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High Level Consultation Workshop on

ADAPTATION, RESILIENCE AND SUSTAINABILITY KNOWLEDGE NETWORK FOR ADDRESSING CLIMATE CHANGE

REPORT

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Resilient India - Disaster free India

National Institute of Disaster Management
Ministry of Home Affairs, Government of India

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HIGH LEVEL CONSULTATION WORKSHOP ON

ADAPTATION, RESILIENCE AND SUSTAINABILITY KNOWLEDGE NETWORK FOR ADDRESSING CLIMATE CHANGE REPORT

18th July, 2023

Organised By:

National Institute of Disaster Management (NIDM)

under project CAP-RES

in collaboration with

Department of Science & Technology (DST) GoI

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High Level Consultation Workshop on Adaptation, Resilience and Sustainability Knowledge Network for Addressing Climate Change Report

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Disclaimer:

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The document can be downloaded from the website https://www.nidm.gov.in

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MESSAGE

The biggest challenge India is going to face in the coming time will be to understand the ways of improving the adaptive capability to increase the Human Development Index. DST has done a good job in upscaling the climate research as part of the initiative of the two National Missions. The new STIP by DST also highlights the need for application of science to increase resilience against supply disruptions and climate risks, and enable the transition to a cost-effective carbon future. The Climate Adaptive Planning for Resilience and Sustainability (CAP-RES) was the umbrella project envisaged under the National Mission on Strategic Knowledge for Climate Change by DST and implemented by NIDM. As part of the project disclosures, the need to integrate and strategize Science and Technology in disaster resilience and cross-cutting issues surfaced as an utmost priority. This workshop on Adaptation, Resilience and Sustainability Knowledge Network for Addressing Climate Change was one of the most interesting endeavours under CAP-RES as it will enable a framework and scope of work for the network centre which will work holistically across DRR, CCA and Sustainability.

I heartily applaud Prof. Anil K Gupta and his entire team at NIDM for successfully organizing the high-level consultation.

(Akhilesh Gupta)

DR AKHILESH GUPTA

SECRETARY SERB &
SENIOR ADVISOR

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कार्यकारी निदेशक
Rajendra Ratnoo, IAS
Executive Director

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आज़ादी का अमृत महोत्सव

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FOREWORD

Climate change adaptation and disaster risk reduction are crucial to achieve a sustainable future. Actions related to disaster management and disaster risk reduction are required to utilize and innovative S&T interventions, research strategies and develop a holistic, integrated, and inclusive approach. The work done in disaster risk resilience, climate adaptation and sustainability- nationally and internationally- is extensive and shows quality. Irrespective of this, they are often limited to their silos. A network which will be efficient in bringing in the existing models, data, resources, successes and challenges will be crucial in establishing this synergy. The workshop on Adaptation, Resilience and Sustainability Knowledge Network for Addressing Climate Change was a step toward understanding the functional prospects of such a network. I am grateful to DST, GoI for constantly supporting us in such endeavours. I further congratulate Prof Anil K Gupta and his team for conceptualising and organizing this high-level consultation workshop.

I am delighted to present this workshop report which is a compilation of the recommendations and valuable insights from the eminent experts. I am sure that the contents of this report will be useful in future.

(Rajendra Ratnoo)

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PREFACE

Climate Adaptive Planning for Resilience and Sustainability (CAP-RES) was implemented by NIDM with the support of the Climate Change Programme of DST-GOI, and focused on enabling effective science-policy-practice interface. Under this strategic endeavour, NIDM has taken up various international and national disclosures in the recent past which aligns with the Prime Minister' 10 point agenda.

NIDM's leading endeavour in promoting the Adaptation and Resilience Agenda could receive the attention and support of all key players and stakeholders. The high-level consultation on Adaptation, Resilience and Sustainability Knowledge Network for Addressing Climate Change was one such attempt and tried to understand and develop capacities for operationalisation of adaptation strategies including resilience actions and plans across the critical sectors and cross-cutting issues to foster a continuous exchange of knowledge and experience and enable an adaptation network centre.

