
Resilience and Sustainability Summit: Vision 2047

जलवायु और आपदा संकट से संरक्षा: तन्कता व संवहनीयता की ओर"- शिखर सम्मेलन

17th – 19th January 2023; Time: 09:30am - 5:00pm

Venue: Vigyan Bhawan, New Delhi

Draft Report





Message

IPCC Sixth Assessment Report showed clear linkages between climate change and sustainability, extreme events, biodiversity loss and the loss of natural resources. Extreme winters, summers and rainfall are part of the variance of impacts of global warming. The impact of climate change on India is going to be dis-proportionate, with higher impact on areas with high population density and high poverty. The Eastern and North-Eastern part of the country has high climate vulnerability.

‘Science and technology’ is a major tool to fight the menace of climate change. Of late, hazards are not happening in isolation but in combination with two or more. This calls for putting in place a multi-hazard warning system, along with better coordination at inter-agency, inter-ministerial and Centre-State levels. The Department of Science and Technology (DST) has been supporting National Institute of Disaster Management (NIDM) in its flagship programme under the National Mission on Strategic Knowledge for Climate Change (NMSKCC) of which Disaster Risk Reduction (DRR) is one of the important dimensions.

In this connection, to set forth the vision for the future for more inclusive responses, NIDM in collaboration with the Department of Science & Technology (DST), United Nations Development Programme (UNDP), GIZ India and other national and international agencies organized “Resilience and Sustainability Summit: Vision 2047 (RESSUMMIT2047)”. I am happy to see the comprehensive report of the summit which clearly presents the short- and long-term actions required at the policy, research & capacity building, administrative and civil society front. The session wise report is a rich compilation of the diversity of topics covered under various high-level plenary and colloque sessions. It will definitely be very helpful for policy makers, professionals working in DRR and climate change arena, scientists and academicians across the country.

(Akhilesh Gupta)

Message

Weather and climate-related disasters have increased dramatically over the past few decades. The most recent climate projections for future also indicate a significant increase in the frequency and/or intensity of extreme events.

The Sendai Framework for Disaster Risk Reduction, the Paris Agreement on Climate Change, the UN decade on Ecosystem Restoration, COP14, UNCCD, CBD, COP-26 Glasgow Climate Pact & COP-27 Sharm el-Sheikh Implementation Plan have paved the way for achieving sustainability through mainstreaming of climate change and DRR concerns along the economic and environmental development with social inclusion. The task at hand is so mammoth that requires multiple interventions at various levels. The role of NIDM as a think tank for the Government to provide assistance in policy formulation and to facilitate in reducing the impact of disasters through planning and promoting training and capacity building services including strategic learning is crucial.

In this connection, the deliberations of recently held “Resilience and Sustainability Summit: Vision 2047 (RESSUMMIT2047)” are crucial towards developing Resilience and Resource Sustainability Knowledge Platform. I am happy to present the RESSUMMIT 2047 report which is a systematic compilation of the highlights and key recommendations from the speakers and discussants of the high-level plenary and colloque sessions. Various actionable outputs for practitioners on ground can be drawn from the report. The RESSUMMIT2047 is the Pre-event of NPDRR 2023. The key outcome of RESSUMMIT2047 will also feed into the discussion of the 3rd meeting of NPDRR which is scheduled for 10-11 March 2023 at Vigyan Bhawan New Delhi.

Shri Rajendra Ratnoo

(Executive Director, NIDM)

Message

Decentralized and all-inclusive disaster management is essential for SDG realisation in India. In recent years disaster management has gone through a paradigm shift from ‘response and relief centric’ approach to ‘prevention-preparedness and mitigation’ centric approach. Identification of risk indicators at local level for risk mapping, locally led adaptation and DRR actions and pathways & means to operationalize the guidelines at local level are a few essential components of the current approach which has the agenda of strengthening localisation of resilience measures at its core.

Effective disaster management requires multi-disciplinarity, trans-disciplinarity and inter-disciplinarity. RESSUMMIT2047 has provided the much required platform to the experts, institutions, government organizations, scientists and international agencies in this regard. To evolve a framework for developing the Vision for 2047 key contexts of the challenges and key strategies to work in a long-term basis have been flagged out during the three-day summit by the experts. I am happy to share that the proceedings of the summit are now available in the form of the present report which is a ready reference for the policy makers, academicians, practitioners working on DRR and climate change field.

(Anil K. Gupta)

Background

India and the region are among the highly disaster-prone geographies of the world, witnessing disasters as regular features of damage and loss events. With changes in the land-use and landscape, degradation of environment, societal and technological changes, coupled with impact of climate change, disasters have been ever increasing in terms of occurrence and impacts. Disaster damages & losses have huge economic consequences particularly owing to impacts on infrastructure, industry, ecosystems and resources of the people. Over the years, non-economic, systemic and cascading effects of a wide range of disasters have enhanced the understanding of disaster management approaches which has led to focus on underlying causes of increased risk and vulnerabilities in the region. Greater emphasis is now towards concerted efforts of risk proofing developmental planning and practices. This calls for the following:

- Holistic understanding of safety and sustainability that assimilates realisation of climate extreme events as major contributors of disaster losses & damages,
- Integration and synergy of disaster risk reduction policy and practices with scientific advances, innovations and ground lessons.

India has taken big strides and leadership initiatives in promoting disaster management and sustainability. India's National Institute of Disaster Management (NIDM) is a unique professional think-tank and capacity building establishment that supports all sectoral Ministries of the Government, States/UTs, other stakeholders and countries in the area of DRR capacity building and research. National Disaster Management Authority (NDMA) is the apex authority chaired by the Prime Minister and has a unique tiered institutional framework covering states/UTs and district level network, and other key stakeholders that includes international and regional interventions as well. Besides, Disaster Management Act (2005), the National Policy on Disaster management (2009), the well laid National Disaster Management Plan (2019) and the ambit of Prime Minister's 10 Point Agenda 3 on Disaster Risk Management are key guiding forces of India's disaster risk management accelerations.

Science - Technology and innovations plays a substantial role in disaster and risk management through effective early warnings and forecasts, strategic innovations, disruptive technologies, artificial intelligence, robotics, green technology, nature-based solutions etc. As Disaster Management has gone through a paradigm shift from '*response and relief centric*' approach to '*prevention-preparedness and mitigation*' centric approach, DRR initiatives at local and regional levels have

become more inclusive and integrated. Policy advocacy, effective governance models and S&T innovations have played a crucial role in this context.

Globally, many examples of successful on-ground pilots exist but, however, upscaling and replication at large scale of such success stories and best practices needs further customization, moderation, and innovations. Case studies and best practices need to be collected and analysed in a systemic approach to feed into the process in a well designated mechanism.

NIDM has undertaken strategic endeavours and important high level discourses in the recent past in sync with the Hon'ble Prime Minister's 10 point Agenda on Disaster Risk Management, of which are: (i) International Conference on Science, Technology Research-Policy-Practice Interface for Climate Risk Management on 25-27 August 2020 (https://nidm.gov.in/PDF/pubs/CAP-RES_NIDM.pdf) (ii) High Level Policy Dialogue on Localising Climate Resilience Agenda: Vision 2050 and 2100 (LOCC-RES 2100) during 2-3 September 2021 (https://nidm.gov.in/PDF/pubs/CAP-RES_NIDM.pdf) and (iii) High Level Policy Round Table on Science-Technology and Innovation Policy for DRR on 6 January 2022 (https://nidm.gov.in/pdf/trgReports/2022/January/Webinar_06January2022akg.pdf). Additionally, with the support of Department of Science & Technology (DST) GoI, NIDM has been implementing the important 'Climate Adaptive Planning for Resilience and Sustainable Development in Multi-Hazard Environment (CAP-RES)' an umbrella project that focused on science-policy-practice interface.

Gaining insights and consolidating the lessons learned from previous endeavours, NIDM in collaboration with Department of Science & Technology (DST) GoI, along with partners - United Nations Development Programme (UNDP), GIZ- India and others across the United Nations bodies, multi-laterals, academia, international NGOs has organised the “**Resilience and Sustainability Summit: Vision 2047 (RESSUMMIT2047)**”, Science-Policy-Planning-Practice Interface for DRR in Changing Climate” during 17-19 January 2023 at Vigyan Bhawan, New Delhi, India. The RESSUMMIT 2047, a Pre-event of NPDRR 2023, has been a multi-ministerial and multi-partner initiative in which 'High Level Plenary Sessions' and technical 'Colloque - Parisamvaad Sessions' were held.

The 'RESSUMMIT2047' deliberations have led to the identification of key contexts of futuristic 'risk and resilience'. The present report summarises the discussions and presents the key outcomes of the 3-day summit. Key outcomes of the summit would be crucial and expected to feed into

- The discussions of NPDRR's 3rd meeting scheduled for 10-11 March 2023 at Vigyan Bhawan, New Delhi. NPDRR - National Platform for DRR, is a statutory body created by the official Gazette of Govt. of India
- The discussions and commitments for *Atmanirbhar Bharat*
- India's strategic focus in leading G20 priorities

RESSUMMIT 2047 is the first ever the unique assembly of senior policy experts, scientists, managers, officials, academic, research, practice professionals, NGOs, on Resilience and Sustainability from future perspectives. Total 22 sessions including 13 plenary, 9 parisamvad colloquium were held during the summit, besides 6 pre-events. The RESSUMMIT2047 was attended by over 70 organizations, 130 speakers and total over 350 delegates. It was a culmination of CAP-RES series of forum, towards Resilience and Resource Sustainability Knowledge Platform.



Day 1- 17 January 2023

Session 1: RESSUMMIT2047-Launch ‘आह्वान’

Dignitaries:

- Shri Krishna S Vatsa, Member, NDMA, GoI
- Dr. Akhilesh Gupta, Secretary SERB, DST, GoI
- Shri Taj Hassan, Executive Director, NIDM
- Dr. Roderico H. Ofrin, WHO Representative to India
- Shri Dennis Curry, Deputy Resident Representative, UNDP, India
- Shri Ashish Sinha, Joint Secretary, G-20, MEA, GoI
- Prof. Anil K Gupta, HoD, ECDRM, NIDM
- Dr. Ashish Chaturvedi, Head, Environment, Energy & Resilience, UNDP India

Session Coordinator: Dr Sweta Baidya Das, Consultant, NIDM



The session **RESSUMMIT2047-Launch ‘आह्वान’** started with lighting the lamp by the dignitaries to invoke the Goddess of Saraswati which was followed by the address of the dignitaries. Welcoming the delegates in the summit, **Prof. Anil K. Gupta** presented the context of the RESSUMMIT 2047. He highlighted the multi-disciplinarity, trans-disciplinarity and inter-disciplinarity required for the disaster management and stated that the RESSUMMIT2047 platform in which experts, institutions, government organizations, scientists and international agencies have gathered provides a stage for

that. ‘One of the key objectives of the summit is to evolve a framework for developing the Vision for 2047. The agenda is to develop a consortium for Vision 2047. We can flag out key contexts of the challenges and identify the key strategies to work in a long-term basis’ Prof. Gupta added. He emphasized on the technology adaptation and popularization at the local level to effectively tackle climate change impacts at the ground level and disaster risk reduction (DRR).

Highlighting the role played by concerted actions, scientific inputs, vaccine delivery mechanisms and strong push towards protecting the most vulnerable in India’s response to COVID19 pandemic **Shri Dennis Curry** stated that India’s pandemic recovery has many lessons for the international community. He underlined the complexities of the post pandemic era such as disruptions in the global supply chain created by Russia and Ukraine’s warlike situations, spiralling prices of the food grains and energy crisis which has brought to the centre stage the need for new avenues of dialogue on the ideals of resilience. Highlighting that the present summit takes cognizance of all these priorities Shri Curry emphasized on effective planning and implementation of DRR measures at ground level.

Shri Ashish Sinha informed that as India hosts G20 presidency, Honourable Prime Minister has emphasized on to making it a participatory exercise involving research and academia. He informed that the country would host over 100 meetings in over 25 cities in a year. A dedicated Working Group on ‘Disaster Risk Reduction’ has been set up under India’s presidency which also got support from UNDRR and other agencies and institutions. He further added ‘Disaster Risk Resilience is integral to SDGs and thus G-20 should be taken as a global collaborative platform to profess this further instead of considering it as a competitive space’. Shri Sinha invited the participants to feed the inputs to G20 through NDMA or directly to enrich the overall narrative on DRR.

Dr. Roderico H. Ofrin underlined that after the COVID pandemic from which the world has collectively recovered from, climate change is the next big emergency we need to come together for. ‘It impacts all the sectors, and the impacts are visible now more than ever in terms of more heat and cold waves, intense and frequent cyclones, droughts, unusual patterns of rains & floods, but at the heart of all of this is people and their health’ he added. Quoting the IPCC report (2022) Dr. Ofrin stated that ‘Rising sea levels and changing monsoon patterns have led to the loss of 16% India’s per capita GDP since 1991 but the health impacts remain invisible. At present less than 1% of multilateral climate finance is specifically for health’. Highlighting the links between climate change and food insecurity & malnutrition, increased vector borne diseases, outbreak of new viruses etc, he emphasized on the interventions in building climate resilient health systems including climate resilient health facilities and safe and green hospitals and bring in resilience in the sectors directly impacting health such as water, sanitation and food systems.

Welcoming the delegates **Shri Taj Hassan** highlighted the role of NIDM in empowering various institutes across India via training and capacity building on various aspects of DRR, in carrying out in-depth research after major disasters for the help of the practitioners. He informed that NIDM has a

wide network of more than 200 universities and institutions called 'Indian Universities and Institutions Network on DRR'. Shri Hassan informed that to expand the research & development capacities of the country NIDM is going to incorporate more research projects on relevant topics of DRR at institutional levels. He emphasized on actionable outputs from this forum for practitioners on ground which involve the field officials who ensure enforcement on the ground.

Welcoming the participants **Dr. Akhilesh Gupta** cited the **6th report of the** IPCC released in 2022 which showed clear linkage between climate change and extreme events. It also showed linkage of climate change with sustainability, the biodiversity loss and loss of natural resources. He said that extreme winter, summer, and rainfall are part of the variance of impacts of global warming. Citing the study carried out by DST to map the vulnerability of the country he highlighted that the Eastern and North-Eastern part of the country has high climate vulnerability. 'The impact of CC on India is going to be dis-proportionate, with higher impact on areas with high population density and high poverty' Dr. Gupta Stated. He praised the efforts of NIDM in assimilating the knowledge through training and recommended that that it should also be clubbed with knowledge production via research. Mentioning that globally a new discipline of study known as 'Extreme Events Attribution' has come up in which research in the extreme events and its impacts on society are being carried out Dr Gupta suggested NIDM to initiate research so that production of knowledge and dissemination of knowledge could be linked. He further recommended to make the RESSUMMIT2047 an annual event in which different stakeholders can join hands.

