13th JICA FORESTRY WORKSHOP OF FORESTRY PROJECTS IN INDIA

Adapting Together: Community- Driven Solutions for Climate Resilience

Held on 13th – 15th November 2024
At Taj Vivanta, Shillong, Meghalaya

Hosted by

MEGHALAYA BASIN DEVELOPMENT AUTHORITY (MBDA)

Under the auspices of

Project for Community Based Forest Management & Livelihoods Improvement in India

FOREWORD

It was a great pleasure to host the 13th Annual Workshop of JICA-Assisted Forestry Projects in India, in Shillong, Meghalaya. The conference which saw the participation of a range of stakeholders including senior officials, experts, policy makers and practitioners from across the country and beyond, is a culmination of decades of knowledge, experience and expertise which has not only enriched our collective knowledge but will foster continued dialogues and long-term partnerships to address the pressing environmental challenges of our time.

Forests and natural ecosystems play a pivotal role in maintaining ecological balance, supporting livelihoods, and mitigating the effects of climate change. In Meghalaya, we are privileged to steward a rich natural heritage, and projects like the MegLIFE embody our resolve to conserve and sustainably manage these invaluable resources. This workshop provided an invaluable platform to share experiences, lessons, and best practices, particularly in integrating technology, enhancing community participation, and promoting climate resilience.

I extend my gratitude to JICA for their unwavering support towards realizing our vision and for being instrumental in driving these transformative initiatives across India. I commend the Meghalaya Basin Development Authority (MBDA) and the MegLIFE project team for organizing this workshop and creating a space for meaningful exchange and collaboration.

As we reflect on the insights and discussions from this gathering, I am confident that the outcomes will inspire further innovation and cooperation in forestry management and environmental conservation. Let us continue to work together to build a future where people and nature thrive in harmony.

Shri. Sampath Kumar, IAS
Principal Secretary,
Forest and Environment
Government of Meghalaya

PREFACE

The 13th Annual Workshop of JICA-Assisted Forestry Projects in India marks a significant milestone in our collective pursuit of sustainable development while building better responses to the challenges of climate change and strengthening our commitment to sustainable forestry, biodiversity conservation, and community-driven development. As the Project Director of the MegLIFE project, it has been both an honour and a privilege to host this prestigious gathering in Meghalaya, a state endowed with natural beauty, rich natural resources and ecological diversity.

This year's theme, 'Adapting Together: Community-Driven Solutions for Climate Resilience,' reflects the growing recognition of the pivotal role communities play in shaping and sustaining conservation efforts. The workshop provided a platform for practitioners, policymakers, and experts from across India and beyond to come together, share knowledge, and explore innovative approaches to the challenges posed by climate change, resource degradation, and evolving socio-economic dynamics.

From the thoughtful keynote address delivered by the Honorable Governor of Meghalaya to the engaging discussions on spring shed management, carbon markets, and digital innovation, the workshop underscored the importance of collaboration, technology, and community engagement. These deliberations reinforced the need for integrated approaches to natural resource management that align ecological, social, and economic priorities.

I extend my heartfelt gratitude to JICA for their continued support in fostering initiatives that not only conserve nature but also empower communities for climate resilience. I also thank the Meghalaya Basin Development Authority (MBDA) team, as well as all participants and contributors, for their invaluable efforts in making this workshop a success.

As we move forward, let us strive to translate the insights gained into impactful actions, ensuring that our forests and natural ecosystems continue to thrive for generations to come.

Dr. D. Vijay Kumar, IAS
Commissioner & Secretary, Government of Meghalaya,
Project Director, MegLIFE Project

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BACKGROUND

The 13th edition of the Annual Workshop of JICA-Assisted Forestry Projects in India, held from November 13–15, 2024, served as an important platform for collaboration and knowledge sharing among stakeholders dedicated to forestry and biodiversity conservation. Hosted by the Meghalaya Basin Development Authority (MBDA) which implements the MegLIFE project, the event brought together forestry officials from JICA-assisted projects across 10 Indian states. The workshop was further enriched by the participation of representatives from JICA Kenya, the Government of Kenya, and experts in forestry, technology, and community engagement. With forests and biodiversity being critical to India's ecological and economic well-being, this workshop addresses the urgent need to tackle challenges posed by unsustainable anthropogenic activities and the mounting pressures of climate change.

Guided by the overarching goal of nurturing "flourishing sources of nature" that contribute to conservation, climate neutrality, and sustainable resource management, the workshop creates a platform for knowledge exchange and capacity building. It underscores the country’s broader goal and also JICA's commitment to supporting resilient ecosystems while fostering innovation and community-driven solutions. The theme Adapting Together: Community-Driven Solutions for Climate Resilience chosen for the workshop captures this essence.

Over the course of the workshop, discussions revolved around three interconnected themes critical to the success of forestry projects. Climate Change Adaptation and Mitigation focused on strategies to address climate challenges, showcasing successful interventions and their measurable impacts. The theme of Transformative Technology highlighted innovative tools and applications that enhanced decision-making and the effectiveness of project interventions. Lastly, Community Participation for Sustainability emphasized the importance of inclusive approaches, showcasing models of community engagement that leveraged local knowledge to ensure the long-term resilience of ecosystems and the sustainable management of natural resources.

The three-day workshop resulted in practical recommendations that can be adopted by participating projects, in government policies or by other NRM actors and practitioners.