PROF ANIL K GUPTA

Project Director, CAP-RES
Professor and Head,
Division of Environment, Climate and Disaster Risk Management

(Anil K Gupta)

BACKGROUND

In the present context of 'Azadi ka Amrit Mahotsav', it is of much relevance to reaffirm its commitments for Atmanirbhar Bharat while also for the G20 presidency towards inclusive, equitable and sustainable growth, skill mapping, climate financing, circular economy, disaster risk reduction and resilience and cooperation. The Prime Minister's 10 point agenda on Disaster Risk Reduction also calls for imbibing the principles of Disaster Risk Management (DRM) by all development sectors. The Science Technology and Innovation Policy (STIP) 2020 brought out by India highlights water, agriculture, climate change, and energy as priority sectors and suggests the development and promotion of better resource management to be taken up in these sectors. For understanding the futuristic vision and ensuring practical and pragmatic solutions, it is necessary to develop a more objective approach towards them. Under the Paris Agreement, the UNFCCC asks parties to submit and update periodically an adaptation communication, which may include information on its priorities, implementation and support needs, plans and actions. The need to shift focus to the operationalization of adaptation plans DRR cross cutting sectors is thus evident.

CONCEPT

Facilitating the pool of knowledge and expertise generated under the CAP-RES project, this current workshop aims to conceptualize a network of networks to promote the development of a climate adaptation and resilience framework by:

- Identifying the current challenges in the adaptation-resilience-sustainability (ARS) nexus.
- Identifying the need for suitable resources including human capacity, financial provisions, technology and other relevant resource needs.
- Identifying potential collaborators and contributors (potential partners across government at different levels, corporates, businesses, academicians, international agencies, international and national NGOs).
- Understanding the scope and structural options for the network.

DISCUSSION NOTES

1. Identifying the existing challenges in the ARS Nexus

2. Identifying the need for suitable resources including human capacity, financial provisions, technology and other relevant resource needs

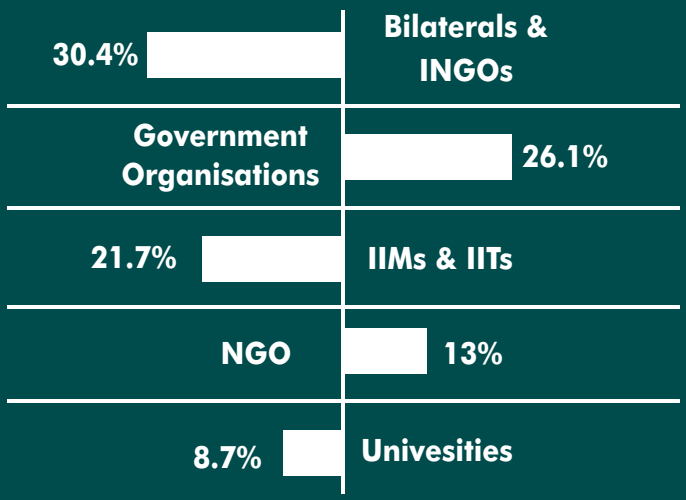
3. Identifying potential collaborators and contributors (potential partners across the government at different levels, corporates, business, academicians, international agencies, international and national NGOs)

4. Understanding the scope and structural options for the network

Thematic Areas of Discussion

- Science Technology & Innovation
- Adaptation Strategies for Climate Change Resilience & Sustainability
- Nature Based Solutions & Ecosystem-Based Approaches
- Industry & Private Sector

Organizational Representation



Science, Technology and Innovation

Expert Working Group 1

To ensure resilience and sustainability in the face of accelerating climate change, it is essential to develop and implement effective technology and innovation measures. This all-encompassing framework for action includes numerous strategies that cut across industries and communities. It entails fostering climate- aware legislation, driving technical advancements, boosting infrastructure resilience, advocating ecological conservation, and strengthening local communities. Societies can protect themselves against the effects of climate change by incorporating these techniques, guaranteeing that human advancement and the sensitive ecosystems of the earth can coexist in harmony.