Shri Krishna S Vatsa emphasized on the 'Resilience' which enhances the capacities to adapt to the changing climate as well as accommodates and empowers one to recover from a crisis. Linking resilience with risks Shri Vatsa highlighted that while facing a crisis, social, cultural, and financial resilience act together to address the problem. He further added that India's Social Protection Schemes & initiatives like PPE Kit distribution, PDS, Cash Transfers worked effectively to deal with the COVID crisis. 'Drawing the lesson, we need to follow a similar kind of social protection approach when dealing with crisis of the extreme events caused by climate change while also expanding the collective response towards climate change crisis multifariously in terms of research, field response, and collaborative initiatives' Shri Vatsa added. Highlighting the regional disparity in India as a challenge he stated that investment in low economy states like Bihar, Assam, Uttar Pradesh, West Bengal, and Odisha should be prioritized. Shri Vatsa highlighted the need for concerted efforts to bring down the disaster losses, the need for more investments in risk reduction to bring sustainable gains. He also highlighted that about 40 thousand crores funds are available for risk reduction through National Climate Fund and State Disaster Mitigation funds.

Drawing the attention towards ensuring greater infrastructure resilience, Dr. Vatsa emphasized on to building standards and paying greater attention to application of codes. 'Disaster Risk Reduction as a sector must expand and must improve both in its knowledge, application, and its research capacities

and in its capacities to greater action on the field' he added. He also underlined that India's G20 presidency and setting up of the working group on DRR offers an opportunity to expand the sector, to formalize and recognize all those working in this field. 'The RESSUMMIT-2047 is a positive step in the direction of strengthening DRR as a sector'. He assured that NDMA will work with NIDM in articulating the vision for 2047.

Dr. Ashish Chaturvedi, Head, Environment, Energy & Resilience, UNDP India closed the proceedings of the session with the words of thanks.

Framework for developing the Vision for 2047: Key Components Emerged

✓ Guiding Principles

- Social protection approach to tackle the crisis of the extreme events caused by climate change
- Collective response towards climate change crisis multifariously in terms of Research, field response, and collaborative initiatives
- Prioritize investments in the low economy states like Bihar, Assam, Uttar Pradesh, West Bengal, and Odisha etc to tackle the climate crisis.
- Create societies that focus on wellbeing, have the mindset to link it's every action with the impact of the action on the planet & other people and call for urgent actions.

✓ Infrastructure Sector:

- ✓ Increased investments in building resilient infrastructures to boost the adaptive capacities of vulnerable topographies.
- ✓ To build standards for infrastructure resilience and application of codes

✓ Healthcare system

- Efficient disease surveillance system that links the meteorology data and disease outbreaks and issue early warnings
- Documentation of case studies, best practices on healthcare system that is both climate resilient and sustainable for adoption with the following guiding principles:
 - service delivery through primary health centres remain functional during adverse climate conditions
 - sustain efforts in making hospitals, laboratories to withstand floods and shocks caused by climate change
 - healthcare system does not contribute to climate change and still achieve universal health coverage and SDGs.
- Climate literacy with the emphasis on impact of climate change on human health

✓ Research & Capacity Building

- NIDM to initiate Research in the disciplines of DRR including 'Extreme Events Attribution'
- RESSUMMIT2047 to be established as an annual event for different stakeholders to join hands, plan and take stock of actions.

✓ Disaster Risk Reduction as a sector

- Expand and improve both in its knowledge, application, research capacities and in its capacities to greater action on the field- Responsibility of NDMA and NIDM



Keynote Address

- Dr. Shombi Sharp, UN Resident Coordinator, India

Special Address

- Shri Sudhir Mungantiwar, Hon'ble Minister of Forests, Cultural Affairs and Fisheries, Govt. of Maharashtra

Remarks

- Shri Kirtiman Awasthi, Senior Policy Advisor- Climate Change, GIZ India

Vote of Thanks

- Dr. Susheela Negi, Scientist E, Climate Change Programme Division, Department of Science and Technology

Session Coordinator: Ms Pritha Acharya, Research Associate, NIDM



Shri Sudhir Mungantiwar started his address discussing the variable rain patterns and compared it to the climate pattern from 1956 to 2023. Highlighting the impact of irregular weather pattern on the earth's temperature and the damage it causes in terms of tangible and intangible assets he proposed to have a forestry-oriented sustainable development. He highlighted the work carried out under Shyama Prasad Mukherjee Jan-Van Yojana in Maharashtra focusing on the integrated development of villages near the forests. Hon'ble minister also emphasized on spreading Water Literacy (Jal Saksharata).

Dr. Shombi Sharp, in the address highlighted the fact that risk creation is moving faster than the risk reduction. He underlined the balance between the sustainability and resilience. ‘If we had tackled the challenge of sustainability, resilience wouldn’t be so much more prominent in the conversation that we are having today’ he stated. Talking about intersectionality of the risks Dr. Sharp said that the learnings from the COVID-19 pandemic have enabled the world to foster partnerships, bringing stakeholders on a common platform and accelerate the new processes (e.g. digital innovations). The lessons India has learned (i) tackling the challenge of COVID19 combining the local level presence in terms of door to door actions involving Anganbadi & ASHA workers with the most advanced pharmaceutical innovations and digital platforms and (ii) tackling the challenge of cyclones with advanced early warning systems that now covers the entire coastlines resulting in the successful reduction in the mortality by more than 90% in the last 15 years provide opportunity to the country to share its lessons with the world.

He underlined the ‘Prevention, Preparedness and Early Warnings’ as the most cost-effective risk reduction model. Dr. Sharp informed that the United Nations system will soon unveil a ‘UN Sustainable Development Cooperation Framework’, which would be a partnership offer to the Government, Civil Societies, and Private Sector Organization to work on resilience & sustainability for 2023–2037. He further added that the SDGs are going to be the core of G-20 deliberations that might give a platform to further discuss the intersectionality of climate change adaptation, resilience & mitigation.

Shri Kirtiman Awasthi highlighted the collaborative efforts of GIZ India related to climate change adaptation and DRR at the national and subnational level.

Dr. Susheela Negi presented Vote of Thanks to the dignitaries and the participants.



Session 3: सहयोग International Cooperation: G20 and beyond

Session Chair:

- Shri Praveen Pardeshi, Member, Capacity Building Commission, GoI

Session Moderator:

- Dr. Ashish Chaturvedi, Head, Environment, Energy & Resilience, UNDP India

Distinguished Panellists:

- Dr. Akhilesh Gupta, Secretary SERB & Sr Advisor, DST, GoI
- Dr. Muralee Thummarukudy, Director, G20 Global Initiative Coordination Office, UNCCD, Bonn, Germany
- Shri Atul Bagai, Head, UNEP India
- Prof. Anil K Gupta, HoD, ECDRM, NIDM

Session Coordinator: Dr Sweta Baidya Das, Consultant, NIDM



Moderating the session, Dr. Ashish Chaturvedi highlighted the multiple intersecting crisis of war, pandemic (in some part of the world) and environmental crisis because of pollution, climate change and loss of biodiversity the world is struggling with at present. ‘Multiple crisis are interacting and intersecting with each other. We need to co-operate at multiple level within communities, president welfares, villages and panchayats. We need to collaborate at the level of states, countries, but also across international boundaries’ Dr. Chaturvedi stated. Setting the agenda for the session he highlighted that the focus of the discussions would be to think about the kind of ‘structures for cooperation and engagement’ needed to deal with the present poly-crisis.

**Opportunities for Sharing
Evacuation at Scale: Cyclone in
Odisha**

India’s sharing of best practices and lessons learnt while working at scale can give way to **South-North Cooperation for learning**, this could be a very important structure of co-operation

Framing the discussion around cooperation for strengthening capacity building **Shri Praveen Pardeshi** said that the present era is the era of poly-crisis but also an era of opportunities. Highlighting the role of the Capacity Building Commission he underlined the challenge ahead of the commission of building capacities of 3 million central level and 25 million state level civil servants to ensure knowledge and skill sets available in the services to tackle the forthcoming climate issues and develop disaster risk resilience.

Highlighting that most of the solutions that India has been able to pull off are of very large scale, Shri Pardeshi underlined that India can make a difference in the world in a big way

- By sharing and showcasing its good practices developed while working at scale. India’s G20 presidency offers the opportunity in this regard.



-By carrying out climate modelling for the region (as many of the rivers have origin from Nepal, Tibet and Bhutan etc) and sharing the knowledge across neighbouring countries.

He also emphasized on climate modelling to come up with

District Specific Climate Change Predictions to make climate change real to the residents of the district. Stressing on the need for operationalising approaches of learning he especially emphasised 'Experiential on the Job Learning' approach for building capacities.

Dr. Akhilesh Gupta highlighted some of the internal cooperation structures that DST has established or in the process of establishing for building resilience and the efforts to strengthen the indigenous capacity in research and technological innovations aiming to become more self-reliant.

He underlined the importance of local actions required to tackle global issue of climate change and the challenges of funds available for this. Dr. Gupta informed that with the support of DST, Climate Change Cells have been set up in 29 states. The primary work of the State Climate Change Cell is to carry out research and adaptation. Many states have participated to develop District and Sub-District Level Vulnerability Maps. Highlighting this as the point to start actions he mentioned that states like J&K and Madhya Pradesh have provided the parameters to the local administration at district collector level. 'We do not expect international support for climate actions, but we need to have India centric actions. The central government, state government and local government must work together to address this' he added.

Dr. Gupta also informed that 'National Science and Technology Innovation Policy' has also been developed in which the scientific research has been brought at the centre stage of the action. He mentioned that instead of bringing the experts from the international level, SERB is working on the ideas of 'Brain Circulation'-wherein the NRI's can help India in technology indigenization while living outside of India and highlighted the readiness and support shown by the Indian diaspora in this regard. SERB is also working to enhance the research capacity and research manpower by increasing the number of post-doctoral fallows from 300 to 1000 per year, he stated.

Dr. Muralee Thummarukudy highlighted the linkage between climate change, land degradation and resilience. Mentioning that two way relation between climate change such as excess rainfall, lack of rain, heat waves, cold waves and land degradation he stressed on addressing the issue of land degradation at scale to strengthen resilience and livelihood and multiple other challenges of climate change. He informed that India is focusing on two very important issues during its G20 presidency.

**Capacity Building Approach:
Experiential on the Job Learning**

Example: Satellite data shows that the Mangrove percentage in Maharashtra has increased over the last 7-8 years by the combined efforts of many agencies that worked on a project on Mangrove Restoration.

This project site is one of the examples from the many opportunities that are there for 'Experiential on the Job Learning' by visiting the project site for 5 to 7 days to get oriented and capacitated and come back with changed mindsets

One is restoration of areas degraded by mining while the other is the restoration of areas affected by forest fires. He also highlighted the four thematic streams of the work of G20 Global Initiative to Reduce Land Degradation 1. work with all countries of the world to promote the best practices for land restoration including legislative best practices, best practice in financial management etc. 2. work with private sector in all matters related to resilience 3. Work with civil society, youth, women, farmers etc 4. Build capacity at scale. ‘We are hoping to work in all the 193 countries and see how capacities on land restoration can be hardwired into various academic systems especially agriculture universities, forestry institutions, civil engineering, water resource engineering etc’ Dr. Thummarukudy stated.

Emphasising the importance of Eco-DRR and building resilient structures **Shri Atul Bagai** informed about the training module UNEP

has developed for Panchayat officers on Eco-DRR to bring in ecological aspect on DRR. He highlighted the challenge to scale

- ✓ How can Ministry of Rural Development’s Poverty Alleviation Schemes be made green?
- ✓ How can climate resilience be brought in the Poverty Alleviation Schemes?

it up. ‘Working in few villages in Kerala with panchayat level officials we have come up with good model but we have 2.75 lakh panchayats in India. To scale that up through the training and capacity building institutions or via ministries (Ministry of Rural development or Panchayati Raj Ministry) is a challenge’. Highlighting the approach for cooperation Shri Bagai stressed that ‘International organizations can only bring in good practices, technical expertise, or pilots but government has to pitch in to scale them up through mainstreaming them via institutional structure through the ongoing schemes’.

Summarizing the discourse **Prof. Anil K Gupta** underlined that Capacity Building has emerged as one of the most cross cutting dimensions of cooperation at operational level. He highlighted following points for the cooperation framework:

- **Institutional mapping** across G20 countries of potential institutions having specialized initiative in the past or are planning to have specialized initiatives in the area of DRR. Analysis of the best expertise from the institutions and development of a framework and join hands.
- **Area of Cooperation: Lessons of the disasters** – from other countries and from India need to be contextualized and brought into the training capacity building packages.
- **Area of Cooperation:** Training for different level of DRR professionals eg. Operational level and policy level, response related training, humanitarian planning level training etc
- Operational research to improve operational requirements in DM.
- Bridging the gap between academic fraternity, operational fraternity, and training fraternity should be weaved into the cooperation framework. Civil dimensions and dimensions of public private partnership should be weaved into the framework.

Recommendations:

Policy Makers:

- ✓ Formulation of Cooperation Framework for DRR. Key dimensions:
 - Discussion to be framed around ‘Cooperation for Building Capacities in G20 and other forums’
 - Sharing of best practices and lessons learnt while working at scale
 - Lessons from the disasters from across the world
 - Institutional mapping across G20 nations for the best expertise
 - Training for different level of DRR professionals and responders
 - Experiential on the Job Learning for building capacities
 - Bridging the gap between academic fraternity, operational fraternity, and training fraternity
 - Civil dimensions and dimensions of public private partnership
- ✓ Measurement of Risks and development of score card of risks based approaches
- ✓ Poverty Alleviation Schemes: Review for inclusion of dimensions of disaster risk resilience and adaptation
- ✓ Review of the successful pilots and good practices brought in by the international agencies for their scalability to mainstream them through GOI’s ongoing policy schemes.

Research & Capacity Building

- ✓ Documentation of good practices developed while working at scale to facilitate sharing and showcasing in different forum
- ✓ Climate modelling for the region and sharing the knowledge across neighbouring countries
- ✓ Climate modelling for District Specific Climate Change Predictions
- ✓ Institutional mapping in DRR from across G20 nations for capacity building
- ✓ Lessons of the disasters – from other countries and from India, documentation, contextualization and inclusion in the training capacity building packages
- ✓ Training for different level of DRR professionals and responders eg. Operational level and policy level response related training, humanitarian planning level training
- ✓ Ecosystem-based Disaster Risk Reduction (Eco-DRR) should be scaled up where the regulatory functions of ecosystems (such as forests, wetlands and mangroves) are systematically harnessed to mitigate, prevent, or buffer against disasters.



Session Chair:

- Shri Manoj Singh, Addl. Chief Secretary, Govt. of UP
- Prof. Anil K. Gupta, GIAN & Honey Bee Network, Former Vice President, NIF

Session Moderator:

- Shri Kirtiman Awasthi, Senior Policy Advisor- Climate Change, GIZ India

Distinguished Panellists:

- Shri Ashish Tiwari, Secretary, EF&CC, Govt. of UP
- Dr. Ranjan Panda, Chair, CCC Network
- Dr. Ritesh Kumar, Director, WISA
- Dr. Madhav Pai, CEO, World Resources Institute, India
- Shri Manu Gupta, Co-founder, SEEDS India/ SEEDS Asia-Pacific

Session Coordinator: Dr. Anjali Barwal, NIDM



Moderating the session, Shri Kirtiman Awasthi stated that the issue to ponder over is to how do we localize the actions to promote, build and strengthen resilience ultimately leading to sustainability and realization of SDGs. He mentioned a few approaches in this regard involving engagement with the

Panchayati Raj Institutions and mainstreaming climate change and disaster risk reduction into sectoral planning processes.

