CUSTOMIZED REGIONAL TRAINING PROGRAMME ON

DISASTER RISK MITIGATION & MANAGEMENT

FOR SENIOR IAS & SENIOR STATE CIVIL SERVICE OFFICERS

29th JANUARY - 1st FEBRUARY 2025

JOINTLY ORGANISED BY

GOVERNMENT OF KERALA

NATIONAL DISASTER MANAGEMENT AUTHORITY

KERALA STATE DISASTER MANAGEMENT AUTHORITY

CENTRE FOR DISASTER MANAGEMENT, LAL BAHADUR SHASTRI NATIONAL ACADEMY OF ADMINISTRATION

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EXECUTIVE SUMMARY

Kerala, a state celebrated for its phenomenal natural landscapes, is grappling with far reaching consequences of natural disasters and climate change-induced perils such as landslides and coastal erosion. In addition to these challenges, Kerala experiences increasingly intricate geotechnical problems that demand specialized solutions. The SENDAI Framework - Target 6 highlights the necessity to boost international cooperation by 2030 for Disaster Risk Reduction. Recognizing the imperative need for expertise tailored to these specific challenges, the Centre for Disaster Management, LBSNAA joined hands with the National Disaster Management Authority and Kerala State Disaster Management Authority to conduct an extensive 4-day customized regional training programme on disaster risk mitigation & management for senior IAS & Senior State Civil Service Officers. The overarching objective of this workshop is to facilitate the transfer of state-of-the art knowledge and skills drawing upon real-life instances from Kerala as illustrative case studies.

This immersive learning experience aspires to cultivate a problem-solving perspective among participants, uniquely attuned to the region's idiosyncratic challenges. It is envisioned as a dynamic platform where knowledge transcends boundaries and is meticulously tailored to address the nation's disaster management concerns. By harnessing the synergy of technical prowess, KSDMA's local insights and NDMAs national experiences, the workshop endeavours to equip participants with the requisite tools and strategies essential for navigating and mitigating the intricate disaster risk reduction challenges that the country confronts on its journey towards sustainable development and resilience.

BACKGROUND

The 4-day customized regional training programme on disaster risk mitigation & management for senior IAS & Senior State Civil Service Officers marks the third phase of the Surkashayanam initiative that started in 2012 (https://sdma.kerala.gov.in/surkashayanam 2012/), which stands as a pioneering milestone in the domain of disaster risk reduction. On a global scale, disaster management has become an integral component of comprehensive planning efforts aimed at fostering societal and ecological resilience in the presence of extreme events, whether they stem from natural occurrences or societal factors. Within this context, the country promotes a Social-ecological framework, which views social and ecological systems as interconnected and mutually influential. Gaining an understanding of the functioning of both systems and how they mutually adapt and strengthen each other provides vital insights for developing effective management approaches.

Moreover, in line with this objective and considering the future vision of NDMA to integrate "Science and Technological considerations in Disaster Risk Reduction," CDM, LBSNAA and KSDMA are determined to organize a four-day training programme. The decision to conduct this training programme on Disaster Risk Reduction is also underpinned by the international, national, and regional agendas and strategies outlined in the National Disaster Management Plan. These include: 1. The prioritization of achieving the seven objectives set forth in the SENDAI framework, as informed by the AR6 report 2. This initiative aligns with the need for anticipatory actions, creating risk transfer mechanisms, mainstreaming risk informed planning and rapid adaptation of advance science and technological solutions 3. Rooted in the fourth priority of the SENDAI framework, which emphasizes Investing in disaster risk reduction for resilience 4. Further it upheld the fifth point of the Prime Minister's Ten Point Agenda for Disaster Risk Reduction, which advocates for Leverage technology to enhance the efficiency of disaster risk management efforts.

The primary aim of this training is to create an enriched platform for interaction and fellowship between senior administrators, professionals and scientists specializing in hazards and disaster risk management from across the country. Its overarching goal is to gather global insights and contributions to inform the development of world-class scientific frameworks and policies geared toward effectively managing and reducing future disaster risks and threats.

Introduction

The Customized Regional Training Programme on Disaster Risk Mitigation & Management is conducted from January 29 to February 1, 2025, at Saj Earth Resorts, Ernakulam. The programme was specifically designed for senior IAS officers and Senior State Civil Service Officers nominated from various states across India.[1] Over the course of four days, the programme incorporated a structured blend of expert-led sessions, panel discussions, case studies, and field visits. Each component was meticulously planned to align with the programme's overarching objectives, which focused on enhancing participants' understanding of disaster response preparedness, mitigation strategies, and recovery processes.

A key feature of the programme was the series of field visits to disaster-affected regions, including Chellanam (Ernakulam District), Vagamon (Idukki), and Koottikkal (Kottayam). Chellanam, a coastal area severely impacted by erosion, was employed as a case study to examine coastal disaster mitigation strategies. Vagamon and Koottikkal, which had previously experienced severe landslides and flooding, provided participants with firsthand exposure to disaster-affected areas, enabling them to observe and analyze response measures and mitigation initiatives. These field visits emphasized understanding the state's preparedness, risk reduction strategies, and recovery efforts in addressing challenges such as coastal erosion, storm surges, and landslides. Furthermore, discussions during the visits highlighted lessons learned from past disasters, the role of early warning systems, and engineering interventions aimed at enhancing resilience against future disasters.

The training programme was designed to promote interactive learning through comprehensive discussions and question-and-answer sessions following each expert-led presentation. To further encourage engagement, group activities were integrated into the schedule. These activities required participants to review and analyze the National Disaster Management Guidelines on the Management of Urban Flooding and Landslides. This approach ensured that officers not only acquired theoretical knowledge but also participated in collaborative problem-solving and policy review exercises. Such activities reinforced their ability to apply disaster management strategies effectively in their respective regions, thereby enhancing their capacity to address complex disaster-related challenges, with a holistic understanding of disaster risk mitigation and management, equipping them with the necessary tools to implement effective strategies in their bureaucratic roles.

Methodology

THE TRAINING APPROACH

The training methodology [Figure 1] incorporates a multi-dimensional learning approach is structured around interactive learning, field-based observations, expert-led discussions, and policy review exercises, ensuring that participants gain theoretical knowledge, practical experience, and strategic insights to enhance disaster resilience and management.

Each component is carefully aligned with the overarching objectives of enhancing disaster preparedness, mitigation, and recovery strategies through a social-ecological framework that recognizes the interconnection between social systems and ecological resilience. The following are the key feature of the training approach:

[1] Appendix: 1 – Participants attended the Training Programme

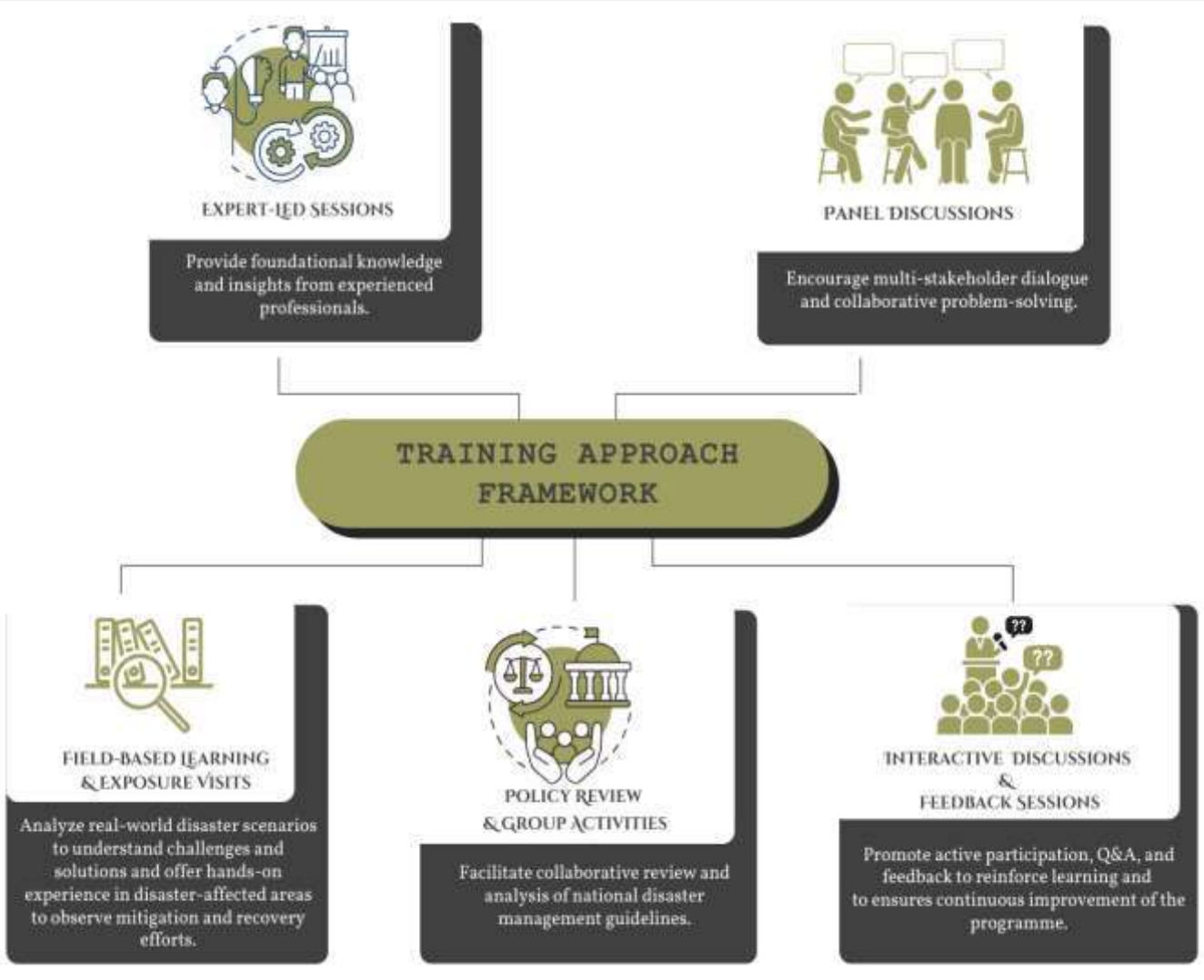
✅ **Structured Learning:** The approach follows a step-by-step progression, ensuring holistic disaster risk management training.

✅ **Experiential Learning:** A blend of theoretical and practical approaches with expert sessions, case studies, and field visits.

✅ **Policy Integration:** Direct alignment with global and national disaster risk reduction policies, making the training more relevant and applicable.

✅ **Engagement & Collaboration:** Encourages active participation, discussions, and policy review exercises.

Figure 1: Training Approach Framework



Day 1: 29.01.2024

INAUGURAL SESSION

The inaugural session was chaired by Member Secretary, Dr. Sekhar L. Kuriakose, who welcomed the participants, invited speakers, and organizers of the training programme. He initiated the session by conducting a round of introductions, allowing participants to familiarize themselves with one another, and extended a warm welcome to all attendees.

Following this, Mr. Chandrasekar, Director of LBSNAA, set the tone for the training programme. He provided a comprehensive background, emphasizing the relevance of the programme and highlighting the significant role of bureaucrats in disaster risk mitigation and management. By offering a brief overview of the training programme, he effectively outlined its objectives and expected outcomes, ensuring participants understood its importance and relevance to their roles.

Smt. Sharadha Muralidharan, Chief Secretary of the Government of Kerala, joined online to deliver the inaugural speech and officially inaugurated the training program. In her address, the Chief Secretary primarily focused on how to reduce the scale of disasters at the local level and emphasized the role of officers can play in mitigating disaster impacts. She highlighted that collectors and bureaucrats are always at the forefront during disaster response and are tasked with making critical decisions, such as when, where, and how to evacuate people, as well as identifying the systems in place to manage such situations effectively.