Challenge at Hand:

- Lack of micro-level weather data; there should be weather sensors on telecom towers to get data. Local stage forecast requires outage data.
- Data in digital format is a challenge; CWC data should be shared in digital format.
  All publicly funded data must be shared at the district level.
- There should be appropriate measurement standards for resilience and disaster tolerance pertaining to urban infrastructure. There is also a need to build community resilience at an urban level. Using the science of ancient self-healing structures and traditional knowledge with proper understanding, analysis and scientific validation in research will be effective in building resilience.

Key Collaborators and Contributors:

- Upgrading KVK and equipping them with AIML tools may foster their role in becoming a hub of DMIS.
- A functional collaboration between ICAR, DBT, CSIR, IMD, MoES, ISRO will be valuable in exchanging data.

Resource Needs:

- Data visualization capacity and tools should be available at district level for all sectors. Traditional Knowledge should be documented and promoted.
- Recognition of outstanding student projects which increase resilience in Disaster preparedness.
- Capacity Building through self-learning material. There should be disaster resilience courses on one platform.
- There should be mandatory courses on Disaster Management in all the curriculums. It is suggested to make a course channel e.g. NPTEL.
- Promote mobile Apps for self-coping up management.
- The Disaster Management Information System (DMIS) should be strengthened. Absorb retired people from defence and other sectors. Rehabilitation innovation is required.
- Innovations in new disaster-proof technologies and materials should be awarded under disaster relief categories.
- Promote extensive use of Drones and AI for disaster management.

Industry and Private Sector

Expert Working Group 2

The direct and indirect impacts of climate change and extreme events on the private sector and industries are well known. However, the sector as a unit, holds immense potential to transform risks into opportunities. Adapting business models and operations to climate change, funding in adaptation investing for resilience and supporting others through products and services are essential to cope up with the risks of Climate Change. The following points were discussed to understand how and where private sector can fit in as the missing link to the climate adaptation puzzle.

Challenge at Hand:

- The lack of connect between theory and practice needs to be bridged.
- Understanding the supply-chain risks is crucial in making them resilient. Circularity can thus be instrumental for climate change adaptation and minimising the existing gaps. Risk assessments coupled with relevant insurance models will be an effective tool in making the entire industrial supply chain more resilient.
- Covering risks through opportunity tools: zoning maps; green transitions etc.

Key collaborators and contributors:

- To put theory to practice, industry-specific training should be conducted for students. Similarly, faculty development programmes should focus and include pro-industrial training.
- Collaboration and bringing in sectors like steel, construction, mobility etc. on a common platform and understanding ways to introduce and mainstream carbon neutrality in these sectors.

Resources Needs:

- Course curriculums to imbibe circular economy, resource economy etc.
- There is a need to create a common platform for understanding concepts and showcasing best practices on carbon neutrality.
- Environmental Social Governance (ESG) can be an important tool targeting compliance - driven approaches to circularity, carbon neutrality and resource efficiency.

Scope and Structural Options:

- Bringing in a transition towards systemic interventions and thinking for both the big industries and the MSMEs.
- A blended approach should be taken up by inculcating science and academia together to build in Science-Technology-Policy and Practice interface.
- Learning from successes and failures will open up the scope for cross-sectoral learning.

Adaptation Strategies for Climate Change Resilience and Sustainability

Expert Working Group 3

The urgency of addressing climate change has propelled discussions surrounding the establishment of an Adaptation, Resilience, and Sustainability Knowledge Network. The following points were discussed in depth during the discourse, elucidating their significance and providing a roadmap for the development of adaptation strategies.