Sharing his experiences **Shri Manoj Singh**, highlighted the lack of resilience, adaptation as well as ecological intelligence in the urban areas. He underlined that formal education of urban residents is coming on the way to the adoption of environmental ethics by them whereas adaptation in rural areas can be operationalized quite easily by putting efforts towards capacitating villages through trainings and awareness generation. Shared the lessons learnt he emphasized on

1. Inculcating environmental ethics at personal level. Mixing it with religious ideologies may help popularization especially in the rural areas
2. Popularization of the concept of climate neutral events, families, homes and business houses etc.

Highlighting the correlation between the risk and uncertainty **Prof. Anil K. Gupta** stated that a phenomenon may be uncertain over time but its probability can be estimated over space. So, regions where floods, droughts, and landslides etc will occur are known but when will they occur are not yet known, therefore, resilience building is needed which requires creation of an institutional framework at the local level. Considering the high variability in the climate over a short distance he highlighted the need to have such models and monitoring systems that every panchayat should have private monitoring stations. The main points from his discourse are as follows:

- 15th finance commission made a recommendation to create Disaster Resilience Management and Mitigation Fund. This is going to be created now. NIDM should take lead in making models of operationalization of this fund in different kinds of ecosystems viable for district, community and block levels institutions to adapt.
- Operational guidelines for LiFE (Lifestyle for Environment) will be to make a database of such viable functioning community institutions which are maintaining biodiversity,

Lessons from UP

Process Adopted for CC and DRR Localization

1. Forest, Environment and Climate Change Departments were clubbed together for better coordination between decision making and implementation arm.
2. Established synergy with other departments.
3. Organized a 'Climate Change Conclave'. All the discussions and recommendations were documented.
4. Based on the recommendations Climate Action Plan for the State was prepared.
5. Financial provisions, already available in the budget under various schemes were carefully studied. It was realized that 80% of the finances required to implement SAPCC in UP are available in the budget and ~20% extra is needed.
6. SAPCC submitted to Govt of India
7. UP has 58,000 panchayats. A 'Conference of Panchayat' was organized which saw the participation of 30,000 Gram Pradhans and was attended by the CM and Union Cabinet Minister of Panchayati Raj. Discussions were focussed on the environment, disasters and climate change. The learning from the effort is that awareness among the Pradhans can make the task to develop carbon neutral panchayats very easy. It would take 3-4 years, cost about 5 crores and require ~ 5 acres of land for solar panel to install half megawatt of electricity to turn a panchayat into Carbon Neutral one.
8. UP has village level plans ready with the strategy to monitor the climate change, environment and disaster every month to enable evolution of the climate change policy of

conserving resources, proving low carbon low variance ecosystems as LiFE is a community level initiative.

- NAREGA -10 days out of 100 could be used for mapping biodiversity and the knowledge around biodiversity. Knowledge from 650,000 villages from our country would be viable and fruitful for taking the next step that is to move away from environment-oriented programme to entrepreneurship-oriented programme providing opportunity to rural people for in situ value addition to the local resources and through that mitigating climate risks and generating resilience.
- The cost of infrastructure is higher in the climate vulnerable and fragile regions but by design the areas where people face more risks infrastructure is poor. Therefore, reforms are required in the budgetary and financial system of uniform allocation of funds for non-uniform conditions at the community level. A possible indicator could be the prevalent wage rates. In the area where it is lower than the minimum wage rates, states need to intervene through various programmes with much higher level of allocations than the regions where market rates are higher. In the latter case market forces will do the work.
- If ecosystems must be maintained incentivise communities living in the fragile regions and maintaining ecosystems. For example, incentivise communities of the high-altitude mountain regions who are maintaining the landscapes and biodiversity and prevent the deforestation and therefore preventing prevalent disasters such as landslides.
- Community should know that their role in actions in both for good and bad climate year. Preventive measures must start in the year when climatic conditions are favourable. Hence, Good Weather Codes needs to be created.

Sharing the lessons learned while attempting to localize the resilience agenda in UP especially during financial resources mapping, [Shri Ashish Tiwari](#) highlighted the common assumption that climate action is different than the ongoing policies and development activities. He highlighted the importance of duly converging the schemes for climate

Lessons from UP

1. Integrated Planning ensuring Multistakeholder Participation for Climate Action

Strategy: 'Climate Smart Action Plan of the Pilot Village'

In UP Village Level Climate Action Plan is integrated under the larger Gram Panchayat Development Plan. GIZ provided the capacity building support needed for that. Capacity building exercise for the panchayats were carried out in the experiential learning mode in which 1 village was selected as pilot in each of the 39 climate vulnerable districts. NGO's working on grassroot level were engaged to impart experiential knowledge to the village stakeholder community for climate planning. The idea is if pilot can be successfully implemented in one village, then the agenda for mainstreaming the climate action will slowly cover the whole district.

2. Financial Resource Efficiency

Many organizations working in the field of climate change and disasters are working in silos. SAPCC – is a comprehensive plan. All the organizations must be motivated to work in the duly allocated regions within the SAPCC to bring in financial resource

action with the existing schemes and said ‘only a little bit of tweaking in the ongoing developmental schemes can turn a project into climate sensitive one’.

Underscoring the ecosystem that is being created in the UP for localizing the climate actions he suggested that parallel knowledge network should not be created and universities and institutions should be well capacitated to have the knowledge required for localization of climate action at panchayat and district level and umbrella institutes like NIDM should impart CB to those institutes. ‘Realizing that sharing of best Practices is the best way to impart knowledge we have invited climate heroes and village representatives to share experience which proved to be very beneficial’ Shri Tiwari added.

Shri Ranjan Panda shared his perspective of the localization of resilience gained from the Grassroot level experiences. He stressed on understanding the ecosystems for resilience building and highlighted that 1. resilience building efforts should talk a lot about ecological ethics as we are fast losing them. 2. Youth must be engaged in the resilience building efforts as their understanding around climate change, seasonality of fruits, ecosystems around water bodies etc is unreal and completely different than the understanding of the previous generation. 3. Utilization of the knowledge of the migrant workers related to natural resource and ecosystems conservation within the city to restore water bodies, water system and to make that institutionalized.

‘How should the resilience models integrate needs of both cities and the rural areas?’

He underlined the urban and rural connect through ecosystems and migrant population who have the knowledge of the ecosystems. ‘About 75% of all the water sources that city gets including industries come from the water sheds in the forests. Almost one third of all the cities in the world gets its water from forested watersheds. ‘This is the connect we have through ecosystems, the same connect we also have with the people that move from villages to the cities possessing knowledge of the ecosystems. Therefore, climate finance of the cities should not only cater to the needs of the cities but also cater to the needs of the watersheds of the far-off places’, Shri Panda emphasized.

Dr. Madhav Pai, stressed on the importance of having the right knowledge base, the information and the data while localizing climate and resilience building actions. ‘More use of science, more use of geo-analytics and tools and toolkits that

‘How do we do adoption of science in the local governance is a challenge?’

Example: Common mistake while doing mass plantation

Tremendous efforts go in planting trees yet there is a lack of understanding to use science for making this work. Instead of focusing on the number of trees planted, the most effective strategy to alleviate heat stress is to

- increase the city's green cover, especially by planting trees in a cluster
- to focus on biodiversity and
- reducing land surface temperature

communities can also use can develop much more context sensitive solutions and help implement locally led actions’ he stated.

Dr. Pai highlighted the trend of fast adoption of technology in the present era while adoption of science is a challenge. However, he stated, the use of science makes it a lot easier to communicate about actions at the local level.

Dr. Ritesh Kumar stressed that the discourse on resilience must pinpoint on the fact that major proportions of disasters today are hydro-meteorological in character and therefore, ‘Water’ should be made central element in resilience building. He highlighted the need to connect the stakeholders for participatory management to continually adapt and monitor water systems. ‘The indicators need to be collected from disaster professionals, hydrometeorologists, ecologists, sociologists etc and brought together to understand the message of the nature. A city can only be smart when it respects nature and people together’ Dr. Kumar stated.

Shri Manu Gupta emphasized on the potential of the reimagined systems and advanced technologies to provide actionable insights, that allow multichannel inputs to bring in finances required and localization without letting go the agency of people. He shared some of the insights gained when in 2022, ‘AKSHVI’, a digital infrastructure to self-assess losses and damages to climate change, being created by SEEDS under the guidance of NDMA and many others was prototyped in 3 locations.

- The losses experienced by the communities is almost 2.5 times higher than the government’s norms for assistance.
- A household affected by disaster, going by the normal scale, takes 19 years to recover completely if it has the funds of its own.

Shri Gupta highlighted that the current relief and assistant disposition does not consider the secondary effects of disasters like the trauma, lack of access to education and health, losing school years and hence these are never ever compensated for. This is where the concept of building digital infrastructure comes. ‘AKSHVI’, he highlighted, is basically a loss and damage data highway which will bring in the government, business houses and civil society that can actually help to increase the compensation from 30% to 50-60% so that it does not take that long and disaster affected population don’t resort to desperate coping mechanisms.



innovations’ he stated.

Prof. Rajiv Shaw in his video message stressed on the importance of Vision 2047 to put forward a futuristic approach to build better infrastructure, better early warning system and better community resilience. ‘We face new risks in the world of uncertainty, but we are also looking at the new and emerging technologies and

The book 'Climate Panchayat' edited by Shri Ashish Tiwari, based on the efforts that UP government has initiated engaging with the Gram Panchayat to promote localization of the resilience agenda at Gram Panchayat Level was also released during the session.

Recommendations

Policy Makers:

- ✓ Creation of an Institutional Framework at the local level. Possible Components:
 - Panchayat with a monitoring station
 - Disaster Management Information System (DMIS)
 - Universities and Institutes - knowledge hub of climate and disasters related knowledge, policies, frameworks
- ✓ 'Water' centric approach for climate action and disaster risk reduction planning
 - Planning at watershed level
 - Collect indicators from disaster professionals, hydrometeorologists, ecologists, sociologists etc and bring together for holistic understanding
- ✓ Generate guidelines as to how different cities must change their regulatory process so that entire burden of climate resilience does not come to rural people and urban population must bear the greater responsibilities (NIDM to Steer)
- ✓ Disaster Resilience Management and Mitigation Fund: Create models of operationalization of this fund in different kinds of ecosystems viable for district, community and block levels institutions to adapt-NIDM to take lead
- ✓ Professional tax mechanism in every city to manage hinterland of that cities so that coping of the climatic risks and preventive measures can be taken up
- ✓ Guidelines for urban infrastructure: No new building should be allowed to build without rooftop water harvesting system to store water
- ✓ Transformation from uniform budgeting with regard to infrastructure development to non-uniform budgeting based on region-requirements.
- ✓ Guidelines for carbon negative-road map by all the business houses
- ✓ Guidelines to promote practice of carbon neutral concept in conferences, events, houses etc.
- ✓ NAREGA – To use 10 days out of 100 working days for mapping biodiversity and the knowledge around it
- ✓ Mechanism to incentivise communities living in the fragile regions and maintaining ecosystems

Research & capacity Building:

- ✓ NIDM to steer a very systematic DMIS system. Possible components:
 - Develop and provide both capacities and willingness to use good weather opportunities
 - Volunteers identified provide relief of various kinds in the neighbourhood when disaster happens
 - Data of migrants, their specific skillsets to be utilized for climate adaptation and DR actions in the cities
- ✓ NIDM to provide 500 PhD fellowships to develop national capacity of rigorously trained scholars. States must also provide for special PhD fellowships
- ✓ Create Good Weather Code and Institutional Mechanism to harness favorable climatic conditions
- ✓ Operational Guidelines for LiFE (Lifestyle for Environment): Creation of a database of viable functioning community institutions which are maintaining biodiversity, conserving resources, proving low carbon low variance ecosystems

Local Administration:

- ✓ Financial Resource Mapping within the existing schemes for implementation of climate action at the local level
- ✓ Building Disaster Management Information Systems (DMIS) in every state /district which will go up from block to national levels.
- ✓ Database of the migrant workers and their specific skillsets for institutionalizing utilization of their knowledge and capacity related to natural resource and ecosystems conservation within the city to restore water bodies and water system

Civil Society:

- ✓ Promotion of ecological ethics as a part of the effort for resilience building
- ✓ Engage with the youth in the resilience building efforts to build their understanding around climate change, seasonality and ecosystems around water bodies etc.
- ✓ Movement to generate 'Ecological Intelligence' to cope up with CC and induce DRR.
- ✓ Popularization of the concept of climate neutral events, families, homes and business houses etc



Day 2: 18 January 2023

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Environment & Health Emergencies: Critical Trends

Session Chair:

- Dr. Vivek Saxena, APCCF Govt. of Haryana
- Shri Yugal Joshi, Mission Director, LiFE, NITI Aayog

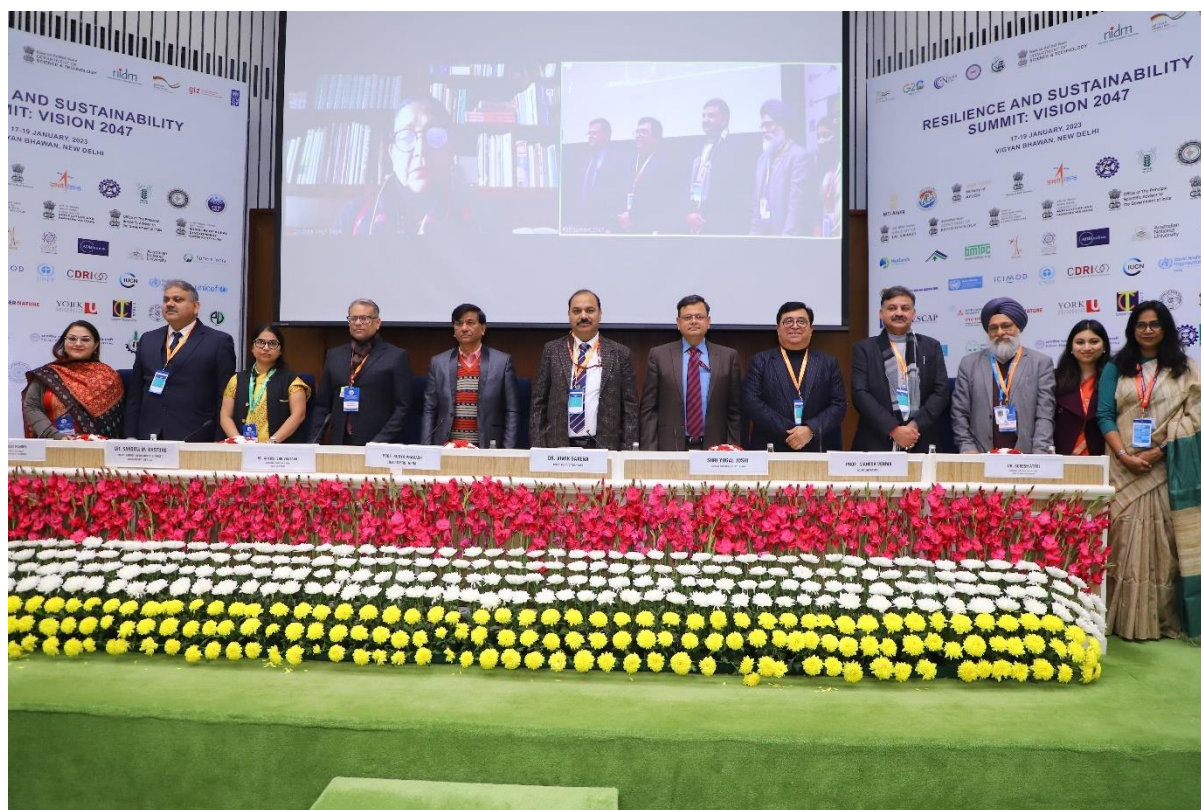
Session Moderator:

- Prof. Ashish Pandey, Department of Water Resources Development & Management, IIT Roorkee

Distinguished Panellists:

- Prof. Mahesh Verma, Vice Chancellor Indraprastha University
- Dr. Dipa Singh Bagai, Country Head, Natural Resources Defence Council
- Dr. Suresh Attri, Principal Scientific Officer, DEST, Govt. of Himachal Pradesh*
- Prof. Surya Prakash, Head GMRD, NIDM
- Dr. Sangita M. Kasture, Head - Energy, Environment & Forest Decision Unit, DBT, GoI*
- Dr. Aakash Shrivastava, Additional director & Head, CEOH & CCH, NCDC

Session Coordinator: Ms Atisha Sood, NIDM



Giving the opening remarks Prof. Mahesh Verma highlighted the link between the changing weather pattern and the changing relationship of humans and its surroundings with the human health. ‘Ill health is often because of the interplay of many environmental agents and the host which is a human being’ Prof. Verma stated. He highlighted that environment today is not just physical surroundings, but it is physical, chemical, biological or anything which is external to human being. All these combined have a profound influence on public health. ‘It’s said that one-fourth of deaths worldwide could be prevented if we are little concerned about the environmental risk factors which are mainly water, sanitation, hygiene, indoor and outdoor pollution and chemicals etc’ Prof. Verma stressed.

Emphasising the profound effect of changes in weather patterns such as temperature and rainfall on public health that do not get realized by the majority, Dr. Dipa Singh Bagai highlighted the work carried out by NRDC since 2010 in Ahmedabad, Gujarat where a heat action plan was developed as a pilot which later became a part of the national disaster management plans. Heat Action Plans have now been developed by 100 cities from 23 States, She highlighted. ‘We have been trying to break out of a silo-based approach to solutions for climate action, air pollution, environmental and governance because these are all very closely interlinked’. Health and improved air pollution are the co-benefits of climate action which are required to be taken quickly and efficiently. A Heat Action Plan needs to have a very strong climate action and environmental health agenda embedded in but it also has to have very strong governance embedded to make it implementable, Dr. Bagai suggested.

Dr. Suresh Attri quoted the example of urban hilly regions like Shimla where natural resources (e.g. water) are significantly depleting, however, less is being done to address the core issue e.g. revival of the springs. These regions have now become extremely susceptible to diseases like dengue. He stressed that assessment of resources and strategic planning for improvement of demand and supply chain is the key that can help in reducing the emergency in water and health sphere.

Prof. Surya Prakash highlighted the importance of developing adaptive capacities to deal with the changing environmental conditions. Dr. Prakash mentioned the importance the following 'Es' for DRR - Environment, Energy consumption, Economics, Extreme weather events, Early warning for hazards and disasters, Ethics (Credible and reliable Information) and Empowerment (of those who receive information). Stressing on the role that Science and Technology can play in managing the environment and health emergencies Prof. Prakash highlighted the need to break out from the silo-based approach and move to a more innovative and creative approaches.

Underlining the interdisciplinary research **Dr. Sangita M. Kasture** highlighted some of the efforts of DBT using biotechnology in biodiversity conservation, environment toxicology, waste to energy, microplastic mitigation & management and finding alternates to single-use plastic etc. Dr. Kasture informed that DBT along with the Ministry of Environment, Forest and Climate Change has developed the risk analysis framework which describes the principles of risk analysis used by the Regulatory Agencies to protect human health & safety and the environment. She stressed on the need to look at the futuristic risks for science and innovations to address.

Dr. Aakash Shrivastava highlighted that the determinants of health lie in the environment that surrounds an individual. He informed about some of the initiatives taken up under the Mission on Health under the National Action Plan on Climate Change and under the National Programme on Climate Change & Human Health. The focus has been on finding ways to have a climate resilient, green and environmental friendly health infrastructure so as to reduce healthcare systems' carbon footprints, Dr. Shrivastava stated. He underlined the importance of increase in awareness in the public about the health impacts of climate change to understand the health messages and warnings and follow the do's and don't. 'The next step is to create the capacity of the existing and future health workforce in this country to understand the impacts of climate change to develop a resilient Health Care system'. He mentioned that efforts are ongoing to bring in climate change into the medical curriculum. Dr. Srivastava also mentioned about the new surveillance systems under the program- for air pollution related illnesses and for the heat stroke & the heat stress and the ongoing efforts to strengthen the alert systems. He also gave a brief about the institutional set up of the mission for the implementation and collaborating agencies and departments.

Shri Yugal Joshi highlighted the need to learn from the history and foster a mass movement towards altering our attitudes, behaviours and actions as our prime responsibility should be to behave in a conscious way towards the environment. **Dr. Vivek Saxena** highlighted the impacts of environmental

factors on health determinants. He stressed on the importance of informing the public about this association and encouraging them to view health as a collective effort rather than a personal one. It also came out from the discussion that since environmental factors are aggravating the disease outcomes across the world it is critical to give equal importance to climate change adaptation and

Recommendations

Policy Makers:

- Plan to foster collaboration in health care system with infrastructure, climate change and health related professionals and institutions and non- government collaborations for knowledge dissemination and empowerment of communities etc
- Devise plans using the existing research at the national level but also at the level of implementation in the small towns and cities
- Policy for promotion of the Preventive Health Care Systems
- Job opportunities for PhD scholars working on climate change and health specific topics to retain the skilled human resources
- Promote collaboration of district administration working in climate change and health and academicians to help the district move forward

Research & capacity Building:

- Research to generate evidence on health co-benefit of the mitigation policies
- Identification of the futuristic risk areas with respect to the health emergencies due to climate change
- Capacity building of the health workforce of the country regarding the health impacts of climate change
- Capacity building at the local administrative level to be able to understand, address and implement climate change and health related action plans
- Collaboration with the academics to help teach about climate change and its impact

Local Administration:

- Emergency Operations Centre at the local levels to disseminate the information to each and every stakeholder
- Strengthening Early Warning System related to health and health warnings for extreme weather
- Ethical practices in disaster management to ensure the dissemination of credible, reliable, accurate and advantageous information

Civil Society:

- Collaboration of non-governmental bodies at national, state or local level with National Programme on Climate Change & Human Health to strengthen the cause
- Community empowerment to understand climate change, DRR and health information and warnings

mitigation.



Dr. Sonam Wangchuk, Environmentalist, Director SACM Ladakh

Highlighting the increased frequency of disasters in Ladakh Dr. Sonam Wangchuk cited the flash flood at Pam (2006), cloud burst at Leh (2010) when a quarter of the city was washed away and cloud bursts in 2015 and 2017. The natural precipitation is less than 100 mm in a year in Ladakh.

Giving example of traditional mud houses of Ladakh which help moderating the temperature throughout the year, Dr. Wangchuk highlighted the importance of region-specific actions based on local realities and sensibilities. The importance of leveraging from the social capital of the regions while addressing the climate change impacts and disasters was also at the core of his discourse.

Recommendation:

- Leveraging from the social capital to ideate interventions based on the local realities.

Learnings from the Disasters of Ladakh: Leveraging from the social capital

About 1000 people and thousands of houses and farms were lost in the cloudbursts and flash floods in Leh in 2010. From the government to people and organizations all came forward to support the disaster hit population of Ladakh. There was a big mistake made in the approach to provide relief to the people when not enough efforts made to understand the local realities, sensitivities, and sensibilities.

In Ladakh people live in mud houses. Mud is a good insulating material and the cost-effective houses are built with local resources deploying local skills. The temperature inside these houses remains moderate in winters and summers, these are easy to built because the material comes free of cost and people help each other to build them. In 2010 post cloudburst, thousands of pre-fabricated plastic boxes were distributed out of kindness to thousands of people who have lost their mud houses. This costed four to five lakhs each. Local reality is that the people in the area can't even imagine living in the boxes that don't have that thermal mass. Government and the people who wanted to support thought that they must give quickly whatever they can to the disaster hit population as winter was approaching. Little did they know or study that, though, Ladakh does not have much material capital, it has a great social capital. There is no homelessness in Ladakh and nobody remains hungry as people help each other. This is how people have survived in Ladakh. Nobody lived in any of these shelters provided. People went and lived with their relatives and friends where they had warmth, love and support. Next spring they started building their own mud houses to begin their lives again but without any support from what the nation gave. If the government had not distributed these plastic boxes and instead given the money to the people this would have provided disaster hit population the required financial support to rebuild their houses with the help of the community.

Without understanding the social capital, the material capital were pumped in the form of the plastic boxes which became plastic garbage in the next two to three years. The nation lost 4 lakh-five lakh rupees on each of this hut but the people in Ladakh did not receive that. This shows the need to learn about the local realities and the local social capital not only in Ladakh but also all across India as India has a huge social capital.

By- Dr. Sonam Wangchuk



उन्नयन-III

Infrastructure & City Resilience including Peri-urban

Session Chair:

- Prof. Ravi Sinha, Professor, IIT Mumbai

Session Moderator:

- Dr. Amit Prothi, Director General, CDRI

Distinguished Panellists:

- Shri Manish Dubey, Chief of Practice, Indian Institute for Human Settlements, Bengaluru

- Dr. Aditya V. Bahadur, Principal Researcher (Urban Resilience Lead) & Chair Research Strategy Team, IIED
- Shri Sanjeev Banzal, DG, ERNET, GoI
- Shri Manoj Dabas, Deputy Chief of Party, ICRAF
- Dr. Himanshu Shekhar, Associate Academic Officer, UNU- EHS, Bonn Germany

Session Coordinator: Ms Richa Srivastava, Consultant, NIDM



Setting the context **Dr. Amit Prothi** underlined that more than half of the world’s population is living in the cities where social, economic, and cultural infrastructure and assets get concentrated. Because of this concentration the maximum impact of a hazard gets felt in the cities. ‘This calls for thinking about urbanization as climate change is exacerbating the risks in urban areas while poor urban development is exacerbating the risks of climate change’ Dr. Prothi stated. **Prof. Ravi Sinha** underlined the unique nature of the problem as healthy cities ensure healthy societies and humanity.

New Approach: Big Data Approaches

Understanding air temperature in cities is notoriously difficult because it varies block by block depending on urban geomorphologies. However, every android phone in the world is constantly monitoring its battery temperature. Based on this, an innovative startup in the USA have developed an application where the battery temperature are getting collected and through an algorithm battery temperature data is converted into the air temperature data. The application is able to crowdsource extremely precise air temperature information from cities from half a million mobile phones spread across the cities which allow them to model heat waves over time. Its application can be used, for example in the City of Paris where, when the heat wave comes, it will be required to blanket the city with cooling centers, instead, city can target particular neighborhoods more than others.

Shri Manish Dubey highlighted that while about eighty percent of all economic action in the world happens in the cities, about 75 percent of the total emissions also comes from cities. He underlined that the cost of the

resilient infrastructure does not add much, it is just about three percent to the upfront cost but it pays back four times more in terms of net benefits. ‘The idea of risk is not yet seeped in the planning. The need is to gauge our risks well enough, understand them well enough, communicate them well enough to stop pushing people and infrastructure into known unsafe zones’ he added. Use natural ecosystems as natural buffers rather than overriding them and creating infrastructure that gets impacted. He further highlighted the lack of enough projects that provide investors assurance of timely delivered and returns that resilient infrastructure promises. To make that happen, Shri Dubey emphasized, the role of better incentivized instruments and multilateral ability to start supporting national and sub-national governments and city governments in creating those pipelines providing the necessary enhancement guarantees so that these projects are built.

Underlining the role of the cities in the present-day world, **Dr. Aditya V. Bahadur**, mentioned that cities are responsible for ~75 -80 percent of the world’s GDP and more than one in every two people in the world now lives in the cities. ‘The challenge is the vast numbers of vulnerable population in the

cities which is on the front lines of the battle against the climate change. As a rule, 33% of all cities across the world are informal and in the global South the percentage of informality is higher. In some of the most at-risk cities 60 -70 percent of people are living in the informal

Best Practices

Structural solution to a fairly proximate problem

Example is a project in Gorakhpur (UP) where the proximate problem was urban flooding and water logging. Instead of redoing the drains and dusting their hands off, the local NGO - GEAG took a systemic structural approach. Following the approach, it was realized that flooding happens because the non-operational drains. Drains are non-operational because they are filled with the garbage. The garbage has accumulated because the waste management system is not working due to lack of accountability between the local government and people who are being affected by flooding.

So instead of fixing the drains, community was mobilized to put the pressure on the local government to find a comprehensive and sustainable solution of the problem. The government stepped in because of the pressure of educated and empowered community and this led to a step change and a paradigm shift in the risk that these people faced.

settlements. This means that there are almost a billion people across the world living in cities that earn less than two dollars a day and don't really have the capacity to withstand the shocks and stresses of climate change' Dr. Bahadur added. Highlighted the shifts in the nature of shocks and stresses that cities across the world are facing he mentioned (i) Shocks and stresses are becoming more intense. (ii) Extensification of shocks and stresses as disasters are becoming more extensive wherein the individual disasters impacting large numbers of assets and people while multiple concomitant disasters are happening at the same time (iii) More frequent disasters (iv) Risks are becoming tele-connected – If disaster struck one part of the world, it leads to a disaster in another part of the world due to the densification of economic and social networks **Dr. Bahadur** highlighted the mistake in the way of managing risks in the cities by aligning with the traditional approaches of doing things even though there is such a substantial shift in the nature of risks that cities are facing across the world. He highlighted at the shifts that are required in the governance for climate resilience

1. The right amount of data to complement the existing ways of understanding climate impacts with new, innovative, decentralized, and disaggregated approaches such as Big Data approaches as well as analog approaches

2. Build institutions which embrace people of informal settlements and informal knowledge and appropriate informal practices to co-create the plans with them

3. Structural approach involving communities to deal with community resilience

Highlighting the role played by Information and Communication Technology (ICT) during COVID 19 pandemic and behavioural change it brought out **Shri Sanjeev Banzal** highlighted the importance of ICT in prevention, detection and mitigation of the impacts of disasters, rescue &

relief operations and in rehabilitation dur to disasters. He emphasized on incorporation of the use of technology like GIS, AI, Machine Learning, Big Data Analytics and Satellite for mapping and tackling disaster conditions. Shri Banzal highlighted some of the recommendations on which actions are ongoing or/ are required: (i) 112 the single emergency number for our country (ii) Free of cost roaming facility should be allowed across the operators for 15 days' time period whenever there is a physical damage of the infrastructure or wherever there is a disaster (iii) Priority call 'routing' - based on the priority given to the different functionaries of relief and rescue operation their call should get mature first. Either their call be put in queue first or it gets through breaking the existing communication as in such circumstances many near and dear ones try to reach out to the person in the

Best Practice

People from informal settlements join formal planning processes and mediate the relationship between governments and informal settlers to understand each other's compulsions and insights

Example from Ghana, where government cancelled the exercise slated for eviction, demolition and relocation of a slum after including informal actors in the planning process as it was found that there were far too many people living in the slum then the government had realized. This has resulted in avoiding an Internal Displacement Disaster that would have happened had the plan implemented.

affected area (iv) All feature phones should also have the GPS enable capability so if disaster hits and somebody calls at 121 the location of the person gets registered and known even if verbal communication couldn't happen.