She pointed out that while there are numerous guidelines, protocols, and directives involved in disaster management, the officers in charge must ultimately make the final decisions. She stressed the importance of managing community panic and ensuring effective communication during such crises. She emphasized the significance of the "golden hour" during disaster situations, underscoring the need to act swiftly to reduce casualties and initiate rescue operations. Smt. Sharadha Muralidharan reiterated the importance of readiness, anticipating potential disasters, and being well-prepared to handle such emergencies efficiently.

To better manage disaster situations, she further emphasized the importance of data, as effective management can only be achieved when decisions are based on accurate and reliable information. She also highlighted that, along with response efforts, restoration and rehabilitation play a significant role in disaster management. There is a need to clearly define short-term, medium-term, and long-term interventions, ensuring that existing government assistance programs are integrated into rehabilitation initiatives.

While discussing mitigation measures, the Chief Secretary reiterated the importance of focusing on readiness. Given the current climate change conditions, she noted that the world is approaching a phase where climate-related events will become more unpredictable and severe than anticipated. As a key takeaway, she stated, “Be open to disasters happening in other places as well. There is a need to customize strategies and requirements according to specific situations. Success in disaster management is not just about determination; it is about how the community and society function, ensuring that people and resources are prepared when the time comes.”

In her closing remarks, she added, *“This is just the beginning. Disasters will continue to occur in the future, and we must ensure that our resilience and endurance to such events are long-term.”*

The inaugural session continued with Dr. Joy Elamon, Member of KSDMA, welcoming and addressing the participants of the training program. He assured that the program was structured to ensure meaningful learning experiences for all attendees. Dr. Elamon emphasized the importance of officers understanding disaster management practices and mitigation processes, especially in the face of unpredictable climate conditions. He also highlighted how learning from Kerala’s experiences could better prepare them to handle such challenges effectively.

Mr. P. K. Singh, a faculty member at LBSNAA, also addressed the participants, extending a warm welcome to everyone. He expressed confidence that the training would equip participants with practical tools and strategies to better manage disasters and mitigate their impacts in their respective regions.

Experience Sharing

Smt. Tinku Biswal IAS

Smt. Tinku Biswal welcomed the participants to the training program, expressing her hope that everyone would gain maximum learning from the sessions. She also suggested that since senior officers were attending the program, they could share their valuable experiences. She began by emphasizing the importance of harnessing technology and the human capacity to use it effectively.

When she joined the service, disaster risk reduction (DRR) was not a common topic of discussion; the focus was primarily on disaster management. Since then, significant progress has been made in understanding disasters, mitigating their impact, and reducing disaster risks through technology. However, she noted that technology is only a part of the solution. With so many tools available, the key lies in using technology effectively and harnessing its potential. While immediate response is crucial, disaster risk reduction is equally important. Kerala has aligned many plans with DRR, leveraging technology, but implementation requires resources. This is where individuals like us must differentiate between what is worthwhile, what to initiate, and what to avoid.

She highlighted that while there are numerous guidelines in place to act upon, there will be times of crisis when one might feel overwhelmed and take time to respond. She illustrated this with examples from the 2018 Kerala floods, which affected the entire state for a sustained period, and the 2024 Wayanad landslide, which was a sudden, intense event. Such events, exacerbated by climate change, will become more frequent, and we must learn to live with them. This underscores the need to focus on risk reduction.

To achieve this, we must mainstream disaster risk reduction initiatives and integrate the understanding of DRR into disaster planning. She cited the case of the 2024 Mepadi landslide, where the local panchayat had a disaster risk mitigation plan and

a master plan. However, there was an over-reliance on technology, such as IMD forecasts, and a lack of sufficient rain gauges, which led to gaps in scientific predictions. In contrast, local knowledge played a critical role in saving lives and reducing casualties. For instance, the local knowledge of people in Vilangad, Kozhikode district, during the 2024 landslide, proved invaluable. This highlights the need to incorporate community knowledge into disaster management processes.

She stressed that disaster reduction must be community-led, as this is key to enhancing response mechanisms and overall disaster management. She concluded by encouraging participants to share their field experiences in disaster risk reduction, as this would help improve collective understanding and preparedness. Finally, she hoped that participants would take away not only happy memories from Kerala but also key insights to strengthen their work in disaster management.

Training Sessions

Expert Led Session – 1

ADMINISTRATOR'S PERSPECTIVE ON THE DISASTER MANAGEMENT ACT: IMPLEMENTATION CHALLENGES, LESSONS LEARNED, AND THE WAY FORWARD - Mr. P. H Kurian IAS (Retd.)

The session began with a detailed presentation by Dr. Sekhar L. Kuriakose on the disaster management framework and institutional mechanisms. This was followed by a short video depicting the severity of the 2018 Kerala floods, showcasing how the state, as a community, came together to overcome the disaster. Dr. Kuriakose also provided a brief overview of the 2024 landslide in Meppadi, highlighting its impact and the response efforts.

Mr. Kurian's session primarily revolved around his experiences in managing disasters in Kerala, particularly the 2018 Kerala floods and Cyclone Ockhi. He began by emphasizing the necessity of grassroots-level interventions in disaster management and the importance of adhering to the Disaster Management Act to better handle such situations. He reflected on his journey as a bureaucrat, noting that during his early years, the three R's of disaster management—Relief, Rehabilitation, and

Reconstruction—were the primary focus, while the concept of 'mitigation' was not yet prominent. However, over time, mitigation has gained significant importance.

Drawing from his experience, Mr. Kurian stated, *"Coordination is the most critical aspect of disaster management. Support among and within teams is essential for effectively managing disasters."* He explained that while every role comes with certain powers, it is not always about exercising authority but rather about working in a coordinated manner. *"It is not just the capacity and ability to act through power but the capacity and ability to work collaboratively that truly matters. As a bureaucrat, you will be effective only when you are acceptable and approachable,"* he added.

He stressed the importance of leadership and collaborative planning, stating, "Whether the disaster is minor, small, or major, your role as a leader in planning and coordinating with others is crucial. You have the power, but how you use it in collaboration with others is what makes the difference."

Mr. Kurian further emphasized that every development plan must incorporate disaster mitigation as a core component. He illustrated this with the example of town planning in Kerala, explaining how disaster mitigation has been integrated into such initiatives. He stressed that as collectors, each officer must ensure that any plan aimed at the betterment of the community includes a component of disaster mitigation. He also explained that in disaster rescue and rehabilitation efforts, the upward system (higher authorities and resources) tends to function faster, while the downward system (local-level implementation) requires proper management and coordination to ensure effectiveness.

He further explained the importance of early warning systems, noting that even when such systems are in place, exact predictions remain challenging. Reflecting on his experience with Cyclone Ockhi, he highlighted the critical lack of early warnings and emphasized the need for multi-level communication systems rather than relying on a single warning mechanism. He stressed the necessity of anticipatory mitigation measures to reduce disaster risks.

Concluding his session, he emphasized the importance of sensitizing the public. He stated, *"It's not always easy to navigate through crises, but maintaining sensitivity truly matters. Once a disaster strikes, effective coordination ensures an efficient response."* He reiterated the need for proactive planning, coordination, and community involvement to build long-term resilience against future disasters.

Q & A

1. **Question:** Sometimes the Disaster Management Act is perceived as draconian, and at other times, it is widely interpreted. Were there any challenges of that nature? Is it draconian or required?

Answer: What matters most is your sense of justice. Balancing legal authority requires a delicate equilibrium, which is challenging to achieve. Knowing when to exercise power judiciously and with restraint is crucial. The situation itself often dictates the actions that need to be taken. He further elaborated with an example from his experience as the Chairman of the Kerala Real Estate Regulatory Authority, where he made decisions based on a balanced and fair outlook.

2. **Question:** Drawing insights from the recent urban flood in Vijayawada, some bottlenecks during rescue and relief activities were identified, such as junior officers being unaware of the rescue plan, procedures, and the availability

of resources. For instance, while big boats were used, smaller boats were actually needed to perform the rescues effectively. Similarly, in the Wayanad landslide, what were the shortcomings observed in the relief and rescue activities as an officer?

Answer: Mr. Kurian responded that since he no longer holds the post of Relief Commissioner, he could only provide an outsider's perspective. He emphasized that the community's response to warnings and their level of preparedness are critical factors in effectively managing disasters. He suggested that mock drills are an excellent way to better prepare for rescue operations. However, for floods, mock drills are not feasible, so assumptions and sensitivity play a significant role. Unfortunately, sensitivity is often lacking in such situations. One of the major bottlenecks, he noted, is the lack of sensitization among stakeholders.

3. **Question:** In Kerala, the government-initiated program *Samoohikasannathasena* is highly active in promoting volunteerism and volunteer activities. However, in many other states, such initiatives are lacking due to the absence of social capital. Are there any steps that other states can take at the district level to address this, especially given the limited allocation of funds for training volunteers?

Answer: In response, he highlighted the existence of *Aapda Mitra*, a central government-approved voluntary group, and emphasized that social mobilization is indeed possible. He shared experiences from Kerala, where collectors have successfully led social mobilization efforts for various projects and programs, demonstrating how similar approaches could be adopted in other states.

4. **Question:** In cases of hazards such as hazardous materials (hazmat) incidents and borewell accidents, there are often too many conflicting instructions and commands, which delay rescue operations and proper management of the situation. Are there any common guidelines or reference materials available to address such scenarios?

   Answer: In response, the existence of hazmat guidelines was explained. A case study of an LPG tanker accident in Karunagapally was presented, highlighting the lessons learned from the incident and the mitigation measures taken accordingly. It was also discussed how the state is now better prepared for such situations.

   Additionally, in response to individual hazmat incidents, an example from Ernakulam district in Kerala was mentioned. The district frequently faces cases of ammonium nitrate leakage, which often leads to chemical seepage into canals. To address this, KSDMA developed a short booklet in Malayalam explaining the nature of the chemicals and how to respond to such leakages. Similarly, it was advised that respective State Disaster Management Authorities (SDMAs) develop short, practical guidelines to handle such emergencies effectively.

Expert Led Session – 2

ROLE OF STATE DISASTER MANAGEMENT AUTHORITIES IN DISASTER RISK REDUCTION

Dr. Sekhar L. Kuriakose, Member Secretary, KSDMA

Dr. Sekhar's session focused significantly on the Kerala State Disaster Management Authority (SDMA), its institutional mechanisms, and how the SDMA functions. The session began by highlighting that Kerala society is vulnerable to a number of natural hazards. He also emphasized the relevance of Grama Panchayats and the importance of grassroots governance in disaster management.

Dr. Sekhar further explained that perspective matters greatly in disaster management—how you look at things can make a significant difference. He illustrated this with a case from his own experience, recounting an incident where a Panchayat Pcresident in Kerala said, *"For you, a flood is when water rises to your neck, but for me, flooding is when my people walk into my Panchayat with their legs wet."* This statement underscored the importance of understanding local contexts and experiences in disaster management. He stressed that people need to be empowered and should know how to prepare projects and respond to such situations effectively. By providing the right amount of funding and responsibility, we can empower communities to take charge and build resilience against disasters.

He further discussed the State Disaster Management (DM) Plan and the Orange Book, The Orange Book which is updated every year, available in Malayalam, serves as a guideline for anticipatory actions during the monsoon season and acts as an addendum to the State Disaster Management Plan. The book also includes year-specific financial allocations. For instance, ₹1 lakh is allocated to each Panchayat as part of monsoon preparedness to prepare and clean relief camps, which are often schools.

One of the novel initiatives discussed was the flood-prone mapping conducted by the Kerala State Disaster Management Authority (KSDMA). This initiative included developing maps that indicate flood return probabilities, such as a 1-in-10-year flood probability. These maps have significantly aided the state in enhancing its preparedness.