Holistic Resource Identification and Allocation:

- The cornerstone of any successful initiative is the identification and allocation of suitable resources. As the discourse highlighted, the Adaptation, Resilience, and Sustainability Knowledge Network requires a multifaceted approach that encompasses human capacity, financial provisions, technological advancements, and other relevant resources.
- Currently, efforts in CCA and DM often operate in isolation, limiting the potential synergies between these critical domains.
- To maximize the network's effectiveness it is imperative to integrate CCA and DM plans. For instance, the Department of Science and Technology (DST) has made commendable strides in establishing a comprehensive database focused primarily on CCA. Collaborative efforts between DST and DM initiatives could lead to a holistic risk analysis approach that considers both natural hazards and human vulnerabilities. The amalgamation of policy-driven standard risk analysis with community-driven insights will improve a comprehensive understanding of the challenges at hand.

Strengthening Collaborative Ecosystem:

- The success of the Adaptation, Resilience, and Sustainability Knowledge Network hinges on the inclusivity of its participants. A broad spectrum of stakeholders, including government entities, corporate sectors, academia, international agencies, national and international non-governmental organizations (NGOs), and local communities, must be engaged. This network should transcend administrative boundaries, fostering transboundary cooperation to address cross- border challenges effectively.
- A crucial aspect of this collaboration is information sharing. The example of Glacial Lake Outburst Floods (GLOFs) underscores the need for data sharing and cooperative anticipation. Building capacity across sectors and identifying linkages among them will ensure a comprehensive approach to resilience. To facilitate meaningful exchange, the engagement strategy should be formalized and institutionalized, creating a platform for the continual flow of knowledge and experiences.

Scope and Structure of the Knowledge Network:

- The Adaptation, Resilience, and Sustainability Knowledge Network should encompass both sectoral resilience strategies and community-centered adaptation approaches.
- A nuanced understanding of 'too much' and 'too little' adaptation is pivotal for crafting effective resilience strategies within various sectors.
- Placing communities at the core of the adaptation strategy is crucial for fostering ownership and sustainable development. This can be achieved by integrating Nature-based Solutions (NbS) in collaboration with NGOs and the private sector.
- Critical infrastructure, often vulnerable to climate-related hazards, demands particular attention.
- An efficient communication channel should connect sectors and communities, ensuring effective dissemination of information and knowledge sharing. A comprehensive listing of stakeholders, supported by a well-designed engagement strategy, will serve as the foundation for fostering active collaboration.

Operationalizing the Framework:

- To operationalize this framework, meticulous planning and execution is essential. The engagement strategy should encompass deliberate and structured approaches to involving stakeholders, nurturing an environment of inclusivity, and ensuring efficient resource utilization. Building awareness among states regarding optimal fund utilization, aligned with the network's objectives, is crucial.
- Moreover, financial provisions, budgeting mechanisms, and information management systems should be adapted to capture the right data for informed decision-making. Coordination at all levels, from local to national, is necessary to ensure effective cross- sectoral collaboration. Education and advocacy efforts should be directed towards enhancing policy dimensions, while also fostering multilevel and inclusive national-level policy interventions.

Nature-based Solutions and Ecosystem-based DRR

Expert Working Group 4

Nature-based Solutions (NbS) and Ecosystem-based Disaster Risk Reduction (Eco-DRR) are innovative methods for tackling environmental challenges. NbS taps into the natural system's resilience, restoring ecosystems like wetlands and forests to offer sustainable solutions. Eco- DRR integrates ecological principles, enhancing ecosystem functions to bolster community resilience. Both emphasize the vital link between human and natural systems, underscoring the need for conserving and restoring ecosystems to enhance adaptability. These approaches not only equip communities to face hazards but also provide sustained ecosystem services, enhancing overall well-being.

Challenge at Hand:

- Balancing Development and Conservation: The delicate equilibrium between development, conservation, and resilience. Urbanization Pressure: Rapid urban growth impacts ecosystems, leading to habitat loss and reduced natural buffers against disasters.
- Habitat Degradation: Destruction of habitats weakens the ecosystem's capacity to cope with disturbances.
- Climate Change Impact: Changing climate intensifies disaster risks, increasing vulnerabilities.