Shri Manoj Dabas emphasized on paying attention to the nature-based solutions for finding answers of the generic problems, to expand green spaces in the cities as well its distribution across the city to help in mitigation of disasters and to enhance food security in the urban realm. 'Cities need to value green cover

<u>Best Practice</u>
More than one thousand tons of Jamun is harvested from the parks situated in the NDMC areas of Delhi. It is sold in Delhi and nearby

much more under unprotected landscape. There should be monitoring as well as steps be taken to reduce encroachments and informal settlements in green areas' Shri Dabas added.

Dr. Himanshu Shekhar, highlighted the importance of featuring urban resilience in NDCs and NAPs. He underlined the need to expand access of knowledge and technology and to work on gender inclusion. Highlighting rising urban poverty and the inequality he underlined that social protection baskets which has programs like MNREGA does not still have an urban component. He also emphasized on the need to promote South-South learning through city networks in the African and Latin American context.

Recommendations:

Policy Makers

- Use of big data approaches and analog approaches for planning infrastructure and city resilience
- Initiation of Common Alerting Protocol through which any emergency message can be shared through any mode
- Recommendation for use of '112' as emergency number across states
- Due to damage of infrastructure during disasters, call roaming facility shall be made available in all regions and networks for 15 days windows
- Priority call 'routing' - based on the priority given to the different functionalities of relief and rescue operation their call should get matured first
- GPS enabling in all phones (smart & feature) to access location details even when network is hampered as a safety protocol. Inclusion of urban components in the social protection schemes like NAREGA
- Multi-national banks playing a role and providing guarantee

Research and Capacity Building

- Build institutions that encourage informal sector to join formal processes of infrastructure planning for city resilience.
- Awareness for the local masons, architects' engineers, etc., on sustainable and resilient construction of buildings.
- Plantation criteria for enhancing Green Cover in cities should have biodiversity, livelihood and food security component
- Increase in the Social Protection Basket for the urban dwellers.

Administration

- Leveraging from the Social network services for information dissemination, awareness creation and to share ground information.

Civil Society

- Promote structural solutions involving communities for proximate problems



उन्नयन-IV
**Addressing Loss & Damage and Humanitarian-Social
Resilience**

Session Chair:

- Shri (K.G.) Shyam Parande, Secretary, Sewa International

Session Moderator:

- Prof. Shiraz Wajih, President, GEAG

Distinguished Panellists:

- Shri Sanny Ramos Jegillos, Senior Advisor, Disaster Risk Reduction and Recovery, Team Leader, Climate and Disaster Team (Asia Pacific), UNDP Bangkok Regional Hub
- Dr. Sanjay Srivastava, Chief of DRR, UNESCAP, Bangkok, Thailand
- Shri Kunal Satyarthi, Joint Secretary, Policy Planning, NDMA, GoI
- Shri Vikrant Mahajan, CEO Sphere India and Shri Shashikant Chopde, Senior Researcher, ISET, USA
- Dr. Rajarshi Dasgupta, Faculty, IIT Delhi

Session Coordinator: Ms Fatima Binte Amin, Young Professional NIDM



Setting the agenda of the session **Prof. Shiraz Wajih** highlighted that during COP 27 in which an agreement on Loss and Damage was finalized, the focus of the news media and the social discourse was on finances, subsidies and compensation while the point on mitigation of loss and damages was missing. He highlighted the need to discuss the whole ecosystem of the loss and damage, the specific issues of climate change impact that lead to the loss and damages, how to mitigate them, mechanisms to address L&D and the factors which actually restrict these kind of interventions. ‘The financial, social, technical or capacity wise limitations which restrict our acting on the mitigation of the loss and damages should also be focussed on’ Prof. Wajih stated. **Shri (K.G.) Shyam Parande** highlighted the engagement of Indian diaspora with the Seva International in successfully carrying out relief operations in various emergencies and disasters across the world. He also shared the experiences of the relief operations carried out during Gujarat earthquake (2001) and highlighted the huge loss of resources incurred because the excess of the relief materials sent to the villages - food, cloths and plastic water bottles etc that could not find any taker.



Shri Sanny Ramos Jegillos Underlined the way in which UNDP can advance the existing engagement with the stakeholders of India. He emphasized on building capabilities in averting, minimizing and addressing loss and damage. In this regard, he mentioned ‘The Santiago Network on Loss and Damage’ - a group of developing

and developed countries that has the objective of catalysing technical assistance to vulnerable developing countries through networking and knowledge sharing. Santiago network is an important venue for South- South cooperation and knowledge sharing, Dr. Jegillos highlighted. He underlined the portfolio approach adopted by UNDP for engagement with the stakeholders to bring in together the capabilities in risk informed development, climate mitigation & adaptation, disaster reduction and recovery. Enhancing the abilities of the countries and communities to correctly measure and predict both adaptation costs and climate attributable loss and damage, maximization of digital technology and digital transformation, improved data governance that will allow data sharing at the country and state level and regionally are some of the areas where UNDP is looking forward for engagement, Dr. Jegillos mentioned.

Dr Sanjay Srivastava highlighted the studies and assessments carried out that showed 93 billion was the annualized approximate probabilistic estimate of loss from all direct and indirect disasters in India which is 3.3 percent of India's GDP. He also mentioned about an adaptation broadcast and said 'India for example in worst climate case scenario needs 43 billion dollars to adapt to the worst of the climate cell'. He suggested NIDM to take leadership role in creating a multi-disciplinary interface to address all the dimensions of Loss and Damage involving the network of universities, insurance companies and private sectors etc. He also highlighted that NIDM should take necessary steps to bring attribution science into Loss and Damage agenda of the country and lead to bring digital transformations in loss and damage assessments.

Shri Kunal Satyarthi shared India's experiences from COP 27 Loss and Damage negotiations and how the L&D has now come up as the third pillar in UNFCCC negotiations along with adaptation and mitigation. He highlighted that for the first time in the country, NDMA and NIDM together are applying performativa prepared by NIDM for capturing post-disaster need assessment. 'We have done PDNA in eight states and nine states in the country have attempted or tried to do damage assessments for economic losses. At present we are assessing only economic damages. We have the PDNA happening in the country and the finance commission provides for recovery and reconstruction fund. If we follow the four directions that the current trajectory of the international & national phenomena is taking we are happily moving with lot of substance in this direction of addressing loss and damage' Shri Satyarthi stated.

Shri Vikrant Mahajan highlighted the issue of non- utilization of funding that is earmarked for mainstreaming disaster risks and climate change because of lack of awareness across the development actors. He also advocated for establishing an institutional mechanism around PDNA for enhanced accountability. He underlined the lack of role models and success stories of mainstreaming DRR in development for learning and scaling up risk reduction strategies. A 'how-to' guidance we need to develop on the good practices which are to be developed, Shri Mahajan added. He also highlighted

the need for new finances, utilization of existent financial arrangements and capacity building needs at field and operational level for frontline workers.

Shri Shashikant Chopde talked about five areas of Loss & damage: agriculture, impact on environment, housing, physical and social infra and lives. He underlined the need to make the risk data public and tools for financing such as insurance and public & private funds.

Shri Chopde highlighted the need to strengthen the value chain of the important flagship crops in each state to enhance farmers income and resilience. In the housing sector, he underlined, the scope of promoting enterprises at the local levels for generating appropriate eco-friendly building construction material. Capacity building of local masons to designs and create better engineered houses and enterprises was also highlighted as an important area to reduce L&D. ‘Capacity building and institutional development of the states at various levels is required in developing projects that have mitigation elements as part of it with the funds available’ he added.

Dr. Rajarshi Dasgupta highlighted the knowledge gap to account for non-material and non-economic losses. Underlining the importance of mental health and post-disaster human well-being, loss of cultural heritages and biodiversity, loss of sacred forests Dr. Dasgupta highlighted the issue of the lack of framework to account for these. Citing a study by IPBCC (Inter govt panel on Biodiversity Conservation) he talked about the loss of land and inter -generational loss of security and generational sustainability and the global efforts to establish relational values between human and nature.

Recommendations:

Policy Makers

Inclusion of the following elements in the framework for L& D assessment

- Institutional mechanism around PDNA for enhanced accountability
- For deliberations on Loss & Damage, inclusion of development actors in addition to the existing humanitarian actors
- Mental health pre and post disasters

Inclusion of the following elements in the framework for reducing L&D

- Risk wise demarcation of the area and risk data be made public to enable informed decision making
- Policy to promote enterprises at the local levels for generating appropriate eco-friendly building construction material
- Inclusion of strengthening the value chain of the important flagship crops in each state to enhance farmers income and resilience

Research & Capacity Building

- NIDM to build on the existing DALA methodology and risk analytics to take the loss and damage agenda forward
- Creation of a multi-disciplinary interface to address all the dimensions of Loss and Damage involving the network of universities, insurance companies and private sectors etc.
- Bring attribution science into Loss and Damage agenda of the country – NIDM to take lead
- Bring digital transformations in loss and damage assessment – NIDM to take lead
- ‘How to’ guide for mainstreaming DRR in development for learning and scaling up risk reduction strategies
- Framework to account for non-material and non-economic losses
- Capacity building at field and operational level for frontline workers

- Capacity building and institutional development of the states at various levels is required in developing projects that have mitigation elements embedded

Administration and Civil Society

- Capacity building of local masons to designs and create better engineered houses and enterprises



विशेष सत्र

SDG Realization through CCA-DRR (Special Session)

Session Chair

- Dr. Nisha Mendiratta, Advisor and Head Climate Change Programme and WISE-KIRAN, DST, GoI
- Prof. Anil Kumar Gupta, Head- ECDRM, NIDM

Session Moderator:

- Shri Vikrant Mahajan, CEO, Sphere India

Distinguished Panellists:

- Shri. Sudeep Roy, Associate Town and Country Planner, Ministry of Housing and Urban Affairs, GOI
- Shri Mohit Rao, Ministry of Panchayati Raj
- Shri Manas Mitra (Office of the Principal Scientific Adviser to the GoI)
- Shri DS Krishnan, Ministry of Panchayati Raj
- Dr. Kanta Singh, Deputy Country Representative, UN Women
- Prof. Santosh Kumar, Head, GIDRR and Former ED, NIDM
- Ms. Marije Broekhuijsen - WASH Specialist - UNICEF India
- Dr. Sudeshna Sen, Programme Policy Officer, Resilient Food Systems, WFP
- Sh. Varun Singh Poonia, Deputy Industrial Advisor, Govt. of India

Session Coordinator: Dr Anjali Barwal, NIDM



Setting the context of the session Shri Vikrant Mahajan pondered over the issue of bringing the development actors together to address DRR and CCA issues. He emphasized that it is the time to review and assess our midterm progress regarding commitments made under Sendai Framework for Disaster Risk Reduction (SFDRR) and SDGs and analyse our progress on mainstreaming the concerns. **Dr. Nisha Mendiratta** highlighted the need for a robust data information system bringing all the information at common platform and making the knowledge available to the stakeholders to strengthen capacity for climate change adaptation and mitigation and resource management. She emphasized on involvement of women and building women leadership as central to disaster management agenda. Dr. Mendiratta informed that the task to create a Pan-India district vulnerability assessment has been undertaken by the department and 10 indicators have been developed for all the states. Next step is to carry out assessment of risks at the panchayat level.

Prof. Santosh Kumar underlined the need for quantification of risks for each sector to take steps for DRR. He also highlighted the fact that the budget of all the sectors has 30% flexi funds which hardly gets utilized for DRR and therefore, understanding mechanism to utilize the fund for DRR should be top priority. **Prof. Anil Gupta** emphasized on identification of risk indicators at local level for risk mapping, pathways and means for operationalize the guidelines at local level, decentralize and all-inclusive DRR and the need to recognize DRR as profession as at present this acts as a deterrent towards SDG realisation in India. Recognition of DRR as a profession will also help overcome the dearth of experts in the area.

Citing SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable, **Shri Sudip Roy** highlighted the issue of lack of yardstick to assess the success of any plan of the urban realm and along with the absence of any feedback mechanism. He suggested proper audits as well as performance assessment be undertaken to create responsibility for reform implementation. He also highlighted the fact that recommendations should be made keeping the difference in the requirements of different genders (for example Sanitation requirement and childcare facilities).

Shri Mohit Rao informed that the Ministry of Panchayati Raj has launched a disaster management plan which gives a framework for mainstreaming disaster at the gram panchayat level. He highlighted the use of Gram Sabhas as a tool to bring consensus among the rural citizens. Panchayat are making headway in clean energy as Sarpanchs are taking leads. He suggested that local climate action plans should also include Disaster Management Plans to be more inclusive. He highlighted that over 250,000 Gram Panchayats of the country offer such a platform to address or decentralize disaster and climate change action plans and be leveraged effectively. Shri Rao also informed that office of the principal scientific advisors has been working on an initiative called Manas Mitra that deals the issues of mental health during and after disasters and highlighted the importance of Tele support to the affected population.

Shri DS Krishnan highlighted that panchayats in India have more than 35 lakh elected representatives and they are directly in touch with the rural citizens and are responsible and accountable to them. The conflict is that they don't have the complete power over the various development programs and schemes that are being executed towards the rural development. The control of Panchayat on expenses is less than 5% at present' he stated.

Shri Krishnan informed about the Village Disaster Management Plan prepared by the Ministry of Panchayati Raj and steps taken for localization of SDGs at GP level. For this, 17 SDGs were grouped into 9 themes (like clean village, good governance village, water sufficient village) which are to be taken up by the panchayats. He also informed about the 'E-Gram Swaraj' - an integrated portal of all panchayats that will soon be made available.