Dr. Sekhar mentioned that Kerala is the only state to have published comprehensive susceptibility maps. However, this led to public protests, as land values in Kerala are exceptionally high, comparable to those in Mumbai. He pointed out that in a democratic system, such developments are inevitable, and at KSDMA, they believe it is essential to make this data accessible to the public. Otherwise, such critical information remains confined to technocrats, limiting its broader utility. Along with that, lighting and heat susceptibility maps were also developed. Dr. Sekhar highlighted the significance of institutional memory by presenting a scenario: during the monsoon season, sudden transfers of officers at the district and taluka levels

often occur. Since these officers are new to the system, they may not be familiar with the response mechanisms or the activities outlined in the Orange Book. This issue has been formally addressed with the government to ensure continuity and preparedness. Additionally, KSDMA has established a Rule Curve Compliance Committee for monitoring and managing dam water levels in accordance with the rule curve.
Dr. Sekhar further discussed KSDMA's new initiative, KaWaCHaM, an early warning system that integrates multiple warning systems into a decision support system. This system aims to widely disseminate early warnings, complementing the existing early warning infrastructure. He also emphasized the importance of monitoring systems, detailing KSDMA's current systems, such as the coastal hazard alert system and flood early warning system. Furthermore, he explained the state's involvement in developing localized landslide forecasting and impact forecasting systems.

Dr. Sekhar further discussed other significant initiatives pioneered by KSDMA under its capacity-building programs, such as Inclusive Disaster Risk Reduction (DRR), which focuses on integrating the most marginalized populations of the state. KSDMA also boasts a massive volunteer network, with 2–3 volunteers in every small area of the state. He elaborated on the use of cyclone shelters, highlighting how shelters in Kathiroor Grama Panchayat in Kannur district are being utilized for multiple purposes, such as housing a women's gym and an Anganwadi center.

He also discussed how Corporate Social Responsibility (CSR) funds, both in kind and cash, can be leveraged to mainstream disaster management (DM) activities. Additionally, he emphasized the importance of Post-Disaster Needs Assessment (PDNA) and the need to transform PDNAs into Detailed Project Reports (DPRs) and actionable projects. He explained how the first PDNA conducted for the 2018 floods evolved into the Rebuild Kerala Initiative (RKI).

Dr. Sekhar underscored the relevance and significance of the State Executive Committee (SEC) in driving DM activities effectively. He also elaborated on urban flood management initiatives, such as Operation Ananda in 2015, and the State Government Mitigation Fund, established in 2012 when the Government of India did not have a mitigation fund. This fund enabled the initiation of a series of projects, including risk-informed master planning and various research activities. He also touched upon vulnerability-linked relocation as a critical aspect of disaster management.

One of the major takeaways Dr. Sekhar emphasized is the need to prioritize funding based on vulnerability and multi-hazard susceptibility. He also highlighted the importance of the human spirit, stating that wonderful people in the field—whether officials or volunteers—can make a significant difference. He cited the example of IT volunteerism, which was effectively utilized during the 2018 Kerala floods, where people living abroad contributed through the 3Rs (Relief, Rehabilitation, and Rebuilding). However, this requires leadership, structuring, organization, and facilitation, as well as connecting volunteers to technology.

Dr. Sekhar concluded by stressing that if resilience-building is the goal, then local governance must be strengthened and empowered. Social capital needs to emerge from social technology, and such initiatives must be harnessed effectively. Inclusivity is crucial for resilience-building, and sensitivity during disasters is paramount.

FIELD – BASED LEARNING AND EXPOSURE VISIT

COASTAL EROSION MITIGATION – CHELLANAM CASE STUDY, ERNAKULAM






Objective:

The field visit aimed to provide insights into coastal erosion mitigation efforts in Kerala, with a focus on the Chellanam project. It sought to highlight the state's vulnerability to coastal disasters, the effectiveness of innovative engineering solutions like tetrapods, and the broader implications for coastal and shoreline management.

Location Visited: Chellanam, Ernakulam:

- A coastal village highly vulnerable to erosion, cyclones, and monsoon storm surges.
- Site of the Coastal Erosion Mitigation Project, where tetrapods—concrete structures designed to dissipate wave energy—were deployed to protect the shoreline.

Facilitators:

- Experts and officials from DDMA (District Disaster Management Authority) Ernakulam.
- The Member Secretary of the project, who provided a detailed explanation of the Chellanam initiative and its outcomes.

Key Observations and Learnings:

1. Kerala's Vulnerability to Coastal Disasters:
    - Kerala's unique geographical location between the western coast and the steep slopes of the Western Ghats makes it highly susceptible to natural disasters such as cyclones, coastal erosion, sea-level rise, and monsoon storm surges.
    - Changing climatic dynamics have further exacerbated these vulnerabilities, necessitating innovative and sustainable mitigation measures.
2. Chellanam Coastal Erosion Mitigation Project:
    - The project is a flagship initiative aimed at protecting the Chellanam coastline from severe erosion caused by rough seas and monsoon waves.
    - Tetrapods, concrete structures designed to dissipate wave energy, were deployed along the shoreline. These structures have proven effective in reducing erosion and safeguarding the coastal community.
    - The project has brought significant social benefits to the local population, providing much-needed relief from the recurring threat of coastal erosion.
3. Effectiveness of Tetrapods:
    - The tetrapods have successfully minimized wave impact, preventing further loss of land and property.
    - The installation process and the science behind the design were explained in detail, highlighting how such engineering solutions can be replicated in other vulnerable coastal areas.
4. Broader Implications for Coastal Management:
    - The Chellanam project serves as a best practice for coastal and shoreline management in Kerala.
    - The case study of Ernakulam demonstrates how innovative engineering solutions can be integrated into broader disaster risk reduction strategies.
    - The visit emphasized the importance of informed decision-making, community involvement, and sustainable practices in coastal management.

The field visit underscored the importance of innovative engineering solutions, community-centric approaches, and sustainable practices in addressing coastal vulnerabilities. The Chellanam project stands as a testament to Kerala's commitment to disaster risk reduction and serves as a model for other regions facing similar challenges.

Day 2: 30.01.2024

Expert Led Session – 1

MAINSTREAMING CLIMATE CHANGE ADAPTATION AND DISASTER RISK REDUCTION IN DEVELOPMENT PLANNING AT GRASSROOT LEVEL - **Dr.Joy Elamon, Member, KSDMA**

His session began by explaining the importance of managing disasters and having systems in place. Dr. Joy provided an introduction to the systems at various levels, from the national level down to the district level. He then delved into the local government system, mentioning that in Kerala, disaster management operates in both top-down and bottom-up approaches, with horizontal connections between various departments.

Dr. Joy started the session by posing a question: *"If you want to see something, what do you need to do?"* Some participants suggested "eyes," while others said "focus." Dr. Joy responded that while these are important, the most significant thing is that *"we first need to look in order to see."* Similarly, in disaster management, even though top-down, bottom-up, and horizontal systems are in place, they remain ineffective unless we actively look for and utilize them.
Dr Joy explains, in Kerala, disaster management plans, programs, and projects are in place, training programs are ongoing, and delegations and deliberations are actively taking place. However, rather than focusing solely on these, he emphasized the session will be about how we are implementing these initiatives in Kerala and how these approaches can be adapted to other situations.

Reflecting on the 2018 floods, Dr. Joy noted that they served as a significant learning experience for Kerala. Before 2018, disasters in the state were mostly localized. He shared his own childhood memories of living in an area prone to inundation and how such localized events were managed. However, the 2018 floods were unprecedented, affecting the entire state. In the initial stages, before a centralized command could be established, it was the Grama Panchayat representatives and local-

level officers, such as Tahsildars, who stepped up to respond to the crisis. Many of these officers and elected representatives were so committed to their duties that they only returned home after the relief camps were closed.

This experience underscored the critical role of local-level stakeholders in disaster management. Dr. Joy stressed that involving local communities fosters a sense of ownership and responsibility. When local stakeholders are actively engaged, they take ownership of disaster management efforts, making them more effective and sustainable.

He further explained that until the 2018 floods, Kerala's Panchayat system did not comprehensively address disaster management, it is after witnessing how local people, along with Grama Panchayat representatives and officials, respond to and manage the flood. The potential and capacity of Grama Panchayats in disaster management were recognized. Consequently, a system and structure were put in place to integrate disaster management into local governance. Grama Panchayats already had plans in place for their development, but by prioritizing and mainstreaming disaster management (DM) components, the Local Disaster Management Plan was initiated. Dr. Joy elaborated on how DM-specific projects and activities could be incorporated into the Grama Panchayat Development Plan (GPDP) to better manage disaster situations at the local level.

He also provided an example of how local self-government programs can be aligned with disaster mitigation efforts. He mentioned that MGNREGS (Mahatma Gandhi National Rural Employment Guarantee Scheme) works primarily deal with water and land management. Every year, the MGNREGS comprehensive action plan can identify areas requiring intervention and addresses issues related to disaster risk reduction. This integration ensures that local development programs contribute to building resilience against disasters. He further stated that initiatives like these can be implemented anywhere across the country if funds are made available and if better planning and management are ensured.

Dr. Joy then explained how the local-level Disaster Management (DM) plans for Grama Panchayats were developed in Kerala. For this purpose, the 13th Working Group was constituted to manage initiatives and interventions related to disaster management and climate change. This group oversees the development of plans, with frameworks, templates, and guidelines provided by the Kerala State Disaster Management Authority (KSDMA). He elaborated on how these plans were systematically and structurally developed, with KSDMA offering technical support and the Kerala Institute of Local Administration (KILA) leveraging its expertise in Grama Panchayat plan development to facilitate the creation of local DM plans.

He also highlighted how the DM plans include chapters on Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR) for the Panchayats. These plans are comprehensive, covering various aspects such as the effects of climate change on the environment, biodiversity, disasters, and people's lives, as well as local intervention possibilities.

Dr. Joy emphasized the importance of data in disaster management. He noted that data sharing among government departments is often a challenging task, as systems are reluctant to share information. This is where the Disaster Management Act and KSDMA play a crucial role. The data procured by KSDMA, such as 31 layers of maps, helped Panchayats identify High Vulnerability and Risk Areas (HVRA) and develop their DM plans. These plans are not static; they need to be integrated into the Grama Panchayat Development Plans (GPDP) for actionable steps. Once finalized, the plans are forwarded to the District Planning Committee and then to the District Disaster Management Authority (DDMA).

He also discussed the Local Action Plan on Climate Change, which assesses how a Panchayat is vulnerable to climate change and identifies key factors for analysis. Topics such as climate change and its effects on the environment, biodiversity, disasters, and people's lives, as well as local intervention possibilities, are covered under these plans.

Dr. Joy explained that these plans are a blend of science, data, and local knowledge. However, more than these, sensitization is crucial. The individuals preparing and implementing these plans learn about climate change, which leads to better preparedness. He noted that this is how scaling up happens, and such initiatives can be replicated anywhere with proper execution and implementation.

He acknowledged that these plans are not perfect and have limitations. Many plans require review, rework, and updating, which is an ongoing process. He further explained how four districts in Kerala, as part of the Rebuild Kerala Initiative (RKI), developed their plans. He also touched upon tools like the Disaster Risk Reduction and Climate Action Tracker (DCAT), which are used for steering and capacitating Local Self Governments (LSGs), as well as Risk-Informed Master Plans.

As a key takeaway, Dr. Joy advised not to assume that everything is perfect. There are always limitations and room for improvement. He encouraged participants to refer to Kerala's approach in mainstreaming Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR) into grassroots-level development planning and explore how similar strategies can be adapted to their local contexts.

Q & A

Question: In Kerala, the local-level Disaster Management (DM) Plans are working very well, but in our state, they are missing. Instead, we only have District Disaster Management Plans (DDMPs). We don't think local DM plans will be possible in our districts, as it seems too difficult. What should we do?