INAUGURAL SESSION

WELCOME AND CONTEXT-SETTING ADDRESS

By Dr. D. Vijay Kumar, IAS, Commissioner and Secretary to Govt. of Meghalaya, and Project Director, MegLIFE

Opening Context

Dr. D. Vijay Kumar, IAS, Commissioner and Secretary, and Project Director of MegLIFE, delivered the welcome address and set the context for the 13th Annual Workshop of JICA-Assisted Forestry Projects in India. He extended a warm welcome to the Chief Guest, His Excellency, the Honourable Governor of Meghalaya, Shri C. H. Vijayashankar, acknowledging the Governor's deep interest in agriculture, forests, and rural development, he remarked on his excellency's extensive travel across Meghalaya and his keen understanding of the state's forests and their connection to livelihoods and also expressed gratitude to Shri D. P. Wahlang, IAS, the Chief Secretary of Meghalaya, for his continued support and guidance in forestry-related issues, as well as to the PCCF, Shri R.S Gill, IFS, and senior officials from the Forest Department.

A Warm Welcome to Delegates

Dr. Kumar welcomed representatives from JICA, including Mr. Eiji Wakamatsu and Mr. Sarin, and delegates from various Indian states, including Himachal Pradesh, Uttarakhand, Odisha, and Tamil Nadu, he also extended special greetings to the team from Kenya, appreciating their efforts to share knowledge and learn from the workshop. Emphasizing the timing of the event, he highlighted that the workshop coincided with Meghalaya's iconic autumn cherry blossoms, a natural phenomenon unique to the region and encouraged attendees to explore Shillong and experience its beauty during this enchanting season.

The Partnership with JICA

Dr. Kumar praised the longstanding partnership between Meghalaya and JICA, emphasizing its contribution to forestry projects and other key sectors such as infrastructure and tourism. He mentioned projects like the Dhubri-Phulbari Bridge, National Highway 100, and JICA's involvement in the Cherry Blossom Festival as examples of this robust collaboration and expressed optimism about deepening this partnership further and highlighted JICA's pivotal role in Meghalaya's development journey.

Forests: A Critical Resource for Meghalaya

Dr. Kumar underscored the significance of Meghalaya's forests, which cover 76% of the state and represent its greatest natural resource and highlighted the challenges posed by development pressures, urbanization, and the need to balance conservation with livelihood opportunities. He referred to the state's cultural heritage of sacred groves, living root bridges, and community-protected forests, which showcase traditional wisdom in forest conservation. However, he noted that these traditions face threats due to modern economic pressures.

Innovative Initiatives in Forestry

He highlighted the state government's strategy to integrate forest conservation with development goals, focusing on promoting eco-tourism and forest-based livelihoods and pointed to specific initiatives, such as creating value chains for forest products like bay leaf, which generate income while preserving biodiversity.

He also introduced Meghalaya's innovative Payment for Ecosystem Services (PES) Program, describing it as the largest such initiative in India that under this program, communities receive ₹15,000 per hectare to conserve forests, he stated that currently, 50,000 hectares have been mapped, and financial incentives are provided to communities who have protected forests for generations. He emphasized the program's success in recognizing the invaluable contributions of communities, particularly in a state where most forests are owned by clans and villages.

Looking Ahead

Dr. Kumar encouraged participants to leverage the workshop as a platform for learning and sharing insights on forestry management, he expressed excitement about the detailed

presentations planned during the workshop, including one on Meghalaya's forestry initiatives, which would showcase the state's innovative practices and emphasized that the workshop was not just an opportunity for the state to share its work but also to learn from the experiences of other states and countries.

Conclusion

Dr. Kumar concluded by reiterating his warm welcome to all delegates and participants. He encouraged everyone to make the most of the workshop and the unique experiences Meghalaya has to offer and expressed his gratitude to the organizers, JICA representatives, and participants for their dedication and enthusiasm, and he looked forward to meaningful discussions over the two-day event. Thanking everyone once again, he wished the workshop great success and extended his best wishes for a productive and enriching experience in Shillong.

ADDRESS BY SHRI EIJI WAKAMATSU, SENIOR REPRESENTATIVE, JICA: KEY HIGHLIGHTS

Introduction

Shri. Eiji Wakamatsu, Senior Representative of JICA, delivered his address during the 13th Annual Workshop of JICA-Assisted Forestry and Natural Resource Management Projects in Shillong. He began by extending his warm greetings to His Excellency, the Honourable Governor of Meghalaya, Shri. C. H. Vijayashankar, Shri. D. P. Wahlang, IAS, Chief Secretary of Meghalaya, Shri R. S. Gill, IFS, PCCF, and Shri. D. Vijay Kumar, IAS, Commissioner and Secretary, and Project Director, MegLIFE. Acknowledging the presence of esteemed dignitaries, including representatives from the Ministry of Environment, Forest, and Climate Change, the Department of Economic Affairs, as well as international delegates from Kenya, Shri Wakamatsu expressed his gratitude for the warm hospitality extended by the people of Meghalaya and the Meghalaya Basin Development Authority.

JICA's Role and Vision

Shri. Wakamatsu elaborated on JICA's mission as the sole Japanese governmental agency responsible for Official Development Assistance (ODA) implementation. He explained that JICA operates as the world's largest bilateral donor agency, with 96 offices globally. He emphasized JICA's commitment to promoting human security and sustainable growth through various instruments, including ODA loans, grants, private finance, technical cooperation, and volunteer programs. Highlighting the significance of the forestry and biodiversity sector, he identified it as a crucial pillar for achieving global goals like the Sustainable Development Goals (SDGs) and the Paris Climate Agreement.

JICA's Contribution to India

Shri. Wakamatsu detailed JICA's long standing relationship with India, which began with its first ODA loan in 1958, he noted that India remains the largest recipient of JICA's ODA loans, with a record commitment of ¥809 billion (approximately ₹44,450 crores) in the last fiscal year, marking the highest annual commitment in JICA's history. JICA's assistance policy in India focuses on sustainable and inclusive growth, encompassing sectors such as urban transport, energy, water, forestry, agriculture, health, and private sector development.

In Meghalaya, JICA has supported 4 ODA projects: one in forestry and natural resource management (NRM) and three in the energy sector, with a cumulative commitment of ₹1,075 crores, he expressed optimism about future collaborations in other sectors to further Meghalaya's development journey.