Sh. Varun Singh Poonia emphasized on the need to develop circular economy, optimize the resources and link disaster management, risk and mitigation which can be mapped so that overall sustainability can be managed. He also informed that the DM plans for chemical and Petro-chemical sector are being developed by the departments which are reviewing the chemical management systems in India. Highlighting the need to develop robust data management system for the industry he said 'we need to establish the 5r system that is redesigned, reproduction, recovery, recycle and reuse'.

Ms. Marije Broekhuijsen underlined the climate resilience nature of WASH programme. She emphasized on the need to build the capacities of Panchayati Raj institutions to implement and monitor the plans to ensure that investments does not go wasted.

Dr. Sudeshna Sen highlighted the work carried out by WFP in India. She talked about development of an application for fisheries wherein the knowledge of the indigenous fishing communities has also been included to present plans for better sustainable catch and reduction in the damage of lives and assets.

Recommendations:

Policy Makers: Key Components to include in the Framework for developing the Vision for 2047:

- Formulation of guidelines to provide directions to the ministry and field level officials on mainstreaming DRR and CCA in development initiatives
- Mechanism for improved, accounted and reported utilization of flexi funds available in different sectors for DRR
- Robust data information system for different stakeholders including the industries
- Increase control of Panchayat on expenses
- Recognition of DRR as a profession
- Involvement of women and building women leadership in DRR
- Component to address - mental health conditions of the affected population
- Establish yardsticks to assess the success of DM and CC action plans and develop feedback mechanism

Research and Capacity Building:

- Identification of risk indicators at local level for risk mapping
- Pathways and means for operationalization of the guidelines at the local level for decentralize and all-inclusive DRR
- Gender specific recommendations during disaster management
- Development of Intensive Information System for Disasters and Risk Reduction Plans in a common platform for easy accessibility for policy makers and public
- Develop approaches for behavioral change where people automatically look for risk exposure of each sector and quantify the risk and eventually learn the ways to deal with the disaster.
- Capacity building to undertake audits as well as performance assessments of the DRR and CC actions to create responsibility for reform implementation

Local Administration

- Awareness and capacity building of the local administration for assessing availability and utilization mechanism of flexi funds in various programmes and schemes for DRR and CCA mainstreaming

Civil Society

- Capacity development of women at the local level for building women leadership in DRR
- Capacity development of field level officers and youth on basic understanding of risk and resilience, to build a cadre of skilled disaster management professionals/volunteers.
- Capacity building of the Panchayati Raj institutions to implement and monitor various plans



Day – 3 19 January 2023



Keynote Address

- Dr. Diana Patricia Mosquera Calle by Deputy Chief, UNDRR Asia-Pacific

Remarks

- Shri Rajan Singh, Member, NDMA
- Prof. Santosh Kumar, Head, GIDRR and Former ED, NIDM
- Prof. V K Sharma, Vice Chairman, Sikkim SDMA & Sr. Professor IIPA

Session Coordinator: Ms. Pritha Acharya, Research Associate, NIDM





Dr. Diana Patricia Mosquera Calle stressed on the transformation of risk governance mechanisms to ensure that management of risk is a shared responsibility across sectoral systems, national,

regional and global level. ‘It is vital to build resilience in all the sectors and ensuring the coherence of national and local frameworks, laws, regulations and public policies by defining roles and responsibilities that guide, encourage and incentivize the public and private sectors to take action and address disaster risk’ Dr Calle added. The focus to prepare for future shocks should be :

- Strong understanding of risk in all its dimensions, a better understanding of the shifting nature of risk driven by the interdependencies of our societies and the global economy
- Disaster risk information system that collects the most relevant disaggregated data (including sex, age and disability) and overlays it on future risk assessment and data on past disasters
- Ensuring open access to different sources of data and information
- Supporting generation of more scientific and technological solutions that are integrated with local indigenous and traditional knowledge to build and inform progress across different sectors
- Preventing new risk and reducing existing risk by integrating more nature-based solutions and ecosystems services in disaster risk reduction related activities
- Build the resilience of the most vulnerable in societies by engagement, empowerment and strengthening the capacity of local NGOs and local actors, local governments and various stakeholders to mobilize all of society
- Ensuring a human rights-based approach is adopted with inclusive processes and implementation

Shri Rajan Singh highted the context of changing horizons of disaster risk along with weather activities, health epidemic and human induced disasters and highlighted the need for advances in early

Key strategies for DRR

1. The impact of disasters is most felt at the local level and indeed the vast majority of disasters tend to be small local events which don't often make the news but still impact lives and livelihoods. The initiatives that help the local governments to improve in understanding the plans and implementing the resilience building measures are needed to be spread.

2. Not all risk can be mitigated or reduced. Hence adaptation measures are required to address the residual risks.

- Multi-hazard early warning systems
- Increased dedicated funding for DRR and climate change adaptation
- Increase capital investments, financing and social expenditures to mitigate involving the private sector
- Revisit public financing mechanisms to invent means of financing prevention

warning system and risk communications, local level preparedness and capacities with sectoral emphasis towards resilience in infrastructure, cities, industries and communities in general.

Prof. Santosh Kumar highlighted the need to assess our future strengths and the changes in the global dynamics, urban dynamics, social orders and economics that would lead to the changes in the vulnerabilities from today. He highlighted the challenges of inequality and the need to assess the gaps in the mechanisms and the partners and start looking for the new strategies to address that. ‘Inclusiveness as a concept has evolved but not been translated into action so far and therefore, inclusion of inclusiveness with the sensitiveness is another issue to be taken up for the 2047’, Prof Kumar stressed. Highlighting the heterogeneity of India he stated ‘We have to come out from the self-deception process and we have to go out of the box and this will be happening only when we make compassion and love as core value of the disaster risk management’.

Prof. V K Sharma highlighted state level preparedness and consciousness about the vulnerabilities and the risks. He shared some of the work being carried out in Sikkim such as mapping of health sector, main streaming glacial lake outburst mitigation and climate smart governance. Highlighting the level of preparedness required as a challenge Prof. Sharma stated that based on the lessons learnt from the summit Sikkim will prepare a roadmap for 2047.

Recommendations:

Key Components to include in the Framework for developing the Vision for 2047: Policy Makers:

- Increased dedicated funding for DRR and climate change adaptation
- Ensuring open access to different sources of data and information
- Supporting generation of more scientific and technological solutions that are integrated with local indigenous and traditional knowledge to build and inform progress across different sectors
- Increase capital investments, financing and social expenditures to mitigate involving the private sector
- Ensuring a human rights-based approach is adopted with inclusive processes and implementation

Research and Capacity Building:

- Strong understanding of risk in all its dimensions, a better understanding of the shifting nature of risk driven by the interdependencies of our societies and the global economy
- Multi-hazard early warning systems
- Development of Disaster Risk Information System that collects the most relevant disaggregated data (including sex, age and disability) and overlays it on future risk assessment and data on past disasters

Local Administration and Civil Society

- Build the resilience of the most vulnerable in societies by engagement, empowerment and strengthening the capacity of local NGOs and local actors, local governments and various stakeholders to mobilize all of society
- Integration of more nature-based solutions and ecosystems services in disaster risk reduction related activities



उन्नयन-V Sectoral Approach and Regional Contexts to Resilience

Session Moderator:

- Dr. Anshu Sharma, Co-Founder, SEEDS India

Distinguished Panellists:

- Shri Chetan Bhakkad, Grant Thornton India LLP
- Dr. Shailesh Agarwal, ED BMTPC
- Dr. Suresh Kumar Chaudhary, Deputy Director General, NRM, ICAR
- Shri Lalit Jain, Director, DEST, Govt. of Himachal Pradesh
- Dr. Arup Nath, OSD(Env.), Syama Prasad Mookerjee Port, Kolkata

Session Coordinator: Ms Fatima Binte Amin, Young Professional NIDM



Setting the context of the session, Dr. Anshu Sharma emphasized the importance of understanding different sectoral approaches to focus deeper on resilience while the regional contexts help build wider understanding of the ground reality. **Shri Chetan Bhakkad** highlighted the importance of bringing in resilience into agriculture sector. He highlighted creation of food value chain system to

reduce the carbon footprint and creating communities which could enable a sustainable value chain systems. Shri Bhakkad stressed on the community driven agriculture models to empower the sector which needs economic, social and climatic resilience the most. Use of technology in agriculture, a community-based approach, creating sustainable value chains and ramping that up and cutting losses all combined makes it a good strategy for building resilience in agriculture, Shri Bhakkad added.

Underlining the twin challenge of climate change and urbanisation **Dr. Shailesh Agarwal** highlighted the need to create 6-8 million square metre area every year by 2030 which is responsive to climate change and adaptations to cope up with fast-moving urbanisation trends. He highlighted the Pradhan Mantri Awas Yojna-Urban (PMAY-U) as a technological summation initiated to handhold state government and local administration to orient them about sustainable development via good construction practices and, thus, to incorporate Sustainable and Resilient themes in the PMAY-U projects. He informed that in 2019, a Global Housing Technology Challenge - India (GHTC-India) e was launched where 54 innovative & sustainable construction systems were shortlisted as basket of technologies divided into 6 categories under lighthouse projects. ‘We can make use of these technologies by simultaneously putting them under use’ Dr. Agarwal added. In the same conference, the third edition of Vulnerability Atlas of India, was brought out by BMTPC, presenting the digitized State/UT-wise Hazard Maps with respect to Earthquakes, Winds & Floods for district-wise identification of vulnerable areas. This edition contains additional digitized maps for Thunderstorms, Cyclones and Landslides, Dr. Agarwal added. He recommended to have a vulnerability atlas of 2047 to help guide the discussion.

Shri Lalit Jain highlighted the importance of the health of the springsheds for the local communities. ‘A springshed is the area of land that contributes groundwater to a spring and is of great importance for the local communities. Any action within the springshed affect the quality of water flowing from the spring. However, the challenge in India is that Springsheds are not even mapped yet’ Shri Jain highlighted. He stressed on establishing a balance between the development and the safety of the environment and advocated to pool various technologies to develop climate resilient, intelligent structures complimenting the topography and geography of the hilly terrains and to move away from creating multi storey building in the hilly regions. ‘There is practically no requirement of multi-story buildings in the hilly terrain’ he stressed. He also highlighted the need to bring out region specific models to cater to the climate change adversities and requirements as hilly regions are so sensitive to climate change that no basic model can work in these areas. Thus, we need to bring out specific/special models. ‘Himachal Pradesh have its own model to cater to the climate change adversities and requirements’ Shri Jain informed.

Dr. Suresh Kumar Chaudhary highlighted the impact of climate change on resources such as soil, water and trees, etc, which cause the decline in the overall productivity of all the sectors, particularly

agriculture. He highlighted 'NICRA-National Innovation for Climate Resilience in Agriculture' a flagship network project of Ministry of Agriculture and Farmers Welfare focusing on strategic research on adaptation and mitigation, demonstration of technologies on farmers' fields and creating awareness among farmers and other stakeholders to minimize the climatic change impacts on agriculture. **Dr. Arup Nath** highlighted the importance to keep the adjacent ports open during disasters as it is often used for inhabiting communities and disaster affected populations. Dr. Nath also underscored the capacity of crop residues to be converted into building materials publishing guidelines on heat islands. He also highlighted the need for increased road safety in India highlighting that 'Road deaths in India are more than the total number of casualties from disasters in India'.

Recommendations:

Policy Makers:

- Micro milestones for each state/districts in India to reach to the net zero targets by 2050
- Publish guidelines for tackling the issue of Heat Islands

Research and Capacity Building:

- Creation of Vulnerability atlas of 2047
- Risk assessment, risk management Atlas & definite agriculture plans for 2047
- Pooling of various technologies to develop guidelines for climate resilient, intelligent structures complimenting the topography and geography of the hilly terrains

Local Administration

- Every district to make a District Agriculture Contingency Plans for guiding stakeholders and providing additional information on how to handle/manage, diverse, emergency situations.



उत्तोलन

RESSUMMIT47 Futuristic Recommendations

Session Chair:

- Prof. V K Sharma, Vice Chairman, Sikkim SDMA & Sr. Professor IIPA

Distinguished Panellists:

- Smt. B V Uma Devi, Former Additional Secretary, DM Division, MHA, GoI
- Prof. S P Singh, Former Vice-chancellor, Kumaon University
- Dr. Madhukar Gupta, State Election Commissioner, Rajasthan
- Dr. B.M.S. Rathore, Senior Policy Advisor, ICIMOD

Session Coordinator: Ms Richa Srivastava, Consultant, NIDM



Smt. Uma Devi underlined the paradigm change in the approach of government of India to disaster management from relief centric to a holistic one involving the prevention, mitigation, preparedness, response and then relief, recovery and reconstruction. She mentioned the provisions of funding for mitigation in the 15th Finance Commission and setting up of Coalition for Disaster Risks Infrastructure (CDRI) as the new developments in the direction of DRR. She highlighted some of the key priority areas to move forward:

- State Disaster Management Authorities (SDMAs) and District Disaster Management Authorities (DDMAs) to be strengthened and be made fully functional
- Local level DRR plans to be made involving Panchayati Raj governance institutions
- Capacity building of the local communities in disaster management as well as disaster risk reduction
- Compliance of the bylaws
- A mission on Disaster Resilient Housing involving components such as use the disaster resistant construction material, solar energy and non-conventional energy sources etc
- Promotion of agrobiodiversity and species resilient to extreme weather conditions.
- Upgradation of the Common Alert Protocol for Early Warning Systems using new technologies, the best practices of the other countries and on the geospatial technologies or the forecasting
- Promotion of Nature-Based Solutions
- Awareness about the lifestyle appropriate for the environment

Prof. S. P. Singh highlighted the multiple hazards involvement in fragile Himalayan region because of the temperature rise and suggested the following key areas to work on:

- Assessments of the Himalayan cities with regard to the vulnerabilities as well as to find stable areas where cities should be created so that the people who are displaced should have a space they can be placed safely
- Trans boundary cooperation among the countries in the Himalayas should be taken to another level
- Roads be converted into ecologically safe places where biodiversity can be managed
- Restoration science should be developed to restore land after degradation
- Declare Himalaya as inherently disaster-prone area so that the planning of different sectors in the Himalayas should happen accordingly

Dr. Madhukar Gupta stated that because of high population, in India, even small disasters trigger off big losses of life and property. He recommended:

- Clearly spelling out the role players of different actors at the national, state and local levels
- Building national capacities as well as build South-South cooperation or SAR cooperation for capacity building in the other neighbouring/ SAR countries
- Spell out the entitlements of various stakeholders in the legislations
- Adopt established good practices of legislations from the other countries (example drought mitigation and management tax of USA)
- To maximize the returns on investments and to reduce disaster risk to the maximum build capacities of the lower official representatives to read and understand digital data



Citing the example of floods in Kosi River in Nepal which impacted the dense population in Bihar, India, **Dr. Pema Gyamtsho** in the video message highlighted that the exposure to hazards can extend with time to an area much larger than the site of the primary event and therefore, stressed on the importance

to understand the upstream and downstream linkages of hazard events within the country and beyond.