Answer: Just think about your locality. You need something at the local level to manage disasters effectively. Don't get overwhelmed by maps, chapters, and complexities. Instead, focus on how you can simplify the process in your locality with the help of your people and the technical support available to you. Start small, involve the community, and build from there.

Expert Led Session – 2

URBAN FLOODING: CHALLENGES, RISK REDUCTION STRATEGIES AND CASE STUDY INSIGHTS - Dr. V. Thiruppugazh, IAS (Retd.) Advisor, Council on Energy, Environment and Water (CEEW), New Delhi

Dr. Thiruppugazh began by stating that he has been studying urban floods for the past 20–25 years, with more intensive focus over the last three years as the chairman of the Advisory Committee on Flood Risk Mitigation in the Chennai Metropolitan Area. Along with 14 other experts in the field, the team has been studying urban floods not only in Chennai but also at a global level to learn lessons and incorporate best practices.

He clarified that the session would not focus solely on urban floods in Chennai but would instead share insights from his global learnings and experiences related to urban flooding.

He opened his discussion with a thought-provoking question: *"Is urban flooding a wicked problem, or is it a problem created by wicked people?"* To this, he responded that he would call it a problem created by wicked people. He explained that three fundamental errors have contributed to this problem:

1. Error of Ignorance
2. Error of Execution
3. Error of Intention

Using statistical data from various years, he elaborated on major urban flood incidents that have occurred in the country, as well as the global scenario. He emphasized that urban flooding is a universal problem, not one limited to specific regions or cities.

He explains that flooding is a complex problem with no simple solutions. He highlights that there are several causes for this issue, and a reductionist approach cannot be applied. There are numerous challenges that need to be addressed, and there is no one-size-fits-all solution for urban flooding. He elaborates on the reasons behind this, stating that many cities were developed before we fully understood hazards, risks, and the science required to assess them. This science is still evolving and is not yet fully developed.

Furthermore, he emphasizes that we must avoid an "all or nothing" approach—where one either does everything possible to address urban flooding or does nothing at all. Flooding is no longer a rare or unpredictable "black swan" event; it is becoming a regular occurrence due to climate change. Unlike in the past, when we referred to floods as "100-year events," we must now prepare for more frequent flooding as a result of changing climate patterns.

Dr. Thiruppugazh further explains that there are four stages in addressing flooding. Initially, the focus was on flood control through engineering solutions, which proved unsuccessful. Then, the discussion shifted to flood management, which also failed to yield the desired results. Later, the approach evolved to "making way for water," and now, the emphasis is on learning to live with floods, as they have become a reality and the new normal. With events like cloudbursts and 24 cm of rainfall in just two hours, the question arises: how do we plan for such extremes? To address this, we must first understand the causes of urban flooding.

Urban flooding is largely a man-made disaster, influenced by factors such as climate change, coastal flooding, tsunamis, and sea surges. However, the primary cause is rapid urbanization. Another contributing factor is the expansion of municipalities, where small villages with inadequate infrastructure are incorporated into cities without extending proper urban infrastructure to these areas. Heavy rainfall over short periods, the urban heat island effect (which alters wind dynamics due to forest infrastructure), poor urban and land-use planning, construction, and encroachment into rivers, canals, and drainage channels further exacerbate the problem. Additionally, sheet flow through private lands has been disrupted due to construction.

Dr. Thiruppugazh also highlights the lack of floodplain zoning acts and buffer zone regulations, which are only present in one or two states. The increasing demand for land, whether for housing or agriculture, has led to more encroachments. One significant point he makes is that when planning cities, areas are designated for residential purposes, but no thought is given to allocating space for the poor. He notes, "Rich people depend on the poor for drivers, house maids, and gardeners. Where will they live? They will inevitably encroach on floodplains." Other causes he mentions include the economic value of river-view properties, the nexus between bureaucrats, politicians, and encroachers, poor implementation of regulations, and a lack of understanding of the critical role water bodies play in the ecosystem. After providing a detailed and in-depth analysis of the causes of urban flooding, Dr. Thiruppugazh further discusses the necessary mitigation measures.

He states that the Sendai Framework provides excellent measures for mitigation, and he provided extensive mitigation measures for urban flooding. Aligning with this, he emphasizes that the first step is to stop accumulating new risks and reduce existing risks. To achieve this, three key actions are necessary:

1. Reduce runoff,
2. Stagger runoff, and
3. Increase the flow.

The next critical step is the development of a drainage master plan for the city and its development areas, followed by city development based on this drainage master plan. Primarily, he highlights that all bottlenecks and encroachments, particularly in outlets and inlets, must be addressed first.

He then discusses the importance of a techno-legal regime, stressing compliance with building codes. For instance, buildings in flood-prone areas should be constructed on stilts, and tsunami-resistant designs should be implemented near coastal areas. These measures must be adhered to by all agencies within the city. He also emphasizes the significance of reservoir management.
Furthermore, he underscores the importance of community preparedness. Trained volunteers for early warning systems, search and rescue operations, and community-based mitigation processes are essential, as spontaneous volunteerism is ineffective. Drawing from his experiences, he notes that people often do not give due importance to early warning systems and Information, Education, and Communication (IEC) efforts, which need to be strengthened.

As a way forward, he asserts that there are no quick-fix solutions. Short-term measures must be implemented, regulations enforced to prevent the creation of new risks, and mechanisms established for coordination among various concerned agencies. A "tail to head" approach for drainage and flood mitigation projects should be conceived, planned, and designed as a single integrated project.

In his concluding remarks, he emphasized two key points:

1. Urban flooding is a serious and growing problem. We must learn to live with floods, meaning all planning and development activities must account for the reality of floods and adapt accordingly.
2. There will be winners and losers in this scenario, and it is crucial to ensure that the weaker sections of society benefit while those contributing to the problems do not gain an advantage and become the losers.

Q & A

Question: Can the Disaster Management Act be used to resettle people in a certain area despite existing restrictions, based on the disaster vulnerability of that area?

Answer: The Disaster Management Act includes a provision that states, "Whatever measures are deemed necessary for mitigation and prevention can be undertaken." However, forcibly relocating people from an area can lead to significant issues. Therefore, amicable solutions must be reached through dialogue and discussion.

It is essential to provide adequate compensation, such as offering twice the standard remuneration and calculating long-term losses when determining the compensation amount. As emphasized, spending ₹1 on mitigation can save ₹6 to ₹7 in relief and reconstruction costs by reducing the losses incurred.

He also cited a successful case of relocation in Kannakipuram, Chennai as an example.

Panel Discussion

PANEL DISCUSSION ON ENGINEERING/MITIGATION PROJECTS FOR LANDSLIDE RISK REDUCTION -

Mr. NSK Umesh IAS and Mr. Ashish D. Gharpure, MD, Genstru Consultants Pvt, Ltd, Pune

Mr. Umesh IAS shared insights from his experience as the Sub-Collector and DDMA (District Disaster Management Authority) in Wayanad, particularly during the 2019 landslide response. He recalled that after the 2018 floods in Kerala, which were described as a "once-in-a-century" event, no major issues were anticipated in 2019. The monsoon had been normal until August 8, 2019, when the situation changed dramatically.

He recounted his experiences during the 10–15 days of the response phase, highlighting the challenges and efforts undertaken during that critical period.

Until 2017, the monsoon in the state typically began between June and July. However, in 2019, there was little rainfall until August, when it started to rain sporadically. Due to this situation, district administration meetings were held on August 7th to discuss the measures to be taken if the rain continued. Key preparedness measures included starting relief camps, which he recounted as a significant step in flood preparedness, and relocating people from vulnerable areas. And the village officer, who is at the grassroots level of the revenue department, played a crucial role in coordinating these activities. The area he discussed was not initially considered as vulnerable compared to other parts of Wayanad.

Mr Umesh recalls, the first action taken was requesting army assistance from Kannur in the morning, and they started from Kannur by 11 AM. After the meeting, everyone dispersed. Around 5:30 PM to 6 PM, we were checking the relief camps to ensure sufficient food, water, and other primary needs for the people staying there. During this time, we received a call about a landslide in Meppadi.

The geographical positioning of Meppadi posed significant challenges, as there is only one road—a district highway—connecting it to the district administration headquarters, which is 40 kilometers away. Normally, the journey takes about half an hour, but on that day, it took two hours.

Upon reaching Meppadi, we faced multiple challenges, including the absence of electricity and communication facilities. By 8 PM, we reached the landslide site, but the road was blocked, preventing us from accessing the other side to assess the situation. The only information we had at the time was that a landslide had occurred in Puthumala.

One of the most commendable aspects of disaster response in Kerala is that local representatives often arrive at the scene before government officials. In this case, the local MLA, panchayat members, the panchayat president were already on-site. However, the situation was complicated as more soil continued to fall onto the excavators as they worked, and there was no proper electricity to support the operations.

One key learning and takeaway Mr. Umesh shared with the participants was the importance of coordinating with the Fire and Rescue Department to ensure the availability of ASKA lights, which are crucial in such situations. By narrating his initial response activities during the Puthumala landslide of 2019, he highlighted several major discussion points:

A Changed Perspective on Rain: He recalled, "That night changed my perception about rain." With no accessible roads, they had to walk 2 kilometers, which he described as the longest walk of his life, to reach a forest range office. There, they found 300 people who had been evacuated. This, he emphasized, was a significant moment and a key learning for everyone. The Panchayat member of the area had foreseen the danger due to heavy rainfall and evacuated everyone in Puthumala to the range office two hours before the landslide occurred.

Challenges in Coordination and Relief: The army, usually taking 2 hours to travel from Kannur to Wayanad, took 10 hours that day due to the conditions. The next task was to rescue stranded people and bring them to Meppadi, ensuring they had food, water, and clothing. Mr. Umesh, along with other officials, walked back with supplies to provide immediate relief.

Decision-Making and Local Knowledge: He explained the critical role of decision-making by collectors or responding officers during disasters. He stressed the importance of trusting local knowledge, recalling an instance where local jeep drivers insisted, they could navigate the terrain to evacuate people, despite the army's objections. After careful consideration, they overruled the army's concerns and successfully evacuated people using the jeeps. This decision was made possible by trusting the locals' understanding of the geography.

Volunteerism and Community Support: He highlighted the role of volunteers, mentioning how an engineering company and a labor contract society in Kerala, called Uralungal Labour Contract Cooperative Society (ULCCS), came forward to build a temporary bridge. This demonstrated the power of community involvement in disaster response.

The Role of Panchayats in Kerala: Mr. Umesh emphasized the critical role of Panchayats in disaster response. He noted that Panchayat members and representatives know their localities like the back of their hands. Working closely with them can significantly ease response efforts and save valuable time.

Search Operations and Volunteerism: He further explained the importance of search operations and the overwhelming volunteer support during the disaster. Numerous individuals and organizations came forward to help, and every search team included local NGOs. He stressed the importance of including people with a voice in core committees, as their insights can prevent failures. In disaster management, blame games are inevitable, but it is crucial to listen to all suggestions and try every possible option. His main takeaway was to never dismiss any idea or suggestion outright but to listen and involve everyone in the process.

Major Takeaways: As an outsider working in Kerala as an IAS officer, Mr. Umesh observed that every Panchayat in Kerala has local disaster management plans, making the state consistently disaster-ready. He noted that while landslides occur in many parts of Kerala, the preparedness and measures taken often prevent casualties. However, these efforts are frequently underreported, and society remains largely unaware of them.

Mr. Ashish D. Gharpure

Mr. Ashish began his session by sharing a visual of Banyan Naala in Uttarakhand, where a 250-meter landslide is currently under construction and repair. He mentioned that this project, along with several others in Uttarakhand, including the development of Kedarnath, is being handled by his company. As he pointed out, Kedarnath faced a severe debris flow during the 2013 disaster, which flooded the entire town. He explained that his team is actively dealing with various challenges such as river cuts, river erosion, and landslides on large hills. Currently, they are working on a 200-kilometer stretch of the National Highway Authority of India (NHAI) in Himachal Pradesh, covering the routes from Kiratpur to Mandi and Mandi to Manali. He highlighted that at least 100 kilometers of this stretch involves river training along the Vyas River, which was severely affected during the 2022 disaster.