Achievements in the Forestry Sector

Shri. Wakamatsu highlighted JICA's leadership in India's forestry sector, with 32 ODA loan projects and three technical cooperation projects implemented across 24 states over 3 decades. This has resulted in the reforestation of more than 2.4 million hectares, the establishment of over 20,000 Joint Forest Management Committees, and the support of over 35,000 self-help groups (SHGs), benefiting approximately 7,00,000 people. He emphasized the evolution of JICA's forestry projects, now in their fourth generation, which prioritize climate change mitigation, biodiversity conservation, sustainable forest management, ecosystem services, and livelihoods. These projects incorporate digital transformation and promote carbon stock assessment and carbon credit trading to enhance both monetary benefits and climate resilience.

Focus Areas for Collaboration

Shri. Wakamatsu outlined three key areas for collaboration going forward:

1. **Leveraging Japanese Expertise and Technology**: JICA aims to integrate Japanese knowledge and innovative technologies into its project, for example, the Chisan-Chisui approach in Uttarakhand combines landslide protection with forest restoration, and the Satoyama initiative in West Bengal promotes participatory forest management outside protected areas.

2. **Dynamic Stakeholder Collaboration:** He highlighted the importance of fostering partnerships with research institutions, private sector entities, and civil society organizations. And joint research bethaven Indian and Japanese institutions has already shown promising results in states like Tamil Nadu, Rajasthan, and West Bengal adding that expanding these collaborations can yield mutual benefits for India, Japan, and the global community.

3. **Strengthening Partnerships for Knowledge Sharing:** He also emphasized India's potential to share its forestry expertise with other countries. citing examples from Himachal Pradesh, where JICA facilitated knowledge exchange with counterparts from Sri Lanka and Nepal on women's economic empowerment. He encouraged similar partnerships, including trilateral collaborations with Kenya, India, and Japan, to address shared challenges and develop innovative solutions.

Themes of the Workshop

Shri. Wakamatsu underscored the importance of the workshop's three themes:

1. Climate Change Adaptation and Mitigation
2. Transformative Technology for Natural Resource Management
3. Community Participation for Sustainability

He expressed confidence that the discussions and presentations during the workshop would yield actionable recommendations, not only for JICA-assisted projects but for India's forestry and NRM sectors at large.

Concluding Remarks

In his conclusion, Shri. Wakamatsu reiterated JICA's commitment to sustainability and replicability in project implementation and highlighted the value of forums like the National Forestry Workshop in fostering cross-learning and addressing common challenges. He urged participants to prioritize the sustainability of interventions and the scalability of successful models during their deliberations and thanked the Meghalaya Basin Development Authority and all participants for their dedication and conveyed his best wishes for a productive and impactful workshop.

ADDRESS SUMMARY BY CHIEF SECRETARY SHRI. D. P. WAHLANG, IAS, CHIEF SECRETARY OF MEGHALAYA

Welcome and Context

Shri. D.P. Wahlang, IAS, Chief secretary to the state welcomed all dignitaries and participants to Meghalaya, known as the "Land of 1000 Sacred Groves," highlighting its unique identity as home to Asia's cleanest village and the world's wettest place. He expressed gratitude to JICA for organizing this significant workshop in Shillong, a city celebrated for its natural beauty and rich biodiversity.

Significance of Forestry and Natural Resources

Shri. Wahlang underscored the vital role of forests not just for resource extraction but also for their critical ecosystem services, which form the foundation of socio-economic development. He emphasized that:

- Meghalaya's forest cover is an impressive 76%, far exceeding the national average of 23.6%.
- The state's high forest cover has earned recognition and awards through the Finance Commission for its contributions to climate action and sustainable resource management.

Role of Forests in Climate Change Mitigation

Highlighting the role of forests as major terrestrial carbon sinks, Shri Wahlang noted that they absorb approximately 2.6 billion metric tons of CO_2 annually.

- India's forest carbon stock, estimated at 7,204 million tons, plays a crucial role in global climate change mitigation efforts.
- Meghalaya has incorporated carbon sequestration strategies into its forest and climate initiatives, making significant contributions to combating climate change.

Community-Centric Approach

Shri. Wahlang emphasized the importance of involving communities in forest conservation efforts. He cited successful initiatives such as:

- **MegLIFE:** A project supporting sustainable development and resilience through forest conservation.
- **Payment for Ecosystem Services (PES):** A program incentivizing community for managing ecosystems effectively.

He also highlighted traditional community-led conservation practices, such as the preservation of Sacred Groves and Living Root Bridges, which showcase self-sustained and culturally rooted environmental stewardship.

Economic Potential

Shri. Wahlang discussed the economic value of sustainable forest management, emphasizing its potential to generate significant revenue through:

- Non-timber forest products (NTFPs).
- Contributions to water and flood management.
- The emerging bioeconomy, which offers immense opportunities for economic growth.

Acknowledgment of JICA

He praised JICA for its efficient collaboration and prompt response in supporting Meghalaya's initiatives. He acknowledged JICA contributions to projects spanning infrastructure and forestry and expressed gratitude for the ongoing partnership in advancing the state's development goals.

Closing Remarks

Shri. Wahlang encouraged participants to share valuable insights and actionable recommendations during the workshop. He assured that the state would take timely action on the recommendations to ensure sustained progress in forestry and natural resource management.

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ADDRESS BY THE CHIEF GUEST, THE HONOURABLE GOVERNOR OF MEGHALAYA, SHRI. C. H. VIJAYASHANKAR

Opening Remarks

His excellency, the Governor of Meghalaya, Shri C. H. Vijayashankar, delivered the address at the 13th Annual Workshop of JICA-Assisted Forestry Projects in India by extending a warm welcome to distinguished guests, representatives from JICA, project leaders, and participants from across India and the world. He acknowledged the valuable speeches given earlier by Shri Vijay Kumar, Shri. Eiji Wakamatsu, Senior Representative of JICA, and Shri, D. P. Wahlang, Chief Secretary of Meghalaya, expressed his gratitude to the organizing committee and emphasized the importance of addressing critical forestry issues during the workshop.

