector from rising seas.
- In Tamil Nadu, under the Coastal Disaster Risk Reduction Project (CDRRP), 14347 Multi-Hazard Resistant Houses and 121 Multi-Purpose Evacuation Shelters were constructed. 438 Disaster Warning Announcement Systems have been established. The conventional power transmission was replaced with underground cabling in Cuddalore and Nagapattinam districts partially.
- West Bengal Government planted 5 Crore Mangrove Trees in Sundarbans after Super Cyclone AMPHAN. Desiltation is under process in all major rivers. A programme named “Jal Dharo - Jal Bharo” was launched during 2011-12 for rain water harvesting.

- Mobile treatment units - 28 numbers of MTUs, deployed at strategic locations in districts, proactively provide safe & clean drinking water within a short span of time.

Technical Session - VI

- Puducherry suggested that instead of going by numbers, it's better to have smaller set of trained people, who are trained in both technical as well as psychological aspects of handling a disaster, including social aspects and how to marshal resources at village level.
- Collector, Nellore, Andhra Pradesh suggested that instead of taking all the districts under one uniform definition, DDMA's should be categorised on the basis of size of population and the area being handled and give them more powers, functionaries, funds and technologies to make them self-reliant and resilient.
- Collector, Iduki, Kerala informed that in Iduki, DDMA meeting is convened every week and linkage with SDMA's is also very smooth, especially during disasters and we also get instructions from State and SDMA's.
- Sr. Consultant, Dadra & Nagar Haveli, Daman & Diu said that there is a need to have disaster resilient volunteers as well, who are available at the time of actual incidents and calamities. Sometimes volunteers also might be affected and hence not available at the time of need.

AGENDA

Regional SDMAS and Institutions Conclave

(Coastal and Island States/UTs)

Date: 8-9 March, 2022

Venue: Chennai, Tamil Nadu

SCHEDULE

Day - 1 (8th March, 2022, Tuesday)

0900 - 1000	Registration	
INAUGURAL SESSION		
1000 - 1005	Lighting of Lamp	
1005 - 1010	Welcome	Shri Kunal Satyarthi, Joint Secretary (PP), NDMA
1010 - 1020	Special Address	Shri Kumar Jayant, Principal Secretary (Revenue and Disaster Management), Govt. of Tamil Nadu
1020 - 1030	Key Note Address	Shri Kamal Kishore, Member & Secretary (I/C), NDMA
1030 -1040	Presidential Address	Dr. V Irai Anbu, Chief Secretary & CEO, SDMA, Government of Tamil Nadu
1040-1045	Vote of Thanks	Dr. Pavan Kumar Singh, Joint Advisor (PP), NDMA
Tea Break - 1045-1100		
SESSION I (1100 – 1220)		
SCIENTIFIC AND TECHNOLOGICAL INNOVATIONS		
Chair: Shri Rajendra Singh, Member, NDMA		
Co-Chair: Dr. Pradip Kumar Jena, ACS, Government of Odisha		
Presentation by Institutions and Agencies on their functions and future possible engagements for effective DRR with coastal States/UTs		
(10 Min each)		
	1	Objectives of the Conclave and Strengthening of Disaster Management Institutional Structure
	2	MoEFCC
		Shri Kunal Satyarthi, Joint Secretary (PP), NDMA & Dr. K. S. Vatsa, Member, NDMA
		Dr. Hemant Kumar, APCCF, IRO, Chennai & Mr. Ila Murugesan, AIG, FSI, Bangalore