Mr. Ashish then introduced the firm he represents, GENTRU Consultants, which specializes in geotechnical engineering. He explained that while they also handle other engineering aspects like hydrology and structural engineering, their primary focus remains on geotechnical solutions. He shared that they are involved in river training, dam rehabilitation under the government's GRIP program, and even hazardous landfill management. He mentioned that they have dealt with significant failures in mining areas, such as in Odisha and Bihar, where mining dumps exceeding certain heights led to catastrophic events. To ensure accuracy, Mr. Ashish emphasized that all investigations are conducted in-house, with their own testing labs for both field and laboratory analysis.

Moving on, Mr. Ashish discussed the changing perspective on landslides, which are no longer limited to hilly regions like Himachal Pradesh but can occur anywhere due to man-made or anthropogenic reasons. He provided a simple definition of landslides as the downward movement of landmass and elaborated on the various triggers, including removal of support (such as erosion or deliberate cuts for roads or housing), forest fires, rainfall, snowmelt, addition of weight (like construction or snow accumulation), and vibrations from earthquakes or blasting. He stressed the importance of controlled blasting and adherence to technical norms to minimize risks.

Mr. Ashish then delved into the types of landslides, such as rotational failure, translational failure, debris flow, debris avalanche, and creep. He explained that while debris flow and debris avalanche differ only in speed, creep is a very slow movement that can take years to manifest, often indicated by tilting electric poles, bending fences, or leaning trees. He also

touched upon rockfall, which is often caused by temperature differences, weathering, and improper cutting of rocks. He cautioned that not all rocks can be cut vertically, as their stability depends on joint orientation.

Discussing mitigation strategies, Mr. Ashish emphasized the importance of understanding the causes, consequences, and impacts of landslides. He differentiated between proactive measures (like predictive models) and reactive measures (such as rescue and rehabilitation). He mentioned that while predictive models are effective for chronic landslides, they are still limited for new landslides. He introduced the concept of a hazard matrix to prioritize actions based on risk levels, ranging from monitoring for low-risk areas to full protection for imminent landslides. He also shared examples of Rockfall Hazard Rating Systems (RHRS) used in Oregon and Colorado, which help in making cost-effective decisions for risk reduction.

Mr. Ashish outlined a methodical approach to landslide mitigation, starting with a topographical survey using LiDAR or drone technology to capture detailed images of the terrain. He explained that geophysical investigations, such as seismic refraction tests and electric resistivity tests, are used to understand subsurface conditions. He stressed the importance of cross-checking these findings with borehole data. For rock analysis, he mentioned the use of stereonets to plot joint orientations and predict failure types, such as sliding, toppling, or wedge failures.

Finally, Mr. Ashish shared the five categories of slope stabilization:

1. Modification of slope geometry – Making geometric corrections.
2. Drainage control methods – Managing surface and subsurface water.
3. Retaining structures – Using gabion walls, RCC walls, or gravity walls to protect the slope's toe.
4. Internal slope reinforcement – Installing anchors or nails.
5. Surface protection – Using vegetation or shotcrete in specific conditions.

He also discussed rockfall stabilization measures, such as caution signs, terracing, flexible barriers, and rock sheds. He emphasized the importance of instrumentation, monitoring, and maintenance to ensure long-term stability. In conclusion, Mr. Ashish reiterated that landslides are complex phenomena requiring a holistic approach combining technical expertise, predictive modeling, and community awareness. He stressed that while mitigation measures are essential, prevention and preparedness are equally critical to reducing the impact of landslides and ensuring the safety of communities.

Day 3: 31.01.2024

FIELD – BASED LEARNING AND EXPOSURE VISIT

FIELD VISIT TO VAGAMON (IDUKKI) AND KOOTTICKAL (KOTTAYAM)

Objective:

The field visit aimed to observe disaster impacts, recovery efforts, and mitigation practices in vulnerable areas of Kerala. It also sought to highlight the state's susceptibility to disasters such as landslides, slope failures, and infrastructure damage, while showcasing ongoing recovery and mitigation measures.

Locations Visited:

- Koottickal (Kottayam):

Observed extensive road damage, bridge collapses, debris accumulation, and other disaster impacts.
Noted the severity of landslides and their effects on local infrastructure and communities.

- Route from Koottickal to Vagamon (Idukki):

Along the way, observed multiple instances of slope cutting, rockfalls, and soil slips along the roadside.
These observations highlighted the geological vulnerabilities of the region and the risks posed by improper land-use practices.

- Vagamon Adventure Tourism Area – Glass Bridge:

Explored the Vagamon Adventure Tourism Area, including the iconic Glass Bridge.
Discussed the balance between tourism development and disaster risk management in ecologically sensitive zones.

Facilitators:

Experts from DDMA (District Disaster Management Authority) Kottayam and Idukki.
Mr. Pradeep G, Hazard Risk Analyst, who provided detailed explanations and facilitated the field visit.

Key Observations and Learnings:

- Disaster Impacts in Koottickal:

The team observed significant damage to roads and bridges caused by landslides and heavy rainfall.
Debris accumulation in the area underscored the challenges of post-disaster recovery and the need for effective debris management systems.

- Geological Vulnerabilities Along the Route:

Instances of slope cutting, rockfalls, and soil slips highlighted the risks associated with unsustainable land-use practices and inadequate slope stabilization measures.
These observations emphasized the importance of integrating geological risk assessments into development planning.

- Tourism and Disaster Risk Resilience in Vagamon:

The visit to the Vagamon Adventure Tourism Area, including the Glass Bridge, showcased the potential of tourism as an economic driver.
Also discusses the need for disaster-resilient infrastructure and sustainable tourism practices in ecologically fragile areas.

The field visit highlighted the importance of integrating disaster risk management into development planning, especially in ecologically sensitive and tourism-heavy areas. The visit underscored the need for sustainable practices, community involvement, and robust mitigation measures to enhance resilience and reduce the impact of future disasters.

Figure 2: Koottickal

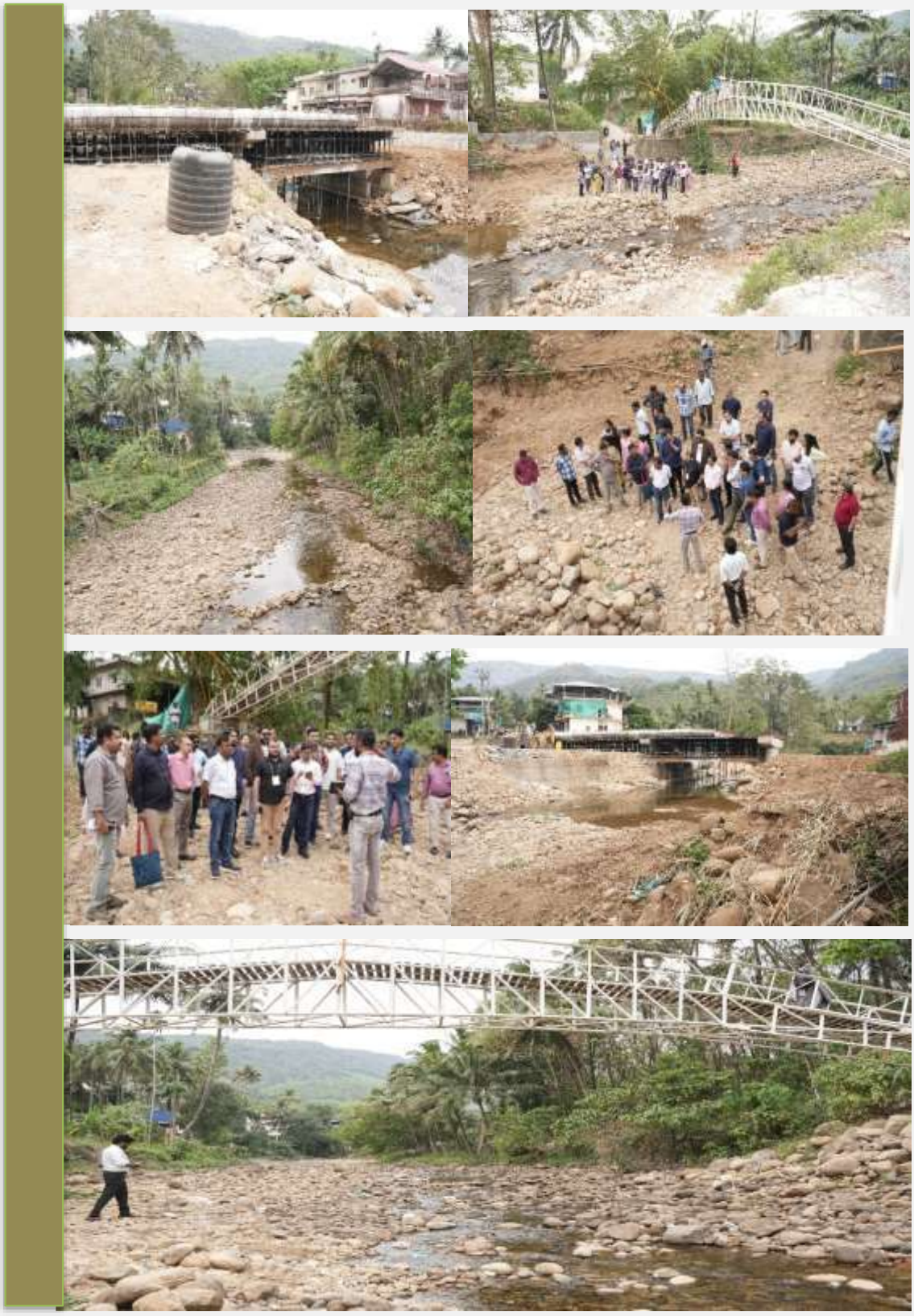
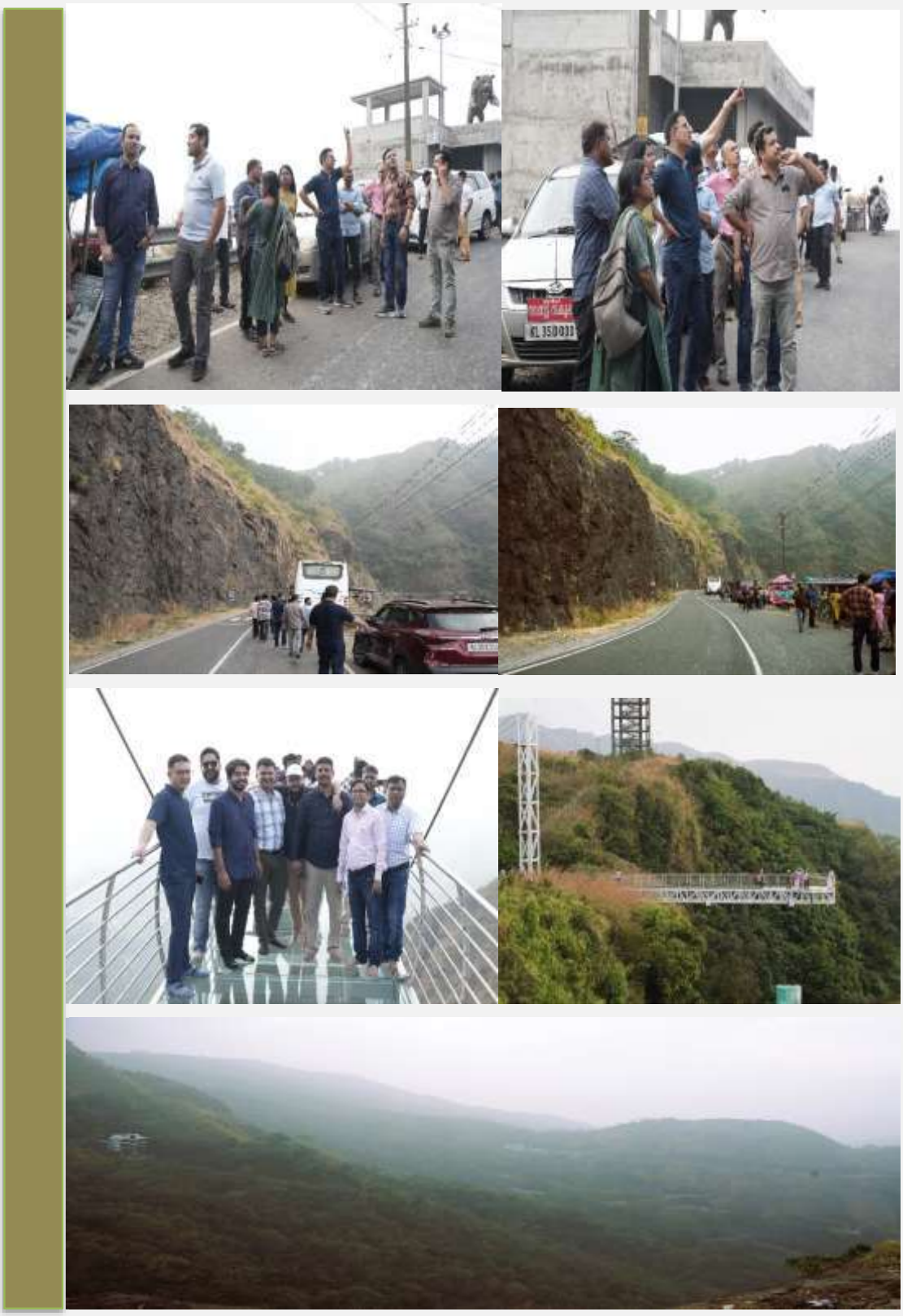