The Importance of Forests

His excellency began his address by underlining the fundamental role of forests in sustaining life on Earth and highlighted the importance of forests in maintaining ecological balance, regulating the water table, providing pure water, and preserving soil fertility. He stressed that forests are essential not only for environmental health but also for the well-being of future generations. However, he pointed out that achieving sustainable forest management requires tackling pressing challenges, such as monoculture, the preservation of native and endangered species, the promotion of medicinal plants, and expanding afforestation to non-forest areas.

Action Plan for Sustainable Forestry

The Governor proposed a five-point action plan to address these challenges:

1. Mitigate the adverse effects of monoculture by embracing biodiversity in plantations.
2. Prioritize the conservation and cultivation of native tree species.
3. Develop strategies to protect and restore endangered tree species.
4. Promote research, cultivation, and sustainable use of medicinal plants.
5. Expand forest cover by implementing greening initiatives in non-forest areas.

He encouraged the participants to deliberate on these issues during the workshop and develop actionable strategies for implementation across states and regions.

Key Issues in Forest Management

1. Monoculture Plantations and Ecological Imbalances

His excellency raised concerns over the widespread practice of monoculture plantations, which disrupt ecological balance and undermine biodiversity. Citing Meghalaya as an example, he noted that 50–60% of plantations in the state are dominated by pine trees, which negatively impact local ecosystems and urged stakeholders to adopt mixed-species plantations to restore ecological harmony and avoid the pitfalls of monoculture.

2. Prioritizing Native Species

Shri. Vijayashankar also emphasized the critical role of native species in maintaining ecological stability. While acknowledging the utility of non-native species—up to 30% in some cases—he advocated prioritizing native species in afforestation efforts. Native trees, he explained, are vital for sustaining biodiversity and ecological integrity, making their conservation a key focus for forestry initiatives.

3. Protecting Endangered Species

He highlighted the alarming decline of native tree species across the country, noting that in some states, over 50% of indigenous species are critically endangered or no longer seen in their natural habitats. He called for the identification and conservation of endangered species in Meghalaya and across India, urging the creation of comprehensive plans to ensure their survival and restoration.

4. Harnessing Medicinal Plants

Describing Meghalaya as a hub for medicinal plants, the Governor emphasized the state's potential to lead conservation and sustainable utilization of its rich biodiversity and called for the documentation, cultivation, and preservation of medicinal plants, stressing the need to safeguard the associated intellectual property rights and promote research in this domain.

5. Afforestation in non-Forest Areas

He also noted that India's forest cover is currently around 20%, significantly below the target of 33% necessary to maintain ecological balance and stressed the need for expanding afforestation efforts to non-forest areas, which constitute 70% of the country's land. By leveraging these areas for greening initiatives, he argued, India could significantly increase its forest cover while promoting ecological sustainability.

Commitment to Collaboration and Outcomes

The Governor expressed his commitment to the workshop's outcomes and assured participants that their recommendations would be given serious consideration in policymaking and planning for Meghalaya. He urged participants to work collectively to devise innovative solutions to pressing forestry challenges, emphasizing the importance of collaboration among stakeholders. While expressing regret that his other commitments would not allow him to attend the entire workshop, he assured that its conclusions would inform future initiatives for forest management in the state.

Conclusion

In his concluding remarks, Shri. Vijayashankar reiterated the critical role of forests in sustaining ecological and economic health. He expressed confidence that the workshop would generate meaningful solutions and foster collaboration among stakeholders. The Governor extended his gratitude to the JICA representatives, organizing committee, and all participants for their dedication to sustainable forestry, wishing the event great success.

ADDRESS BY SHRI. R.S. GILL, IFS, PRINCIPAL CHIEF CONSERVATOR OF FORESTS & HEAD OF FOREST FORCE, MEGHALAYA

Shri. R.S. Gill, IFS, Principal Chief Conservator of Forests and Head of Forest Force, Meghalaya, began his address by extending warm greetings to His Excellency Shri. C.H. Vijayashankar, Honourable Governor of Meghalaya, Shri. D.P. Wahlang, Chief Secretary, Dr. Vijay Kumar, IAS, Commissioner and Secretary, representatives from JICA, and distinguished colleagues from forest departments, state governments, and international delegations. Acknowledging the privilege of addressing the esteemed gathering, Shri. Gill described it as one of the greatest honors of his career spanning over three and a half decades in the Indian Forest Service. He also conveyed his appreciation to the Chief Secretary of Meghalaya, Shri. D.P. Wahlang, IAS, for his invaluable guidance and steadfast support for forestry and environmental initiatives in the state.

Human Imperfection and Lessons from Nature

He reflected on humanity's imperfections in managing and restoring nature, drawing parallels with engineering practices, he highlighted how humans often fail to replicate the resilience and adaptability inherent in nature and used the example of grass, which withstands immense pressure yet springs back effortlessly, contrasting this with human-engineered structures that fail despite meticulous calculations. He emphasized the importance of humility and perpetual learning in addressing environmental challenges, regardless of experience or qualifications, and urged his peers to approach forestry and conservation with an open mind.

Challenges in Meghalaya's Natural Resource Management

Focusing on Meghalaya's unique natural endowments, he pointed out the paradox of abundant rainfall and rich soil coexisting with unsustainable land management practices and cited the example of Sohra (Cherrapunjee), globally renowned for its rainfall but visibly degraded due to

topsoil erosion and a lack of effective water retention measures. He expressed concern over the prevalence of monoculture plantations, including pine in the Khasi Hills and teak in the Garo Hills, which often disrupt ecological balance and harm biodiversity.