  Interconnected Challenges: Urbanization, habitat loss, and climate change interact, compounding challenges.
- Effective NbS and Eco-DRR: Successful solutions require grasping complexities for human and ecosystem benefits.

Resource Needs:

- Essential Resources: Success relies on essential resources for NbS and Eco-DRR.
- Financial Backing: Adequate funding is crucial. Human Expertise: Skilled individuals are required.
- Technology: Appropriate tools and tech support are vital.

  Knowledge Platforms: Sharing insights is essential.
- Government, Academia, NGOs, Businesses: Collaboration enriches resources.

Scope and Structural Options:

- Network Scope: A platform enabling knowledge exchange, planning, and coordinated action is essential like ICIMOD, ADPC/BMPTC etc.
- Structural Options: Partnerships with government bodies, collaborations with businesses, engagement of academia, involvement of international agencies, and cooperation with NGOs are key avenues.

Key collaborators and contributors:

- Essential Network: Collaboration is crucial for NbS and Eco-DRR success.
- Stakeholder Engagement: Involvement of diverse parties is vital like UN Agencies Government. Agencies: Local and national disaster and environment authorities are key. Private Corporations: Companies investing in sustainability are valuable partners.
- Academic Institutions: Research and knowledge sharing contribute significantly.

  NGOs: Conservation and community engagement expertise is essential.

EXPERT MEMBERS

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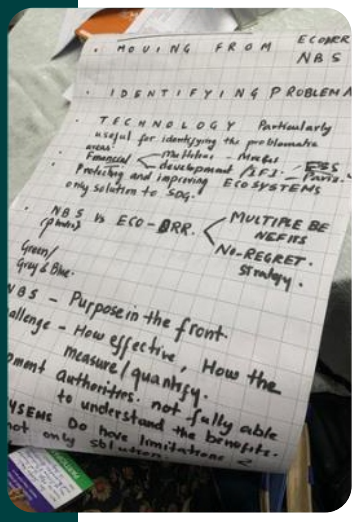
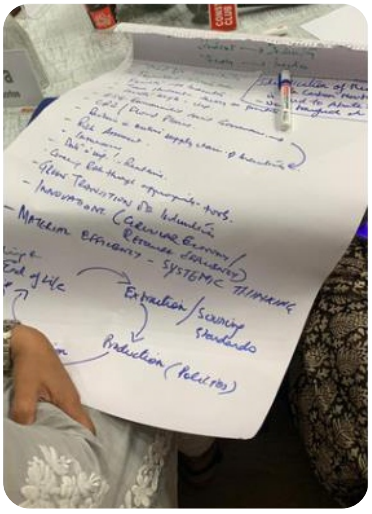
23. Dr. Umamaheshwaran Rajasekar, Coalition for Disaster Resilient Infrastructure (CDRI).

GLIMPSES OF THE DISCUSSION



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NETWORK FOR CLIMATE CHANGE

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ABOUT CAP-RES PROJECT

"Climate Adaptive Planning for Resilience and Sustainable Development in Multi-Hazard Environment (CAP.RES)" aims at developing and implementing capacity building including knowledge and training support system for wider use by related institutions and training centres across sectors and regions. The CAP-RES focuses across three specific regional contexts, i.e. Indian Himalaya Region (special reference to North East), Coastal region and Central-western region. Region specific climate related hazard complex, including flood, drought, water scarcity, forest fire, cyclone/storm surge, coastal erosion, slope erosion/landslide, windstorms, heat wave, disease epidemics, industrial/chemical risks, etc.The proposal of NIDM aims at value-addition to programme sub-areas of the NKMCC by engaging with the institutions/research centres and network of experts, researchers and practitioners, across following 5 key sub-sets of the project focus:

Green Growth and Disaster Risk Reduction

Resilient Agriculture Systems

Public Health Resilience

Climate Proofing Disaster Relief and Recovery

Environmental Policy Instrument in Disaster Risk Reduction

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