Figure 3: *Route from Koottickal, Vagamon, Vagamon adventure tourism area & Glass Bridge*



Day 4: 01.02.2025

Expert Led Session – 1

INTRODUCTION TO POST DISASTER NEEDS ASSESSMENT - Mr. Vivek Coelho, Technical Expert (Recovery), UNDP


As Mr. Vivek Coelho explained, a basic compliance requirement from the Government of India is the mandatory conduct of a Post Disaster Needs Assessment (PDNA) to access funding under the recovery and reconstruction window established by the 15th Finance Commission. This applies to both the State Disaster Response Fund (SDRF) and the National Disaster Response Fund (NDRF) funding windows. The rationale, as he mentioned, is that disaster impact must be assessed through a loss and damage assessment.

Basic Steps for PDNA:

According to Mr. Coelho, the basic steps for a PDNA include:

1. Baseline and context analysis.
2. Post-disaster effects assessment. Effects are tangible, encompassing damage and loss. Impacts, on the other hand, are intangible, relating to economic flows and disruptions. Damage impacts assets, while impacts affect flows.
3. Recovery strategy preparation. As Mr. Coelho described it, this is similar to a developmental plan or a special scheme.

PDNA's Genesis in India:

Mr. Coelho noted that the 2018 PDNA in Kerala was a state-led exercise with support from UN agencies and multilateral institutions. This was followed by testing of the NIDM methodology. In 2022, the Prime Minister mandated PDNAs for 10 flood-affected states seeking funding, though five states declined funding and therefore PDNA. Following the 15th Finance Commission, mainstreaming of the PDNA process began. Wayanad's PDNA was the first state-led effort compliant with the guidelines for recovery and reconstruction notified on August 14, 2024, as Mr. Coelho pointed out.

PDNA's Multi-Sectoral Approach:

As Mr. Coelho emphasized, PDNA takes a multi-sectoral approach. It assesses damages and losses, not just to governmental assets, but also considering ownership. He highlighted that people are disproportionately affected and their assets require compensation. PDNA also considers micro-economic and household-level impacts. The 15th Finance Commission recommends a "build back better" approach after the PDNA process, he added.

PDNA Steps:

Mr. Coelho outlined the following PDNA steps:

1. Training and orientation, mobilizing state-level nodal officers and technical experts.
2. Analysis process.
3. Formulating the recovery strategy.
4. Resource mobilization and implementation mechanisms.

PDNA Process Flow:

When a disaster hits an administrative jurisdiction, the impacts are reviewed and monitored, and the SDMA is mobilized to initiate the PDNA process. The SDMA reviews its internal capacity. For small disasters (e.g., impacting 50 houses), the state government often has sufficient internal capacity. However, for larger disasters (e.g., impacting over 2000 houses), technical expertise may be required. In such cases, the SDMA typically requests guidance and support from the NDMA. This process, as Mr. Coelho noted, requires substantial, granular data. Line departments often face challenges in data processing, collection, and management. Line departments must be mobilized to collect data accordingly, enabling timely report writing. Field visits are conducted, and reports are drafted. These sectoral reports are consolidated under a team lead. Utilizing SDRF funds is encouraged, though they are sometimes diverted. The State Executive Committee (SEC) and Ministry of Home Affairs (MHA) are the decision-making authorities at the state level for NDRF. Multiple layers of scrutiny may occur. The MHA will constitute a multi-sectoral team, including all relevant line ministries, to check if the state government's estimations comply with guidelines. Precise estimations are crucial.

This multi-sectoral team will make recommendations to the NDMA, which will conduct further scrutiny. The NDMA will then forward its recommendations to the SEC, chaired by the Home Secretary. Allocation will occur based on the recovery plan, under various sectors. A special purpose vehicle is needed to implement this recovery plan. The primary accountability for NDRF and SDRF funds rests with the State Disaster Management Authority, as Mr. Coelho reiterated.

Sectoral Reporting Template Overview:

Mr. Coelho provided an overview of the sectoral reporting template, which includes:

- Historical overview and socio-economic linkages.
- Disaster impact on sectoral assets, including mapping of damage and loss.
- Assessment purpose, objectives, methodology, impact assessment, and documentation (GTV).
- Determination of unit costs for quantifying damage and loss of tangible and intangible assets (damage and loss estimates), and cross-sectoral linkages.
- Baseline (pre- and post-disaster extent of damage and loss).
- Debris clearance and transition needs for recovery and reconstruction.
- Recovery and reconstruction assistance, including item-wise details and estimates, livelihood recovery through special schemes, and development assistance/special projects linked to restoring economic flows under the sector.

Introduction to Build Back Better (BBB) Approaches:

Mr. Coelho introduced BBB approaches, noting that NDRF/SDRF focuses on recovery and reconstruction based on damage and loss in social, productive, and infrastructure sectors, considering resilient infrastructure, livelihoods, and communities. The National/State Disaster Mitigation Fund (NDMF/SDMF) is linked to mitigation, including preparedness, resilience, and capacity in forest, environment, and NRM-based sectors, as well as DRR interventions, considering investments in protection, prevention, and restoration of features that contribute to hazard risk and vulnerability reduction.

BBB Components under Sectoral Reports:

Mr. Coelho detailed the BBB components in sectoral reports, including:

- Social: Housing (e.g., owner-driven approach).
- Productive: Sustainable livelihoods across the agri-value chain (schemes), e.g., tourism.
- Infrastructure: WASH, roads (e.g., landslide risk mitigation).
- Cross-cutting: Inclusion and DRR (e.g., medium- to long-term investments).
- Livelihoods linked special schemes.
- Departmental/scheme-based convergence.
- Capacity development, investing in the recovery and reconstruction implementation plan (e.g., investing in departmental resources/PMU).

Monitoring and Utilization of Recovery Assistance:

Mr. Coelho explained the monitoring and utilization of recovery assistance, emphasizing accountability. This includes requisition of a comprehensive recovery plan based on PDNA and sector-wise approved assistance by the State/High-Level Committee (SC-NEC/HLC). Annual expenditure reports and utilization certificates are required before releasing funds for subsequent years. The NDMA monitors projects and activities for quality assurance, supported by independent third-party audits. Recovery assistance, he stressed, differs from relief disbursement due to stricter safeguards and accountability measures.

Expert Led Session – 2

STRENGTHENING CYCLONE FORECASTING SYSTEMS: ODISHA'S EXPERIENCE –

Dr. Kamal Lochan Mishra, IAS Executive Director, Odisha State Disaster Management Authority

As the first State Disaster Management Authority (SDMA) in the country, constituted after the super cyclones in Odisha, Mr. Kamal's session highlighted OSDMA's experience in mitigation and strengthening the system to reduce risks and casualties from frequent cyclones in the state. He began the session by emphasizing the importance of equipping young civil service officers in disaster management.

Mr. Kamal stated that, similar to any subject, unless disaster management is understood clearly with identifiable parameters and measurable indicators, it cannot be managed effectively. He stressed that disaster management requires extensive coordination, integration, and practical application. He further explained that Odisha learned hard lessons from losing over 10,000 lives to a single super cyclone. This tragedy compelled the state to rethink its approach and transform its disaster management system by integrating various verticals of governance into it.
The primary approach of the SDMA (State Disaster Management Authority) has been to achieve zero human casualties. This involves rescuing and evacuating people from vulnerable zones, establishing an effective warning system, and ensuring that warnings are effectively communicated to the community. Dealing with disaster-affected areas is challenging, but these measures have been central to SDMA's strategy.

Mr. Kamal elaborated on the institutional mechanisms of OSDMA, emphasizing the significance of the Emergency Operation Center (EOC) and the State Emergency Communication System (SEC). He highlighted the importance of emergency communication systems, explaining that at the national level, actors like NDMA (National Disaster Management Authority) and INCOIS (Indian National Centre for Ocean Information Services) play critical roles. From the country level to the state level, there is an upward linkage, while at the state level, the Emergency Operations Center (EOC) maintains parallel linkages with NGOs and CBOs (Community-Based Organizations). These organizations play a vital role in communicating with the people. Line departments also play a role, but their communication is confined within the state. Mr. Kamal stressed that communication systems must be techno-centric to ensure efficiency. He further discussed OSDMA's efforts in tsunami preparedness, including initiatives to make communities and villages tsunami-ready. He

emphasized the importance of not relying on a single communication system, advocating for redundant systems to ensure reliability during disasters.

Mr. Kamal highlighted the importance of coordination and collaboration among different stakeholders, explaining how each entity works together to achieve the common goal of disaster management. Throughout the session, he stressed the critical role of communication, noting that while technical and scientific communication systems can fail, the connectivity of communication must not be lost. He emphasized the need to ensure last-mile connectivity, a principle OSDMA has successfully implemented. The success of OSDMA, according to Mr. Kamal, lies in its communication strategy. OSDMA ensures clarity about whom they are communicating with and how they are communicating. He added that when communicating with communities, it is essential to understand their needs and wants. Effective communication requires understanding the community's history, perceptions, and sub-cultures. By identifying these attributes, warnings and information can be communicated more effectively. This understanding is further strengthened through mock drills, community disaster management teams, and other initiatives. Mr. Kamal also discussed the role of data centers, early warning systems, and disaster management as key components of preparedness.

As a major takeaway, Mr. Kamal emphasized that the goal is to create responsive and prepared communities capable of managing disasters. Unless communities are prepared, they will not respond effectively during disasters.

Expert Led Session – 3

REBUILD KERALA INITIATIVE – REBUILDING LIVES - Dr. V. Venu, Former Chief Secretary, Kerala

Dr. Venu's session focused on how the state of Kerala managed to recover from one of its deadliest disasters. The core of his argument was that while immediate disaster management is crucial, building resilience and improving governance systems are even more important for long-term recovery. He emphasized the need to prioritize people in all disaster management efforts.