He explained that most of Meghalaya's plantations are privately owned, with the state intervening to assist landowners in raising forests. However, the focus on uniform species for easier monitoring and standardization has inadvertently caused ecological imbalances and noted that monocultures such as teak fail to support wildlife accustomed to the diverse ecosystems of natural forests, leading to habitat and food shortages.

Ecology and Livelihood Balance

Highlighting the need to harmonize ecological preservation with livelihood generation, he stressed the importance of engaging communities in forest management and commended initiatives like the Payment for Ecosystem Services (PES) program, which incentivizes communities to preserve standing forests instead of felling trees for economic gain by directly compensating landowners for maintaining their forests, the PES program represents a cost-effective and sustainable solution that benefits both nature and livelihoods.

He emphasized that the success of Meghalaya's Forest management efforts lies in empowering local communities as custodians of their natural heritage, sacred groves and living root bridges are examples of Meghalaya's tradition of community-led conservation, which must be integrated into contemporary forestry practices.

Commitment to Preserve Meghalaya's Natural Heritage

Shri. Gill reaffirmed his commitment, along with his team of forest officials, to safeguarding Meghalaya's natural habitat, preventing the spread of invasive species, and preserving the state's rich biodiversity and expressed determination to utilize his experience and wisdom to contribute meaningfully to this cause, ensuring Meghalaya's forests remain a source of pride and ecological resilience.

He expressed deep gratitude to JICA for its unwavering support and collaboration, reflecting on his personal experience during a training program in Japan, he praised the Japanese people for their courtesy and professionalism and admired JICA's contributions to India's development, particularly in the forestry sector, and expressed hope for continued partnership in promoting sustainable natural resource management.

Conclusion

In his concluding remarks, Shri. Gill thanked the Honourable Governor for his inspiring presence and guidance and extended his best wishes to all participants for a successful workshop, expressing optimism that the discussions and interactions over the two days would enhance understanding and collaboration in forestry management and also took a moment to reconnect with colleagues from other states, reminiscing about shared experiences and expressing enthusiasm for future cooperation.

Shri. Gill closed his address by reaffirming his dedication to Meghalaya's forests and inviting all participants to contribute to the collective mission of preserving and enhancing the country's natural heritage.

VOTE OF THANKS BY SHRI. GUNANKA DB, IFS ADDITIONAL PROJECT DIRECTOR, MEGLIFE

Shri. Gunanka DB, IFS, Additional Project Director MegLIFE, began by acknowledging the time constraints and expressing his heartfelt gratitude to all attendees for their presence and participation in the workshop. He emphasized the importance of the collective efforts being made for forestry and environmental conservation.

He extended his appreciation to the Honorable Governor of Meghalaya, Shri. C.H. Vijayashankar, for gracing the occasion with his esteemed presence and providing insightful guidance that set clear and specific goals for the workshop. Shri Gunanka also expressed his gratitude to the Chief Secretary of Meghalaya, Shri. D.P. Wahlang, IAS for his valuable insights and unwavering support toward forestry initiatives in the state.

Shri. Gunanka also acknowledged the Principal Chief Conservator of Forests (PCCF) Shri. RS Gill, IFS and senior officials for sharing their experiences and providing critical inputs to enhance the discussions during the workshop. He also recognized the significant contributions of representatives from JICA, including Shri. Eiji Wakamatsu, Senior Representative of JICA and Shri. Vineeth Sarin, Chief Development Officer of JICA, for their collaboration and instrumental role in advancing forestry and environmental projects in Meghalaya.

Special mention was made of Shri. Rajesh, IFS Inspector General from the Ministry of Environment Forest and Climate Change (MoEFCC), for his active involvement and dedication to guiding the discussions over the course of the workshop. Shri. Gunanka also commended Dr. D. Vijay Kumar, IAS Commissioner & Secretary, and Project Director of MegLIFE, for effectively setting the tone and providing the necessary context to initiate meaningful conversations and deliberations.

In addition, he expressed his gratitude to senior state officials and representatives from STMN institutions, the Ministry of Environment Forest and Climate Change, and the Ministry of Finance (Department of Economic Affairs). Shri. Gunanka also extended his appreciation to JICA officials from both headquarters and Kenya, as well as Kenyan forestry officials, for their contributions to the event. Furthermore, he acknowledged the efforts of experts from private institutions, agencies, and civil society organizations for their critical role in advancing sustainable forestry and conservation initiatives.

In closing, Shri. Gunanka expressed his hope for enriching discussions and meaningful outcomes over the course of the workshop. He thanked all participants for their dedication and contributions, underscoring their collective commitment to advancing forestry and environmental conservation efforts in Meghalaya and beyond.

DAY 1

13TH NOVEMBER 2024

OPENING PRESENTATION

SHRI. VINEET SARIN, CHIEF DEVELOPMENT OPERATIONS, JICA INDIA

Introduction

Shri. Vineet Sarin began by expressing gratitude to the Meghalaya Basin Development Authority (MBDA), particularly Dr. D Vijay Kumar, IAS. Shri. Gunanka DB, IFS and their team for flawlessly organizing the workshop. He extended a warm welcome to senior officials from various states, acknowledging their integral contributions to the JICA Forestry "Arawanai" family, noting the cooperation enriched through long-standing associations.

Historical Overview of JICA's Forestry Sector Engagement

Shri. Sarin highlighted JICA's extensive history in the forestry sector, which began in 1991 with a mass afforestation project in Rajasthan. Over 33 years, JICA has supported 35 projects, including 32 ODA loans and 3 technical cooperation projects. Of the 32 ODA loans, 31 were state-specific, with Rajasthan having received the most, followed by Tamil Nadu, Gujarat, and other states like Karnataka, Punjab, Odisha, Himachal Pradesh, and Meghalaya. The national-level project implemented by the Ministry of Environment, Forest and Climate Change (MoEFCC) supported 13 states, focusing on infrastructure development in State Forest Training Institutes (SFTIs) and colleges.