He highlighted some of the key priority areas to move forward:

- Multi-hazard intersectoral approach to tackle the risks effectively
- Understanding the best practices (e.g. formal and informal early warning systems) currently being implemented in some areas of work and assessing their potential for scaling up
- Understanding the science behind the climate change is key for informed decision making as risks are becoming more widespread and trans boundary in nature

- Harnessing technology for responding to the new types of hustles which could include new early warning systems that utilize interrelated data within or between countries and successful citizen science initiatives
- Resilience should focus on people especially women, children, the poor, the elderly
- The voices of vulnerable local communities to be heard in the planning and policy making processes and should be backed up with science and evidence-based information
- Sharing knowledge in high level platforms within and across states of a nation as well as between countries in a region and across regions in order to harness best knowledge Innovations and practices
- United efforts from the region to translate COP27 pledges related to Loss and Damage and a dedicated fund into reality so that loss and damages caused by transboundary disasters are duly accounted for
- India could play a lead role in advancing the regional approach to deal with disasters - the creation of disaster resilient infrastructure is a very good way forward

Dr. B.M.S. Rathore underlined the ‘transborderiness’ of the disaster risks in the context of Himalayas and highlighted the link between DRR and happiness. He suggested following areas of work and cooperation moving forward:

- Creation of interrelated data and the information systems which includes community based as well as state of art technologies (e.g.) for broadcasting and alerts
- Focus on community to community cooperation in the context of disaster risk reduction and the regional cooperation which happens across the borders without any formal systems
- Opportunity of creating the employment through the Aapda Mitra
- Institutional mechanism for better institutional coherence and coordinated response in terms of hazards and the vulnerability

Prof. V. K. Sharma highlighted the need to create guidelines for the corporate sector as the private sector is not yet active in DRR sphere.

Recommendations:

Policy Makers:

- A mission on Disaster Resilient Housing involving components such as use the disaster resistant construction material, solar energy and non-conventional energy sources etc
- State Disaster Management Authorities (SDMAs) and District Disaster Management Authorities (DDMAs) to be strengthened and be made fully functional
- Declare Himalaya as inherently disaster-prone area so that the planning of different sectors in the Himalayas should take place accordingly
- Plans and strategies for roads be converted into ecologically safe places where biodiversity is managed
- Focus on trans boundary cooperation among the countries in the Himalayas
- Clearly spelling out the role players of different actors at the national, state and local levels
- Build South-South cooperation or SAR cooperation for capacity building in the other neighbouring/ SAR countries

- Spell out the entitlements of various stakeholders affected by disasters in the legislations clearly
- United effort from the region for making transboundary disasters duly accounted for in the L&D and the dedicated funds pledged in COP27
- Opportunity of creating the employment through the Aapda Mitra
- Guidelines for the corporate sector as the private sector is not yet active in DRR sphere.

Research and Capacity Building:

- Creation of interrelated data and the information systems which includes community based as well as state of art technologies
- Upgradation of the Common Alert Protocol for Early Warning Systems using new technologies, the best practices of the other countries and on the geospatial technologies or the forecasting
- Assessments of the Himalayan cities with regard to the vulnerabilities as well as to find stable areas where cities should be created so that the people who are displaced should have a space they can be placed safely
- Restoration science should be developed to restore land after degradation
- Adopt established good practices of legislations from the other countries (example drought mitigation and management tax of USA)
- Capacity building of the lower official representatives to read and understand digital data
- Understanding the best practices (e.g. formal and informal early warning systems) currently being implemented in some areas of work and assessing their potential for scaling up
- Institutional mechanism for better institutional coherence and coordinated response in terms of hazards and the vulnerability

Local Administration

- Local level DRR plans to be made involving Panchayati Raj governance institutions
- Compliance of the bylaws

Civil Society

- Capacity building of the local communities in disaster management as well as disaster risk reduction
- Promotion of agrobiodiversity and species resilient to extreme weather conditions.
- Promotion of Nature-Based Solutions
- Awareness about the lifestyle appropriate for the environment



The Call Together & Road Ahead

Dignitaries

- Shri Kamal Kishore, Member Secretary, NDMA, GoI
- Shri Praveen Pardeshi, Member, Capacity Building Commission, GoI
- Shri Taj Hassan, Executive Director, NIDM
- Dr. Akhilesh Gupta, Secretary SERB & Senior
- Shri H K Makwana, Additional Secretary (Disaster Management), MHA, GoI
- Dr. Thomas Lennartz, Co- director, CC & Circular Economy, GIZ
- Dr. Ashish Chaturvedi, Head, Environment, Energy & Resilience, UNDP India

- Prof. Anil K Gupta, HoD, ECDRM, NIDM

Session Coordinator: Ms Atisha Sood, NIDM



Welcoming the dignitaries of the session **Prof. Anil K Gupta** talked briefly about the 22 sessions in two locations, which took place in the three days summit. The summit had participation of more than 17 plus ministries, 330 delegates, including 115 speakers and participant representation from 29 states who shared their expertise. Highlighted some key aspects emerged from the sessions, Prof. Gupta stated ‘the first is DRR must be established as a professional discipline, especially looking at localising the disaster risk reduction efforts. Second, promotion of more operational research and improvement in the actions on grounds, so that requirement of field officers and implementers are met. Third, utilisation of the networks of institutions and building the synergy among various networks and integrate disaster risk management into their thought process and actions. Lastly, to develop standardization system so that a multiplier effect in our capacity building endeavour is brought in order to address huge capacity needs across all the sectors and geographical actors. He also mentioned that, the event was organized under the umbrella project that tries to establish a science-policy-practice interphase with the support of Department of Science & Technology (DST) GoI, titled ‘Climate Adaptive Planning for Resilience and Sustainable Development in Multi-Hazard Environment (CAP-RES)’. He also mentioned that the event is also conducted as a part of the mission ‘Strategic Knowledge for Climate change’ launched by the Department of Science and Technology. He concluded by expressing his gratitude for all the partners and especially for the support and guidance from the NDMA.

Dr. Thomas Lennartz addressed the gathering and appreciated the fact that many innovative initiatives already implemented in the country were showcased in the summit. Highlighting the collaborations between India and Germany for green and sustainable development as an example he underlined that partnership and multistakeholder engagement are essential for implementing the goals at the national, state and local level. Strengthening resilience and reducing disaster risk is mainly achieved at local level, hence accelerating local level action and capacitating the grassroot level civil society should be the priority in the disaster risk response, he stated. He also emphasised on the need to mainstream climate and disaster risk agenda and promotion of leadership of women in the disaster management. He ended with a note to have a follow up on the discussions that took place in the summit to enable building on this exchange to open ways for more collaborations to realise a resilience and sustainable India.

Dr. Ashish Chaturvedi, further summarised the key takeaways which include (i) strengthening of institutions and capacities of networks for disaster risk reduction in the country leveraging the resources in the country (ii) to develop a framework of capacity development on monitoring mechanisms, utilization and mobilization of finance, use of technology (iii) right kind of climate information which can be utilised at the right moment. Mentioning the existing capacities within India to develop methodologies and other expertise in disaster management he urged for more south – south and south – north collaborations.

Shri Taj Hassan suggested to have very strong documentation of the recommendations and the suggestions to be helpful for the policy makers, and field practitioners. He also urged to share the recommendations with all the district magistrates, policy makers to ensure the trickle down of this information to a local level. He called for collaboration between institutes such as Capacity Building Commission for further capacity building. He concluded by thanking the partners, organizers, panellists and other participants for making this event a success.

Dr Akhilesh Gupta congratulated the eventful three-day summit and recommended undertaking more research in the field of disaster resilience and sustainability and assured participation from SERB and DST in this regard. He also encouraged NIDM to expand itself from a training and capacity building institute to a national research institute. He endorsed undertaking research and studies in the emerging ‘Extreme Events Attribution’ stream. Insisted on the continuation of similar gatherings for fruitful deliberation and idea generation as well as for further operationalizing and launching the implementation strategy he urged NIDM to build an institutional mechanism for implementing the recommendations.

Shri H K Makwana assured that, the recommendations and learnings from the summit will be taken forward by the Disaster Management Division of the Ministry of Home Affairs. He also highlighted that the recommendations from this summit would become the discussion points for the upcoming

NPDRR summit to be conducted in the March 2023. He concluded by expressing continued interest in working forward with the partners.

Shri Praveen Pardeshi pointed out the key findings such as localising actions based on the context of each state and geographical locations. He further urged to not rely on international funding to take care of mitigation problems and instead use local resources in every sector of disaster management. He also mentioned that India's comparative advantage to scale up the interventions should be leveraged in implementing newer interventions. 'Quality of the holistic approach of looking at geology is poor however there are studies around the world which have proved best methods to be practiced in areas of weak geology' Shri Pardeshi highlighted. He urged NDMA, to percolate and disseminate the guidelines to SDMA and DDMA and at the local level elected representatives who are permanent residents who can transfer the knowledge within the community.

This was followed by the distribution of Springer Nature Awards to the Best Paper presentations during the RESSUMMIT2047 pre-event

In his valedictory address **Shri Kamal Kishore** congratulated the organizers for organizing the present pre-event of NPDRR. He further pointed out some national priorities in terms of DRR such as localising the DRR actions, strengthening the SDMAs and DDMA, panchayath raj institutions etc. He highlighted that NDMA is set to build more partnerships with various sectoral ministries in the country (eg; Jalshakthi, education, rural development) and the need to paradigm shift from response to preparedness and risk reduction and the efficient utilization of the dedicated financing for mitigation. He also encouraged the participants to contribute and engage with the upcoming G20 DRR working group meetings and summits. He cited the Issues Paper released by the government of India that highlights top 5 Priorities in moving forward which are early warning for all, resilient infrastructure, improving national financing framework for disaster risk reduction, ecosystem-based approach to DRR and improving disaster response system locally and nationally. Shri Kamal also encouraged the participants to take the discussion forward to benefit the country and also for safer and resilient planet.

On behalf of the organizers **Dr. Sushama Guleria** thanked all the Keynote speakers, Ministers, Session Chairs, Moderators, NGOs, Delegates and other technical and knowledge partners for the organization.



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Day 1- 17.01.2023

**C1. Technology Landscape in 2047 for Disaster & Climate Resilience in India
SEEDS & UNDP**

Panellists:

- Dr. Amir Ali Khan, National Institute of Disaster Management
- Dr. NM Prusty, CDD MASS
- Dr. Ravi Chandra, UNDP India
- Ms. Abha Tewary, UNDP India
- Shri Lakshman Srikanth, SEEDS India
- Col. Sanjay Srivastava, Disaster and Climate Risk Management Expert

Moderator: Shri Mihir Joshi, SEEDS India

Coordinator: Dr. Anjali Barwal, NIDM



Session Summary:

The discussions focused on three important questions (i) In light of technology playing an important role in our society, what are the critical technologies currently in use within the Climate and Disaster Risk Resilience space? (ii) How technologies are utilized by end users and (iii) What is required for democratization of technology to ensure that technology makes the intended impact on the ground? The discussion led to the identification of various key points as enablers for democratization of technology:

Recommendations:

- Democratization of technology requires increased community awareness
- Accurate risk assessment and analysis of development projects
- Open-source data and technology to ensure accessibility
- Integrated data management system
- Capacity building to ensure use of data and technology by end user
- Ensure compliance to risk information
- Importance of behaviour science in DRR
- Promote culture of safety and prevention

C2. Digital Innovation for Resilience

GIZ

Panellists:

- Dr. Preeti Banzal, Principal Scientific Advisor, PSA Office, Govt. Of India
- Dr. Rajneesh Ranjan, Sr. Consultant, NIDM
- Shri Vaibhav Rathi, Sr. Policy Advisor, GIZ
- Shri Manoj K Yadav, Sr. Policy Advisor, GIZ
- Dr. Rohit Sharma, Jr. Climate Change Advisor, GIZ

Moderator: Shri Girdhari Bora, Co-Founder and CIO, Tattva Foundation

Coordinator: Ms Fatima Binte Amin, Young Professional NIDM



Session Summary

India needs to focus on digital innovation in disaster management. Artificial Intelligence (AI) and Internet of Things (IoT) are important tools for early warning systems and monitoring of extreme weather events. Democratization of data and development of knowledge portals are crucial for effective use of information by policymakers and academics. The government of Uttar Pradesh and Himachal Pradesh already using digital platforms to provide information on climate change.

Recommendations:

1. Make technology a mainstream component of disaster management with a focus on digital innovation for disaster risk reduction and community resilience.
2. The number of startups focused on climate and disaster management is limited, the focus should be on reaching the vision of AI-based planning and early warning systems for disasters at all levels, including disaster-prone areas, cities, organizations, and individuals.
3. There is a need to create a conducive atmosphere for scaling up startups in the area of disaster management using AI and IoT; The future of AI and IoT in disaster management lies in smart cities, where technologies like predictive analysis and monitoring systems can play a huge role.
4. The democratisation of data is a crucial aspect of digital technology, where data is accessible to everyone, from startups to policymakers, for collaboration and innovation. Digital transformation

is crucial for ensuring the impact of policies reaching the last mile, making digital a pathway for this, the research community faces a void in terms of the availability and usability of data.

5. The development of knowledge portals and networks is crucial for educating the government and academic institutions on existing networks and how to use the data available.

C3: Technology & Innovation for DRR IIT Roorkee

Panellists:

- Prof. Sumit Sen, Head, Centre of Excellence in Disaster Mitigation and Management, IIT Roorkee (Convenor)
- Prof. J. K. Garg, Director, Tribhuvan College of Environment and Development Sciences, Neemrana, Rajasthan
- Prof. Mahua Mukherjee, Department of Architecture and Planning, Joint Faculty & Ex-Head, Centre of Excellence in Disaster Mitigation and Management IIT Roorkee
- Prof. Ajanta Goswami, Department of Earth Sciences, Joint Faculty, Centre of Excellence in Disaster Mitigation and Management IIT Roorkee
- Prof. Srikrishnan, Centre of Excellence in Disaster Mitigation and Management IIT Roorkee
- Dr. Preeti Banzal, Advisor, PSA Office, GoI
- Dr. S. K. Srivastava, CGM. RC, Sci/Engr 'H', Indian Space Research Organisation (ISRO)
- Ms. Aakansha Tyagi, Associate Editor, Springer Nature

Moderator: Prof. Sumit Sen, Head, Centre of Excellence in Disaster Mitigation and Management, IIT Roorkee

Coordinator: Dr. Sweta Baidya Das, Consultant, NIDM



Session Summary:

Science, technology and innovations are crucial to disaster risk reduction. In order to address gaps, interdependencies, social issues, and disaster risks, the Sendai Framework for Disaster Risk Reduction (SFDRR) promotes investment in creating innovation and technology in long-term and solution-driven research in disaster risk management. In the present session, some of the experiences/approaches and challenges from various initiatives related to Technology & Innovation for DRR were discussed. Role of academia and government in the above context setting the Vision 2047 were also at the core of the discussion.