Dr. Venu further elaborated on the Rebuild Kerala Initiative (RKI), a comprehensive development program launched by the Government of Kerala in response to the devastating 2018 floods. Dr. Venu explained that this initiative, supported by the World Bank and other funding agencies, aims to build a greener, more resilient Kerala by addressing disaster recovery, climate resilience, and sustainable development.

Dr. Venu began by outlining the vision of the RKI. According to him, the vision is to create a resilient and sustainable Kerala by integrating disaster risk management (DRM), climate resilience, and environmental sustainability into development planning. He emphasized that this holistic approach ensures Kerala is better prepared to face future disasters while promoting sustainable growth.

He further elaborated on the sectors covered under the RKI. Dr. Venu mentioned that the initiative spans a wide range of areas, including water resource management, transportation, forestry, sanitation, urban development, and livelihoods, among others. He said that this multi-sectoral approach ensures all aspects of development are aligned with the goals of resilience and sustainability.

Dr. Venu then highlighted the key milestones of the RKI. He explained that immediately after the 2018 floods, recovery and resilience planning began. By 2019, the Rebuild Kerala Development Programme (RKDP) was approved, and the first Development Policy Loan (DPO1) was sanctioned by the World Bank. He added that by 2021, DPO1 was completed with a satisfactory rating, and funding agreements with KfW and AFD were signed. Dr. Venu pointed out that the initial phase of the initiative was launched within 6 to 7 months, which, for a program of this magnitude, is unprecedented in World Bank terms.

Moving on, Dr. Venu discussed the First Resilient Kerala Program (DPO1) in detail. He said that the program was funded with 530million, including 530*million*, *including* 160 million from the Government of Kerala. According to him, the objectives of DPO1 were to enhance institutional and financial capacity for disaster risk management and to mainstream climate resilience into critical infrastructure and services. He highlighted some of the key achievements, including the implementation of 25.06% of medium-term recovery activities, benefiting 3.1 million women and children, updating the State Disaster Risk Management Plan (Orange Book), adopting resilient agroecological zone development plans, and introducing performance-based management contracts for road maintenance.

Dr. Venu then shifted focus to the Resilient Kerala Program for Results (PforR), a multi-sectoral initiative aimed at enhancing Kerala's resilience to disasters and climate change. He explained that the PforR includes several key initiatives, such as the adoption of a Debt Management Plan, the establishment of a Unified Registry Database, and the implementation of Disaster Risk Financing mechanisms. He further elaborated on other initiatives, including the development of risk-informed urban master plans, the integration of climate risk information into local disaster management plans, and the implementation of an integrated river basin management plan for the Pamba Basin. Dr. Venu also mentioned the launch of a platform to track and respond to zoonotic disease outbreaks, the improvement of market access for Farmer Producer Organizations, and the rehabilitation of the core road network to meet climate-resilient standards. He added that the program also focuses on developing a Shoreline Management Plan to protect critical coastal areas from erosion and publishing a Climate Budget alongside the annual budget to prioritize climate resilience. He noted that significant progress has been made in urban planning, disaster risk financing, and infrastructure rehabilitation. According to him, the future focus will be on deepening resilience in coastal areas, improving water resource management, and enhancing digital systems for disaster management.

Also spoke about the KfW-funded road reconstruction project, which is a critical component of the RKI. He explained that the project aims to rebuild roads to climate-resilient standards to withstand future disasters. He emphasized that the Public Works Department – Kerala State Transport Project (PWD – KSTP) is responsible for ensuring that the reconstructed roads meet these standards.

As a major takeaway, Dr. Venu emphasized that while rebuilding infrastructure is critical, the focus must also be on rebuilding livelihoods and restoring confidence in the communities affected by disasters. He stressed that resilience is not just about physical structures but about strengthening people and local organizations at the grassroots level.
According to him, building resilience involves empowering communities and local bodies to take ownership of their recovery and preparedness. He highlighted the importance of integrating resilience into everyday conversations and planning processes. By doing so, communities become more aware of their ability to make changes, no matter how small, which can eventually lead to significant results. This approach, he said, strengthens their capacity to manage disasters.

POLICEY REVIEW AND GROUP ACTIVITIES

Objective of the exercise:

To review the National Disaster Management Guidelines on Management of Urban Flooding & Management of Landslides and to come up with recommendations for developing operational guidelines at district level.

- Participants in each sub-group must collaborate and review the individual chapters allotted to them and come up with their findings and recommendations.
- The group head must compile the findings and recommendations of each sub-group and present the cumulative group report.

Group I: National Disaster Management Guidelines on Management of Urban Flooding
Group Head: Shr. S. Dillirao, I.A.S.

Sub-group	Name of the Participant	Designation	Chapters of the Guidelines to be Reviewed
Sub-group A	Shri. Aniket Sachan, IAS	ADM Law and Order, East Singhbhum, Jamshedpur, Jharkhand	Chapter 1: Introduction Chapter 2: Institutional Framework and Arrangements
	Rohit Gupta	Additional Deputy Commissioner, Rural Development, Patiala, Punjab	
Sub-group B	Shr. O. Anand, IAS	Collector & District Magistrate, SpSR Nellore, Andhra Pradesh	Chapter 3: Early Warning System and Communication Chapter 4: Design and Management of Urban Drainage System
	Shri. K. Elambahavath, IAS	Collector, Thoothukudi, Tamil Nadu	
	Shri. Rajeshwari Pandey, BPS	ADM (Disaster Management), East Champaran, Bihar	
Sub-group C	Sanket Balwanth, IAS	Sub-Collector, Ponneri, Tamil Nadu	Chapter 5: Urban Flood Disaster Risk Management Chapter 6: Techno-Legal Regime Chapter 7: Response
	Ms. Dheenah Dastageer, IAS	Sub-Collector, Berhampur, Odisha	
	Shri. Sumit Kumar Thakur, IAS	Sub-Collector, Thiruvalla, Kerala	
	Md. Shafiq, BPS	ADM (Disaster Management), Nalanda, Bihar	
Sub-group D	Md. Nadimul Gaffar Siddqui, BPS	Joint Secretary, Disaster Management Department, Patna, Bihar	Chapter 8: Capacity Development, Awareness Generation, and Documentation Chapter 9: Implementation of the Guidelines—Preparation of DM Plans Chapter 10: Summary of Action Points
	Shr. S. Dillirao, IAS	Director, Agriculture Department, Andhra Pradesh	

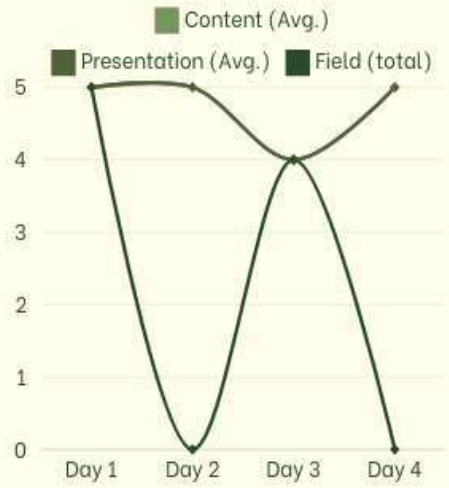
Group II: National Disaster Management Guidelines on Management of Landslides
Group Head: Dr. Mohammed Ashraf Sheikh, JKAS

Sub-group	Name of the Participant	Designation	Chapters of the Guidelines to be Reviewed
Sub-group A	Mohd Idrees, JKAS	Assistant Commissioner Revenue, Kishtwar, Jammu & Kashmir	Chapter 1: The Context Chapter 2: Hazard Zonation Mapping
	Ms. Netra Meti, IAS	Sub-Divisional Officer (Civil), Himachal Pradesh	
Sub-group B	Shri Pakon	ADC, Mon, Nagaland	Chapter 3: Geological and Geotechnical Investigations Chapter 4: Landslide Risk Treatment
	Shri. Akhil V Menon, IAS	Sub-Collector, Thrissur, Kerala	
	Dr. Amir Hussain	Chief Executive Officer, Emergency Relief Organisation, Disaster Management, UT of J&K	
Sub-group C	Dr. Mohammed Ashraf Sheikh, JKAS	Additional Deputy Commissioner, Pulwama, Jammu & Kashmir	Chapter 5: Landslide Monitoring and Forecasting Chapter 6: Regulation and Enforcement Chapter 7: Awareness and Preparedness Chapter 8: Capacity Development (Including Education, Training, and Documentation) Chapter 9: Response
	Shri. Priyan Alex G Rebello, KAS	Assistant Cardamom Settlement Officer, Idukki, Kerala	
	Shri. Vijay Wardhan, IAS	Sub-Divisional Officer (Civil), Himachal Pradesh	
	Shri. Yanthungbemo Kikon	SDO (C), Dimapur, Nagaland	
Sub-group D	Shri Moakumzuk Tzudir	ADC, Mangkolemba, Nagaland	Chapter 10: Research and Development Chapter 11: Implementation of the Guidelines—Preparation of Landslide Management Plans Chapter 12: Summary of Action Points
	Shri. Ankit, IAS	Chief Executive Officer, Z.P. Jalgaon, Maharashtra	
	Shri. Ishant Jaswal, IAS	Sub-Divisional Officer (Civil), Himachal Pradesh	

FEEDBACK AND ASSESSMENTS

FEEDBACK ANALYSIS

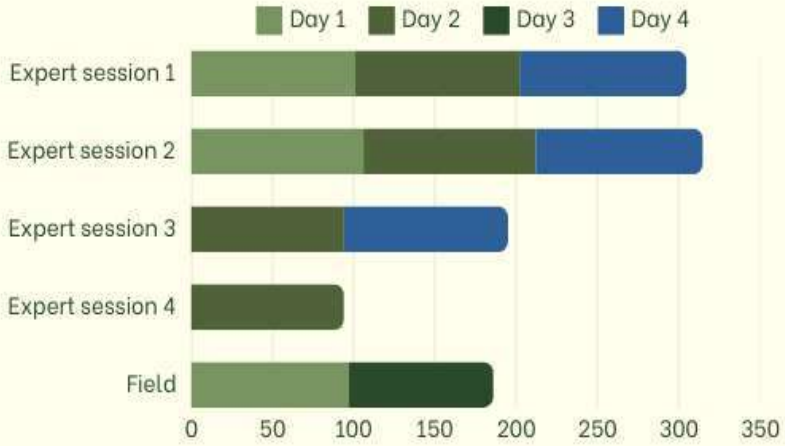
GRAPHS SUMMARIZING THE ANALYSIS OF ATTENDEE FEEDBACK ACROSS THE SESSIONS



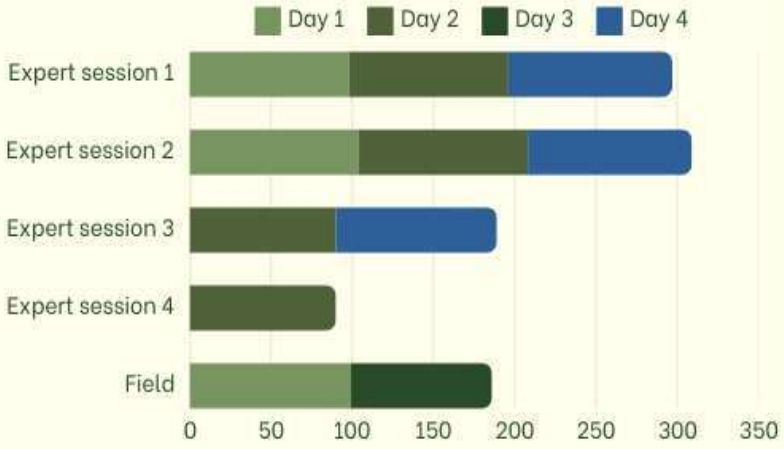
Summary of Averages by Day

- Day 1 emerged as the top-performing day, achieving the highest average ratings for both content and presentation. This success was largely driven by strong performances in Sessions 1 and 2, which were well-received by attendees.
- Day 2 maintained similarly high ratings, with the sessions standing out as a highlight due to its consistently excellent feedback. In contrast,
- Day 3 saw slightly lower average ratings, particularly for the field visits, suggesting variability in participant experiences and indicating areas for improvement in organization and engagement. However,
- Day 4 rebounded with the highest average ratings of all, as all sessions were well-received, showcasing the effectiveness of the content and delivery on the final day. Overall, the feedback highlights the strengths of the program while pointing to opportunities for enhancing field visit experiences.