JICA has also provided technical cooperation projects for capacity building, natural disaster management in forest areas, and bamboo use promotion in the Northeast. Cumulative assistance has reached 17,200 crores INR, making JICA the largest donor to India's forestry sector for over 15 years.

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Generational Evolution of JICA Forestry Projects, JICA's forestry projects were classified into four generations:

- First Generation (1991-1998): Focused on afforestation and soil conservation.
- Second Generation (2002-2013): Introduced participatory management through Joint Forest Management (JFM) programs. Projects adopted a phased approach of preparation, implementation, and consolidation.
- Third Generation (2014-2019): Added sustainable community development and biodiversity conservation activities.
- Fourth Generation (2019 onwards): Emphasized alignment with climate change measures, urban forestry, supply chain development, and digital transformation.

Key Outcomes and Value Additions JICA-supported projects have:

- Enhanced 2.5 million hectares of forest cover, leading to improved agricultural productivity through hydrological improvements.
- Established over 20,000 Village Forest Committees (VFCs), promoting socio-economic development and gender empowerment through 35,000 self-help groups (SHGs) benefiting over 700,000 people.
- Facilitated disaster management, agroforestry, biodiversity conservation, and sustainable livelihoods in forest-dependent communities.
- Supported modern nursery operations, GIS-MIS technology integration, and inter-sectoral convergence for sustainability.

Challenges and Solutions in Project Implementation

Shri. Sarin discussed challenges faced, including the need for sustainability and replicability. He emphasized that JICA projects act as catalysts, kick-starting processes that states must sustain and upscale independently. He shared the success of Tamil Nadu's community development programs, Odisha's society-mode project implementation, and GIS innovations as exemplary models for other states.

New Directions and Recommendations

- Addressing serious development issues aligned with state, national, and global priorities.
- Mainstreaming forestry and biodiversity into larger SDG and Paris Agreement goals.
- Leveraging Japanese technology, such as disaster management designs in Uttarakhand and collaborative research with states like Tamil Nadu and Rajasthan.
- Enhancing digital transformation through GIS-MIS integration, forest health monitoring, and carbon stock assessments.
- Engaging the private sector, including Japanese firms, in forestry and biodiversity initiatives.

Workshop Themes and Expectations Future JICA projects will focus on

The three themes of the workshop—climate change adaptation, digital transformation, and community participation—were emphasized as crucial for sustainability. Shri. Sarin encouraged participants to focus on replicability, scalability, and inter-sectoral linkages, particularly through micro-planning and bilingual documentation.

Closing Remarks

In conclusion, Shri. Sarin reiterated JICA's commitment to India's forestry sector and encouraged states to view JICA projects as a starting point for long-term initiatives. He stressed the need for continuous innovation, capacity building, and collaborative partnerships to address evolving environmental challenges.

"We have miles and miles to cover before we sleep," Shri. Sarin concluded, emphasizing the collective responsibility to ensure sustainable forestry and natural resource management.

PRESENTATION BY

BY SHRI. GUNANKA DB, IFS, ADDITIONAL PROJECT DIRECTOR, MEGLIFE

Introduction and Context

Shri. Gunanka DB, IFS, began his presentation by extending his gratitude to JICA representatives and other dignitaries for their valuable contributions in setting the expectations for the workshop. He expressed his appreciation for the opportunity to showcase the progress and innovations of the MegLIFE project, a community-centric initiative addressing complex governance and environmental challenges in Meghalaya.

Unique Features of Meghalaya

He touched upon Meghalaya being a unique State in its governance and ecological structure, with nearly 99% of the state's land coming under the Sixth Schedule of the Constitution. This framework ensures that land ownership lies predominantly with communities or individuals, presenting both opportunities and challenges for implementing projects like MegLIFE. While the state boasts an impressive 76% forest cover, over 800 square kilometers of forest degradation in the last decade highlights a critical challenge to sustainability. Furthermore, the absence of a formal Panchayat system has created governance gaps at the village level, leading to community apprehension about government-led interventions.

Key Challenges

The project has faced several challenges due to the unique governance and geographic features of Meghalaya.

1. **Community Ownership and Resistance**: While community ownership fosters local involvement, it also contributes to higher degradation rates due to unclear land ownership boundaries. Many communities have resisted new projects, citing historical exclusions from similar initiatives.

2. **Infrastructure and Accessibility:** Villages in Meghalaya are highly dispersed and often become inaccessible during monsoon seasons. This has significantly hampered project implementation in remote areas.

3. **Governance Gaps:** The lack of a formal governance system at the village level complicates the execution of structured initiatives, as traditional governance structures are not always equipped to handle large-scale interventions.

4. **Data and Human Resource Constraints:** The absence of baseline data, such as village boundaries and traditional maps, has hindered effective planning. Additionally, limited human resources and technical capacity at the grassroots level have posed challenges in scaling up interventions.

Innovative Approaches Adopted by MegLIFE

To address these challenges, the MegLIFE project adopted innovative strategies that place communities at the forefront of decision-making and implementation.

1. **Community-Centric Approach**: Communities were engaged not as mere stakeholders but as primary drivers of the project. Local youth were trained as Village Community Facilitators (VCFs), enabling them to manage community nurseries, undertake GPS mapping, and collect resource data. This approach empowered communities to take ownership of interventions.
2. **Technology Integration:** Advanced technologies such as UAVs, GIS, and mobile applications were employed to overcome challenges related to mapping, monitoring, and data collection. A State Geo-Portal was created, consolidating over 500 datasets to support evidence-based planning and analysis.