	3	NIO	Dr. S. Jayakumar, Sr. Principal Scientist and Dr. Mani Murali R., Principal Scientist Dr. Balakrishnan Nair T M, Group Director, OSCAR Dr. S. Balachandran, Scientist F and Head, Regional Meteorological Center, Chennai Ms. Rekha Nambiar, Commandant, 4Bn NDRF, Arakkonam, (TN) Prof. Surya Prakash
	4	INCOIS	
	5	IMD	
	6	NDRF	
	7	NIDM	
SESSION II (1220 – 1330) INSTITUTIONAL AND FINANCIAL FRAMEWORK OF DISASTER MANAGEMENT			
Chair: Dr. K. S. Vatsa, Member, NDMA Co-Chair: Dr. A. Jaythilak, ACS, Kerala (10 Min each)			
	1	Way Forward - XV Finance Commission Recommendations	Shri Ravinesh Kumar, Finance Advisor, NDMA
	2	Mitigation Fund Guidelines	Shri Sanjiv Jindal, JS (DM), MHA
	3	Recovery and Reconstruction Guidelines	Sr. S. K. Jena, Joint Advisor (R&R), NDMA
	4	Capacity Building & Preparedness Guidelines and Aapda Mitra	Shri Nawal Prakash, Joint Advisor (CBT), NDMA
	5	NCRMP	Shri Rajeev Sharma, Project Manager, NCRMP
	6	CAP and ERSS Discussion and Q&A (10 Min)	Col. Dheeraj Chandola (Retd.), Consultant (IT & Comm), NDMA
Lunch Break – 1330 – 1430			
SESSION III (1430 – 1600) BEST PRACTICES, LESSONS LEARNT AND TECHNOLOGICAL INNOVATIONS BY STATES/UTs			
Chair: Shri Dushyant Nariala, Principal Secretary (Disaster Management) Government West Bengal Co-Chair: Prof. Surya Prakash, NIDM			
	Presentations by States (15 Min presentation + 5 min Discussion)		
	1	Drought Management & GIS Applications in DRM	Karnataka

2	Early Warning System: Improvements	Andhra Pradesh
3	ODRAF & Decentralised Disaster Management	Odisha
4	Involvement of Kutumbashee & Volunteerism	Kerala
(Working Tea/Coffee)		

SESSION IV (1600 – 1730)

BEST PRACTICES, LESSONS LEARNT AND TECHNOLOGICAL INNOVATIONS BY STATES/UTs

Chair: Shri Kamal Kishore, Member & Secretary (I/C), NDMA

Co-Chair: Dr. C. Nagaraju, Executive Director, APSDMA

Presentations by States (15 Min presentation + 5 min Discussion)		
1	TNSMART & Deep Sea Communication	Tamil Nadu
2	Ecological Solutions for DRR	West Bengal
3	NCRMP Implementation	Goa
4	Coastal Erosion Discussion and Q&A	Lakshdweep

Day – 2 (9th March, 2022, Wednesday)

SESSION – V (0930 – 1215)

STATE WISE ISSUES & CHALLENGES AND WAY FORWARD FOR DRR

Chair: Shri Kamal Kishore, Member & Secretary (I/C), NDMA

Co-Chair: Shri Sanjiv Jindal, JS (DM), MHA

Presentation by States/UTs (By all 11 States/UTs - 15 min each, <u>as per template</u>)	<ol style="list-style-type: none"> 1. Andaman & Nicobar Island 2. Andhra Pradesh 3. Dadra and Nagar Haveli and Daman & Diu 4. Goa 5. Karnataka 6. Kerala 7. Lakshadweep 8. Odisha 9. Puducherry 10. Tamil Nadu 11. West Bengal
(Working Tea/Coffee)	

SESSION VI (1215 – 1300)		
DISASTER MANAGEMENT PLANNING AT DISTRICT LEVEL		
Chair: Shri Rajendra Singh, Member, NDMA		
Co-Chair: Dr. A. Jaythilak, ACS, Government of Kerala		
	Presentation by Collectors from States/UTs (5 Min each) covering 1. DDMA 2. DDMP 3. Disaster Response	Collectors from Iduki (Kerala), Karaikal (Puducherry) and Nellore (AP) and (DNH&DD)
WAY FORWARD & VALEDICTORY SESSION (1300 – 1340)		
1300 – 1310	Summary of the Workshop	Shri Kunal Satyarthi, JS (PP), NDMA
1310 – 1315	Special Address	Shri M A Siddique, Relief Commissioner, Govt. of Tamil Nadu
1315 – 1320	Special Address	Shri Kumar Jayant, Principal Secretary (Revenue and Disaster Management), Govt. of Tamil Nadu
1320 – 1335	Way Forward	Shri Kamal Kishore, Member & Secretary (I/C), NDMA
1335 – 1340	Vote of Thanks	Shri K. S. Kandasamy, Director (DM), Govt. of Tamil Nadu
Lunch – 1340		