Percentage of Content Ratings (5-Point Scale)



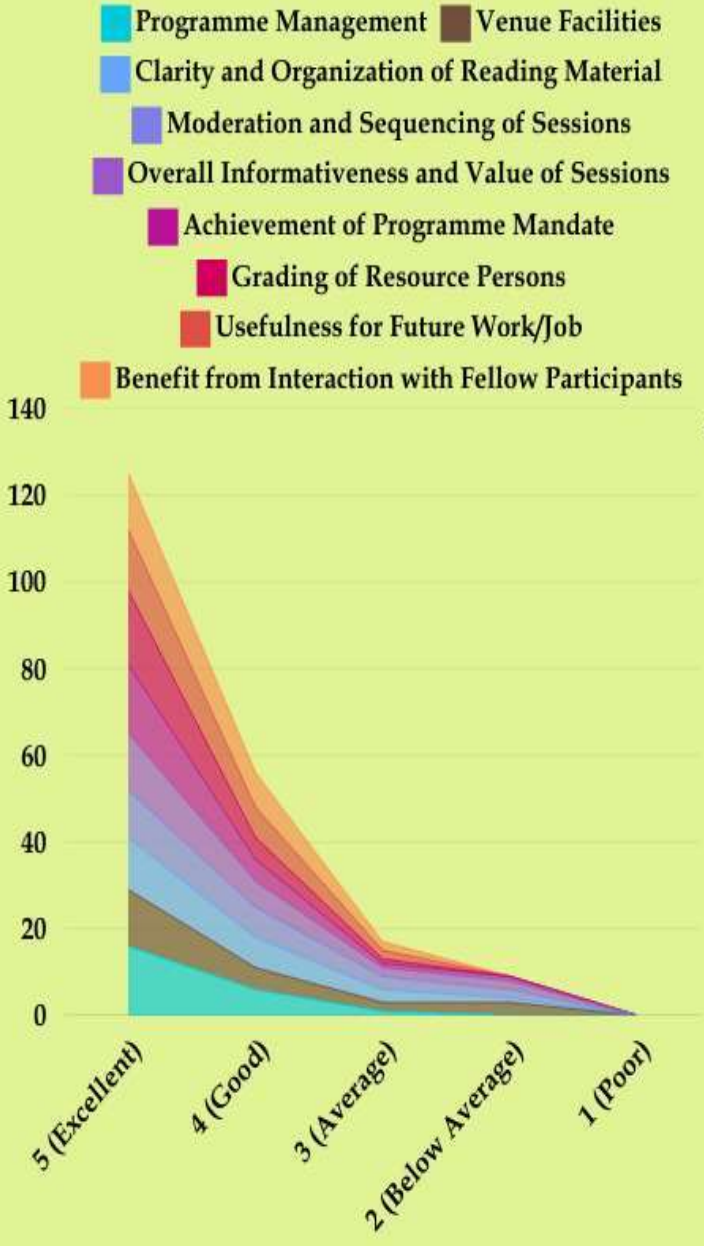
Percentage of Presentation Ratings (5-Point Scale)



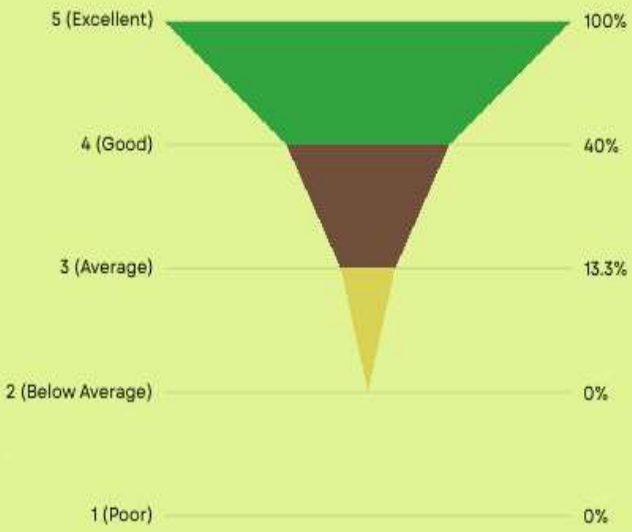
OVER ALL FEEDBACK

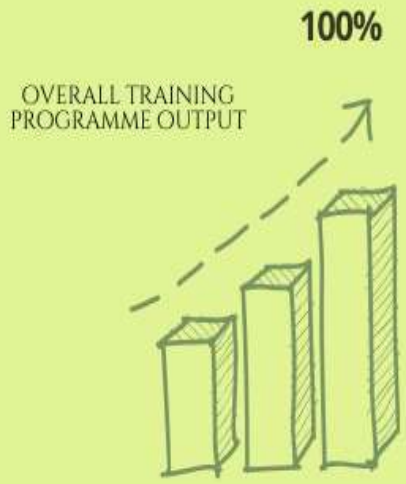
GRAPHS SUMMARIZING ATTENDEE'S OVERALL FEEDBACK OF THE TRAINING

Over all Feedback based on Parameters



Overall Grading of the Programme





Parameter Analysis:

Parameter	Feedback	Analysis
Programme Management	Well-organized and efficient.	Participants appreciated the structured approach and smooth coordination, contributing to the program's success.
Venue Facilities	Appropriate and conducive to learning.	The venue and amenities met participant expectations, providing a comfortable learning environment.
Reading Material	Clear, well-organized, and easy to follow.	High-quality materials enhanced understanding and learning.
Session Moderation/Sequencing	Well-moderated and properly sequenced.	Logical flow of topics and effective moderation ensured participant comprehension.
Session Informativeness/Value	Highly informative and valuable.	Participants found the content relevant and practical, adding significant value to their knowledge.
Programme Mandate Achievement	Successfully achieved its mandate.	The program's objectives were met, fulfilling participant expectations.
Resource Persons	Highly knowledgeable and effective.	Resource person expertise and teaching methods were appreciated, contributing to the program's quality.
Usefulness for Future Work	Useful for future work/job.	Participants felt the knowledge and skills gained would be directly applicable in their professional roles.
Interaction with Participants	Beneficial.	Networking and peer interaction added value and provided new perspectives.

Overall Analysis

The feedback indicates that the program was highly successful and met participant expectations. Key strengths included:

- ✅ **Effective Programme Management:** Smooth coordination and organization.
- ✅ **High-Quality Content:** Clear, informative, and well-structured sessions.
- ✅ **Expert Resource Persons:** Knowledgeable and engaging instructors.
- ✅ **Practical Relevance:** Direct applicability to future work.
- ✅ **Valuable Networking:** Beneficial interactions with peers.

Recommendations for Improvement

While the feedback is largely positive, there are opportunities for further enhancement:

- 🔹 **Enhance Venue Facilities:** Ensure consistent quality of amenities.
- 🔹 **Increase Interactive Sessions:** Incorporate more group activities and discussions.
- 🔹 **Follow-Up Support:** Provide additional resources or follow-up sessions to reinforce learning.

Appendix 1

Table 1: Participant attended the Training Programme

Sl. No	Name of the Participant	Designation	State
1	Dr. Amir Hussain	Chief Executive Officer, Emergency Relief Organisation, Disaster Management	UT of J&K
2	Dr. Mohammed Ashraf Sheikh, JKAS	Additional Deputy Commissioner, Pulwama	Jammu & Kashmir
3	Md. Nadimul Gaffar Siddqui, BPS	Joint Secretary, Disaster Management Department, Patna	Bihar
4	Md. Shafiq, BPS	ADM (Disaster Management), Nalanda	Bihar
5	Mohd Idrees, JKAS	Assistant Commissioner Revenue, Kishtwar	Jammu & Kashmir
6	Ms. Dheenah Dastageer, IAS	Sub-Collector, Berhampur	Odisha
7	Ms. Netra Meti, IAS	Sub-Divisional Officer (Civil)	Himachal Pradesh
8	Rohit Gupta	Additional Deputy Commissioner, Rural Development, Patiala	Punjab
9	Sanket Balwanth, IAS	Sub-Collector, Ponneri	Tamil Nadu
10	Shri. Akhil V Menon, IAS	Sub-Collector, Thrissur	Kerala
11	Shri. Aniket Sachan, IAS	ADM Law and Order, East Singhbhum, Jamshedpur	Jharkhand
12	Shri. Ankit, IAS	Chief Executive Officer, Z.P. Jalgaon	Maharashtra
13	Shri. Ishant Jaswal, IAS	Sub-Divisional Officer (Civil)	Himachal Pradesh
14	Shri. K. Elambahavath, IAS	Collector, Thoothukudi	Tamil Nadu
15	Shri. Moakumzuk Tzudir	ADC, Mangkolemba	Nagaland
16	Shri. O. Anand, IAS	Collector & District Magistrate, SpSR Nellore	Andhra Pradesh
17	Shri. Pakon	ADC, Mon	Nagaland
18	Shri. Priyan Alex G Rebello, KAS	Assistant Cardamom Settlement Officer, Idukki	Kerala
19	Shri. Rajeshwari Pandey, BPS	ADM (Disaster Management), East Champaran	Bihar
20	Shri. S. Dillirao, IAS	Director, Agriculture Department	Andhra Pradesh
21	Shri. Sumit Kumar Thakur, IAS	Sub-Collector, Thiruvalla	Kerala
22	Shri. Vijay Wardhan, IAS	Sub-Divisional Officer (Civil)	Himachal Pradesh
23	Shri. Yanthungbemo Kikon	SDO (C), Dimapur	Nagaland

Appendix 2

		Firm	Purpose	Amount	Payment Status	Source of payment
Item 1	Bill 1	Digital House	Printing	666	PAID	SDMA
	Bill 2	Tandem Reprographics	Printing	6632	PAID	SDMA
	Bill 3	Technoprint	Printing	3600	PAID	SDMA
	Bill 4	Indu System	Printing	3847	PAID	SDMA
	Bill 5	M/s Ajay S R - Voucher	Printing	10000	PENDING	SDMA
Item 2	Bill 1	Sanchi bags	Training Kit	43815	PENDING	SDMA
	Bill 2	Bags Look	Training Kit	70000	PAID	SDMA
	Bill 3	Kasavu Mall	Momento	28174	PENDING	LBSNAA
	Bill 4	Kerala Arts & Craft Village	Momento	39200	PENDING	LBSNAA
	Bill 5	Udaya Spices & dry fruits	Momento	23600	PAID	SDMA
	Bill 6	Sofine	Training Kit	4160	PAID	SDMA
Item 3	Bill 1	Saj group	Training hall	1686577	PENDING	LBSNAA
	Bill 2	MomentMa	Documentation	28800	PENDING	SDMA
Item 4	Bill 1	Greenland travels	Travel	392490	PENDING	LBSNAA
	Bill 2	Cleanex	Travel	8000	PAID	SDMA
	Bill 3	Finch hotel	Field Visit	12600	PAID	SDMA
	Bill 4	Aadaminde Chayakada	Field Visit	890	PAID	SDMA
	Bill 5	Vazhiyorakkada	Field Visit	903	PAID	SDMA
Item 5	Bill 1	IRCTC	Resource person	3037	PAID	SDMA
		Resource person	Honorarium	60000	PAID TO RESOURCE PERSONS	SDMA
GRAND TOTAL				**2426991**		

SDMA	2,80,550
LBSNAA	21,46,441

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