3. **Flexibility and Convergence:** The flexibility offered by JICA allowed the seamless integration of diverse interventions such as Springshed management and infrastructure development (e.g., community halls). By converging multiple funding sources, the project maximized its impact while ensuring resource optimization.
4. **Capacity Building:** A practical apprenticeship program for fresh graduates was introduced, providing training in project management, GIS operations, and UAV technologies. Platforms like Karma Yogi were leveraged for continuous staff skill enhancement and professional development.

Notable Achievements

The MegLIFE project has delivered significant results across forestry, agroforestry, water conservation, and governance systems.

1. **Forestry and Agroforestry:** The project developed over 11 agroforestry models in collaboration with communities and established 430 community nurseries with an impressive 85% sapling survival rate. These models have supported sustainable livelihoods and enhanced ecological resilience.
2. **Water and Soil Conservation:** A major achievement was the mapping of 55,000 springs across the state. Springshed management techniques were implemented to promote sustainable water use, complemented by soil conservation measures such as contour planting with nitrogen-fixing plants.
3. **Village Data and Governance:** Over 4,200 village boundaries were mapped, addressing long-standing governance gaps. This initiative has provided a foundation for better resource management and planning at the local level.
4. **Monitoring and Evaluation**: A dynamic MIS system was created to enable real-time monitoring, financial tracking, and evaluation of project activities. This system has been instrumental in tracking plantation survival rates, procurement processes, and financial transactions with transparency and accuracy.
5. **Awards and Recognition:** The project's achievements have been widely recognized. Project villages received the prestigious National Water Award for three consecutive years, while the GIS and UAV teams earned accolades for their innovative applications in resource and environmental management.

Impact and Vision

The MegLIFE project has demonstrated that a community-led, technology-driven approach can effectively address the critical governance and environmental challenges in Meghalaya. By combining traditional knowledge with modern technologies, the project has created a replicable model for sustainable development.

Shri. Gunanka concluded his presentation by emphasizing the importance of continued collaboration and recognizing community efforts as the cornerstone of the project's success. He called for sustained engagement and support to build on the achievements of the MegLIFE initiative and to inspire similar efforts in other regions.

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THEMATIC SESSIONS

TECHNICAL SESSION 1: CLIMATE CHANGE ADAPTATION AND MITIGATION

Theme 1- Holistic Approach and Innovations for Ensuring Source Sustainability

PRESENTATION ON HOLISTIC APPROACH TO SPRINGSHED MANAGEMENT

By Shri. Abhishek Likam, Team Leader, CHIRAG

Opening Remarks

Shri. Abhishek Likam, began his address by drawing attention to a pressing health concern in Uttarakhand, where nearly 60% of women above the age of 40 visiting hospitals suffer from a prolapsed uterus and elaborated that this condition is largely a result of the physically demanding task of fetching water across steep gradients.

This reality underscores the urgent need for sustainable management of Himalayan springs to ensure a perennial flow of groundwater, which would alleviate such burdens and improve overall quality of life in the region.

Phases of Springshed Management

He described a three-step approach to springshed management, emphasizing a systematic and community-driven methodology. The planning phase, he explained, focused on prioritizing communities most in need of water resources as this phase involved engaging communities through consultations to foster awareness and ownership of interventions while ensuring resource allocation for impactful and sustainable transformations.

In the technical investigations phase, he shared that the focus was on studying geological formations to understand subsurface water flows and aquifer saturation, he also highlighted the importance of analyzing vegetative patterns to examine the relationship between biomass and water and further added that scientific approaches were adopted to observe natural patterns, enabling interventions that align with the ecosystem's natural processes.

Finally, the implementation and monitoring phase, he noted, involved designing interventions that catered to long-term community priorities such as sanitation, agriculture, and tourism. He underscored the role of community engagement in monitoring and evaluation, equipping local stakeholders with the skills to conduct hydrological investigations independently.

Key Insights from Field Studies

Shri. Likam elaborated on the valuable insights gained through field studies. He emphasized the importance of understanding geology and vegetation, acknowledging the diverse properties of rocks and plant species in conserving water. He further highlighted efforts to build community capacity, enabling local stakeholders to independently handle instrumentation and conduct hydrological assessments. He also stressed the intricacy of the Himalayan ecosystems and warned against oversimplifying these dynamics, which can lead to unintended consequences such as landslides.

Challenges in Springshed Management

He candidly addressed several challenges faced in Springshed management and identified policy limitations as a major hurdle, citing difficulties in working within reserved forest areas due to regulatory restrictions and further added that infrastructure developments, such as road construction, often disrupt aquifers and spring systems, exacerbating the issue.

Instrumentation gaps, he explained, were another significant challenge and noted that limited weather stations and inadequate data impede effective planning, while the high variability in terrain requires precise and localized instrumentation.

Sustainability concerns were also raised, with Shri. Likam calling for policies that promote long-term groundwater management and soil conservation and emphasized the need for cross-sector collaboration to address interconnected challenges holistically and effectively.

Success Through Collaboration

Shri. Likam highlighted the transformative power of partnerships in driving success while sharing that over 6,000 springs were treated in just four years through collaborative efforts, compared to only 715 springs treated in the previous 16 years and acknowledged contributions to the MegLIFE project, which benefited from technical expertise in soil and water conservation as well as capacity building initiatives.

Recommendations for Effective Management

He offered several recommendations for improving Springshed management, further he emphasized the need for a balanced approach that equally prioritizes livelihoods, ecosystem management, benefit sharing, and long-term monitoring and cautioned against oversimplifying the complexities of Himalayan ecosystems, stressing the importance of designing interventions that respect these intricacies.

He further advocated for empowering communities with the knowledge and tools required to sustain interventions for decades and further strengthening cross-sector synergies, including public-private partnerships, was another key recommendation to ensure the scalability of initiatives.

Conclusion

Shri. Likam concluded by emphasizing the importance of patience and long-term thinking when working with nature and advocated for sustainable solutions over quick fixes and expressed satisfaction with the progress made in spring shed management initiatives and ended his address by reiterating the importance of empowering communities to take ownership of these efforts, ensuring their success and sustainability for generations to come.