Recommendations:

- Action-oriented research and need based solutions are to be developed consulting the stakeholders.
- Create ecosystem based DRR concepts at the institutional level and transfer it to individual level involving the stakeholders
- Interventions in the NEP for incorporating disaster education at both primary and secondary education level.
- Training of students on disaster response should be made mandatory at schools.
- Innovations from the academia needs to be scaled up to incorporate community-based early warning systems for disasters where institutions and individuals both proactively contribute to DRR
- Science communication should be made in regional languages which is also possible through the NEP

Day 2: 18.01.2023

C4. Local Action for Resilience

Gorakhpur Environmental Action Group (GEAG)



Panellists:

- Dr. Madhukar Gupta, Election Commissioner, Government of Rajasthan
- Mr Sarbjit Singh Sahota, Emergency Specialist, UNICEF, New Delhi
- Ms. Neha Kurien, United Nations Environment Programme (UNEP)
- Prof. R.K. Mall, Dean & Head, Institute of Environment & Sustainable Development, Banaras Hindu University, Varanasi
- Dr. Sanayanbi Hodam, Assistant Professor, North Eastern Regional Institute of Water and Land Management, Ministry of Jal Shakti
- Dr. Sushil Gupta, Vice President, RMSI

Moderator: Ms. Nivedita Mani, Coordinator – Action Research and Communications, Gorakhpur Environmental Action Group

Coordinator: Ms. Richa Srivastava, Consultant, NIDM

Session Summary: The objective of the session was to share some of the experiences/approaches and challenges from various initiatives related to localizing climate actions for building resilience. The moderator opened up the session by sharing the experiences on localizing climate actions from the state of Uttar Pradesh. The Directorate of Environment and the Directorate of Panchayati Raj, GoUP have taken the lead in localizing climate actions in the lowest development unit which is the Gram Panchayats through the Gram Panchayat Development Plans (GPDP) which is looking at developing developmental plans from a climate/disaster lens. For effective implementation of this, the state is imparting capacity building programmes to various stakeholders for integration of CCA-DRR in development plans.

Recommendations:

1. Focus on designing the right kind of capacity building programmes and most importantly, training the right target groups, who are involved in implementing actions at local levels.
2. Sensitize Gram Panchayats on GIS based tools for mapping natural resources that can help in resilience building
3. Sensitize frontline functionaries and involve them in local decision making to play a key role in localizing climate actions
4. Build partnerships with a range of actors from different sectors. For instance, in Uttar Pradesh, a Private-Panchayat-Partnership is emerging wherein the Private companies (CSRs) are encouraged to adopt Panchayats for implementing climate resilient interventions to move towards making Climate Smart Gram Panchayats.
5. For resilience building at local levels role of information technology to be tapped upon
6. Availability and allocation of funds for climate actions is important and the revenue at GP level can play a significant role in this.

C5. Climate Vulnerability Assessment at Grassroot Level CTRAN & UNDP



Panellists:

- Dr. Suresh Chandra Attri, Principal Scientific Officer, DEST State Coordinator, HPKCCC
- Shri A K Jain, Former Commissioner DDA, Visiting Faculty NIDM, Ex UN Habitat
- Shri N L Sahoo, AGM, NABARD Lucknow
- Shri Shubham Tandon, Project Officer-Resilience, UNDP a
- Shri Jagadish Pradhan, President cum Director Sahabhagi Vikash Abhiyan

Moderator: Dr. Ashok Kumar Singha, Partner, CTRAN Consulting Limited (A subsidiary of Ernst and Young LLP)

Coordinator: Dr. Anjali Barwal, NIDM

Session Summary: The local level changing climate effects are either the disasters-in- the- making or on-waiting. The risk and vulnerability assessment has been done on global scale, country scale, state scale as a part of State Action Plan and climate change, but when we talk about localised planning for

adaptation and mitigation, it must be at local level. The major discussion was around the Himalayan states and the coastal state since the Indian Monsoon is governed by both the Himalayas and the Indian Oceans. As Dr. Attri belonged to the Himalayan states while Shri Pradhan to a coastal state, both gave an insightful information from their experiences. While Shri Sahoo touched upon the financial aspects of climate risk management and policy interventions at global, international, and national level, Shri Shubham shared how India is taking lead over both the policy level planning at the G20 Presidency and SENDAI Framework and Shri Jain shared how Climate information is important from master planning point of view. The hazard part of climate has become quite frequent because of the changing climate, the discussion tried to understand the impact at the local level.

Recommendations:

1. Awareness amongst the community is must. The pre-preparedness part is missing, community needs to be pre-prepared for the disaster and the states have the funds for the same
2. The scale of data is very critical. There is an urgent need to understand the criticalities of scale, dynamics, variabilities in the grassroots level.
3. Revisit the indigenous information to adapt to the climate change
4. The planning of the cities needs to be critically investigated. The big data analytics approach should be used for planning of the cities and climatic information must be comprehensive.
5. A lot of structural changes need to be addressed by the financial institutions like lending approaches and evaluation of the project process must be changed, and there should be inclusion of green climate certificates.
6. Market disciplines and the risk management, particularly all the risk needs to examine, evaluated, and standardized and regulation needs to be made on the various aspects of risk management. Climate risk is also one of the main factors.
7. We need to investigate the disasters, but we need to develop methodology and lessons learnt out of it.
8. For vulnerability assessment at grassroots level, we need to understand the aspect of additionalities, not only in federal system but cross-cutting and transboundary also.
9. There must be a theoretical construct like Hazard Risk and Vulnerability Assessment (HRVA) or Community-based Disaster Risk Management (CBDRM), but some utility needs to be prioritized, and resources also.
10. Policies formulated at global or scientific community level, has to have local inputs

C6. Gender and Inclusiveness

GIZ



Panellists:

- Ms Bhawana Luthra, Executive Director, Lead India
- Ms Nivedita Mani, Coordinator – Action Research and Communications. Gorakhpur Environment Action Group (GEAG)
- Ms Archana Chatterjee, Programme Manager, IUCN
- Dr. Mulna Azvi, International Food Policy Research Institute

Moderator: Ms Somya Bhatt, Advisor, GIZ

Coordinator: Ms Richa Srivastava, Consultant, NIDM

Session Summary: The climate impacts are reversing gains in gender equality. Women and girls and other vulnerable groups of people, face greater obstacles to climate adaptation, disproportionate economic repercussions, increased unpaid care and domestic work, and heightened risk of violence due to the crisis's compounding impacts. These deeply entrenched gender inequalities have worsened post-COVID 19. There is also evidence that men and women prefer different adaptation and resilience practices and that when women have access to information, they are just as likely as men, if not more so in some cases, to adopt innovative practices for example in agriculture and water sector. It is also also know that women are crucial to the fight against climate change. So, it also becomes important to shift the narrative away from women and girls as merely being vulnerable or addressing them as target groups and instead promote women's leadership and participation in all climate action. The session focused on the current situation and gender issues in different fields (For Example: Specific role of communities/men and women in Water resource management, forests, agriculture, food security, transportation, energy, waste management, disaster management). Experiences and practices in developing and implementing gender-mainstreamed policies on Climate Change and Disaster Risk Reduction/Management were shared. The influence of different information channels in the adoption of innovative practices among women, success factors and barriers in improving participation of men and women in adaptation and DRR planning were at the core of the discussions.

Recommendations:

- Using gender-sensitive vulnerability and risk assessments as a starting point
- Conducting gender-balanced and gender-sensitive consultations
- Plan for gender-specific benefits considering gender-related impacts and risks
- Develop gender-sensitive results frameworks
- Encourage active participation of women in consultations
- Engage women as agents of change/multipliers to help increase their influence
- Sensitize communities for gender-specific climate change impacts

Day 3- 19.01.2023

**C7. NbS for Resilience
Wetlands International South Asia**



Panellists:

- Dr. Shiraz A. Wajih, President, Gorakhpur Environment Action Group
- Dr. Suchismita Mukhopadhyay, Lead Specialist-Advocacy at Coalition for Disaster Resilient Infrastructure
- Mr. Dhruv Verma, Senior Technical Officer, WISA

Moderator:

- Dr. Asghar Nawab, Program Head, Aquatic Ecology

Coordinator:

- Mr. Ravi Prakash, Wetlands Specialist, Wetlands International South Asia

Coordinator from NIDM:

- Ms. Fatima Amin, Young Professional NIDM

Session Summary: The objective of the session was to identify opportunities for embedding wetlands conservation as nature-based solutions in climate action and disaster risk reduction plans, share lessons learnt on local actions and scalability, and strategy towards convergence of Science-Policy-Planning and Practice interface in wetlands conservation for climate resilience. Dr. Shiraz A. Wajih emphasized the role of wetland ecosystem services in livelihood security and suggested integration of wetland management actions in the Gram Panchayat Development Plan (GPDP) for enhancing disaster risk and climate resilience. Dr. Suchismita Mukhopadhyay highlighted the role of wetlands as blue-green infrastructure for climate change mitigation and disaster risk reduction. She emphasized on uptake of hybrid approaches, integrating gray with blue-green infrastructure and standardization/benchmarking of nature-based solutions to assess their effectiveness. Mr Dhruv Verma accentuated on

decentralizing the concept of nature-based solutions, cross-fertilization of NbS with disaster, climate and wetland professionals, and highlighted the importance of small wetlands in scaling up local resilience.

Recommendations:

- Integration of wetlands conservation in Gram Panchayat Development Plan, Climate action and Disaster Risk Reduction plan
- Hybrid approach of integrating gray infrastructure with blue-green infrastructure for resilience
- Strengthening participatory conservation of small wetlands for livelihood security and resilience

C8. Financial Innovations for Resilience

DA & BIRD



Panellists:

- Dr. Sriram Appulingam, Deputy General Manager and In-charge, Climate Change Centre, Bankers Institute of Rural Development (BIRD), Lucknow
- Mr. Pranay Das, Strategy Head, Accenture
- Dr. Chandra Shekhar Bahilipati, Assistant Professor, IIT Tirupati
- Prof. Ganesh Channa, Founder & President, World Environment Council

Moderator: Ms Gitika Goswami, Associate Vice President & Lead Policy Research and Planning, Development Alternatives

Coordinator: Dr Sweta Baidya Das, Consultant, NIDM

Session Summary:

The Moderator opened the session by stating that financial resources and sound investments are needed to address climate change, to both reduce emissions, promote adaptation to the impacts that are already occurring, and to build resilience. Various strongly negotiated global commitments such as SDGs, NDCs, Sendai framework for disaster risk resilience, UN decades for Ecosystem Restoration, UNCCD COP 14, UNFCCC COP 26 & COP 27 and the recently concluded CBD COP 15 in Montreal have been put in place to ensure the wellbeing of the planet but the action on ground must be backed by a strong and sustainable financial framework. The role of the private sector in climate change mitigation and adaptation has been discussed in the session. It is increasing over the past few years, but it needs to be further bolstered. Roadblocks in the fund flow towards climate action exist and there is a strong focus on climate mitigation rather than adaptation measures. A lot of times, due to the high-risk profile of climate adaptation and mitigation initiatives, banks hesitate to extend loans. That is why there is a need to now establish green banks that would manage financing of initiatives targeted towards climate action.

Recommendations:

1. When a disaster strikes, the focus is on saving lives. But now the focus should also be on saving livelihoods.
2. A 'National Green Taxonomy' or in simpler words, a uniform definition of 'green finance' needs to be developed to make the fund flow to address climate adaptation smooth.
3. It is time that we start to think of climate adaptation finance not only in terms of grants from the developed countries but as 'Blended Finance' that may include soft loans and equity along with grants.
4. Absence of baseline socio-economic data and other estimate numbers, especially for slow-onset disasters hinders financial investments in disaster mitigation initiatives.
5. To engage private and international finance, it is very important to have benchmarks and standards in place.
6. Generating evidence through Monitoring & Evaluation Frameworks can help improve the inflow of climate finance.
7. Finances from various stakeholders such as the government, the private sector needs to be pooled and managed by a 'Green Bank'.
8. The talent and resource pool in India is so huge that with a bit of channelling and streamlining, we, as a country, might as well become self-sufficient in generating funds for climate action.

C9. Resilience and Sustainability in Coastal India UNDP & NIDM

Panellists:

- Ms. Richa Sharma, Additional Secretary, MoEFCC
- Dr. Sushma Guleria, Assistant Professor, NIDM
- Dr. Purvaja Ramachandran, Director, National Centre for Sustainable Coastal Management (NCSCM)
- Shri N. Vasudevan, National Project Coordinator, GoI UNDP GCF Coastal Resilience Project
- Ms. Archana Chatterjee, Programme Manager, IUCN India
- Dr. P. V. Chalapathi Rao, IFS, Special Secretary to Government, EFS&T and Head of the State Climate Change Cell, Andhra Pradesh
- Dr. Priyadarshi Dash, Associate Professor, Research and Information System for Developing Countries (RIS)

Moderator: Shri Jyotiraj Patra, Climate Change and Adaptation Specialist, GoI-UNDP GCF Coastal Project

Coordinator: Ms Pritha Acharya, Research Associate, NIDM



Session Summary:

India has a coastline of more than 7500 km. Of the 420 million coastal population in 9 coastal States, more than 330 live within 150 km of the coast. Indian coasts are also some of the most densely populated regions. India's coastal zone is endowed with abundant coastal and marine ecosystems that include a wide range of mangroves, coral reefs, sea grasses, salt marshes, mud flats, estuaries, lagoons, and unique marine and coastal flora and fauna. These coastal and marine ecosystems support diverse livelihoods and contribute to country's overall food security and economy. More than 4 million marine fisherfolk communities are directly dependent on the coastal resources for their livelihoods. But due to climate change impacts, such as sea level rise, increasing frequency and intensity of cyclones and other hazards like coastal erosion and other anthropogenic forces such as pollution and biodiversity degradation, India's coasts and coastal communities are facing multiple risks. It is in this background, there is an urgency to understand the complex coastal climate change risks and develop suitable resilience and sustainability strategies.

Recommendations:

- Ensure effective use of science- and evidence-based knowledge in coastal resilience and sustainability planning and decisions at the national and State levels.
- Develop and strengthen institutional mechanisms for stronger collaboration between government agencies, research institutes, private sector and community-based organisations on coastal resilience.
- Promote integrated and inclusive governance systems by establishing multi-stakeholder partnerships at the State and district levels.
- Document and share the good practices on coastal ecosystem management and resilience and build a sound knowledge management system on coastal resilience and sustainability.
- Explore innovative financial instruments like blue carbon or coastal bonds, blended finance and risk financing facility for coastal resilient infrastructure development, including ecological infrastructure like restoration and conservation of coastal ecosystems (mangroves, seagrass, saltmarsh, coral reefs).
- Identify new investment opportunities as part of blue economy policy, with active community participation.
- Promote more women-and youth-led initiatives such as research platforms, enterprises, start ups working on coastal resilience and sustainability.
- Initiate regional cooperation and strengthen collaboration among countries in the Bay of Bengal region. Use existing regional bodies like BIMSTEC and IORA.

- Capitalize existing opportunities such as India's G20 Presidency, UN Decade of Ocean Science for Sustainable Development (2021-2030) and the UN Decade of Ecosystem Restoration (2021-2030).
- Prepare or update existing coastal vulnerability assessments, with focus on ecological and social vulnerabilities.



Photo Gallery