PRESENTATION ON ISSUES AND CHALLENGES IN WETLAND MANAGEMENT FOR CLIMATE CHANGE ADAPTATION

By Shri. Saurabh Gupta, APCCF, Punjab Forest Department

Introduction: Context and Importance of Wetlands

Shri. Saurabh Gupta, Additional Principal Chief Conservator of Forest, Punjab, began by highlighting the historical significance of Punjab as the "Land of Five Rivers," a title that now reflects only three rivers—Sutlej, Beas, and Ravi—as Jhelum and Indus have become part of Pakistan. It was emphasized that wetlands play an essential role in Punjab's ecological balance, primarily sustained by surface water systems such as rivers, canals, and dams and that these wetlands not only support biodiversity but also serve as critical ecosystems for climate change adaptation.

Key Highlights on Wetlands in Punjab

He also elaborated on the geographical spread of wetlands in Punjab, stating that the state is home to 6,430 wetlands covering approximately 86,000 hectares, accounting for 1.71% of its total geographical area and Punjab ranks second only to Uttar Pradesh in the number of Ramsar Sites, boasting six wetlands of international importance, including Harike Wetland, Keshopur-Miani, Ropar, and Nangal.

He further detailed unique conservation areas, such as the Harike Wetland, which hosts 70,000–80,000 migratory birds annually but faces severe pollution from industrial waste and Keshopur-Miani was noted as India's first community reserve, famed for its migratory birds and lotus blooms. Special mention was made of the Beas Conservation Reserve, where the entire river stretch from Harike to Talwara has been designated for conserving flagship species such as the gharial, which was successfully reintroduced after 50–60 years, and the critically endangered Indus River Dolphin, with only 8–10 individuals left in India.

Challenges in Wetland Management

He also outlined the numerous challenges in wetland management, and Environmental degradation was a primary concern, with pollution from industrial and agricultural activities, soil erosion, and sedimentation from torrential rains, as well as encroachment and sand mining, affecting wetland health. Climate change was another significant factor, with erratic rainfall patterns and reduced water levels due to overuse and changing weather conditions exacerbating the issue.

He also emphasized biodiversity threats, including weed infestations altering habitats, poaching, and habitat destruction and added Governance issues were another critical challenge, as the complexity of managing wetlands on private lands and unclear jurisdictional boundaries between forest and water departments often hampered effective management.

Interventions and Initiatives

Shri. Gupta shared the integrated approach to wetland conservation, focusing on habitat improvement through measures such as weed removal, desiltation, and community-led management and highlighted the formation of stakeholder groups, such as “Mitra” groups (e.g., Water Mitras and Dolphin Mitras), to engage local communities in conservation efforts.

Community engagement was another cornerstone of the state’s efforts, with programs promoting awareness and participation through CEPA guidelines (Communicate, Educate, Participate, and Awareness). Additionally, sustainable tourism initiatives were developed around wetlands to create eco-tourism models that benefit local communities and promote conservation.

Punjab's innovative mapping and monitoring efforts were emphasized, including being the first state to verify all wetlands above 2.5 hectares for the National Wetland Atlas. He also highlighted that the development of Wetland Health Cards to assess pollution levels and other parameters was a significant achievement and had identified 40 wetlands for conservation actions supported by Corporate Social Responsibility (CSR) initiatives, showcasing a unique model for funding wetland management efforts.

Unique Features and Success Stories

He celebrated several success stories, including the reintroduction and thriving population of gharials in the Beas River and discussed the state’s ongoing efforts to conserve the critically endangered Indus River Dolphin, despite limited cross-border cooperation with Pakistan.

Innovative work combining engineering and vegetative measures for habitat restoration and pollution control was also highlighted, showcasing the state's forward-thinking approach to conservation.

Way Forward

He recommended replicating Punjab's successful models to inspire similar strategies in other states and stressed the importance of leveraging international collaboration with organizations such as WWF to address cross-border conservation challenges effectively.

He also called for the development of wetland-specific legislation and policies to clarify jurisdictional issues and provide robust implementation mechanisms for private and communal wetland management. Emphasizing the need for technological integration, he advocated for advanced mapping techniques and real-time monitoring systems to enhance the effectiveness of wetland management initiatives.

Closing Remarks

The session concluded with an emphasis on the ecological, cultural, and economic significance of wetlands in Punjab. The proactive conservation efforts by the state, including community reserves, wetland mapping, and CSR-supported models, were presented as exemplary measures for addressing climate change challenges. Participants urged for increased collaboration, both nationally and internationally, to tackle pressing issues in wetland management and ensure sustainable conservation outcomes.

Theme 2 - Unlocking Private Lands for Forestry

PRESENTATION ON IDENTIFICATION AND ACTION OF CREATING CARBON SINKS AND LINKAGE WITH CARBON MARKETS

By Shri. Harshad Naik & Shri. Hrishikesh Kunte, BCG Consulting

Opening Remarks

Shri. Harshad Naik & Shri. Hrishikesh Kunte's presentation began with expressing gratitude to MBDA and MegLIFE for organizing the event and emphasized the growing need to leverage technology for climate change mitigation. Drawing inspiration from the Agri Stack and Health Stack initiatives, they

introduced the concept of a Digital Forest Stack to unlock value in the forestry sector and establish strong linkages with carbon credit markets.

Objectives of a Digital Forest Stack

Shri. Naik & Shri. Kunte elaborated on the primary objectives of the Digital Forest Stack. First, they explained the goal of unlocking forestry data by utilizing existing datasets to create value for stakeholders such as governments, communities, and private entities. They emphasized improving the quality and efficiency of forestry services to better serve these groups. Additionally, they highlighted fostering innovation within the forestry ecosystem by enabling private sector and startup involvement in developing value-added services. Finally, they stressed the importance of enhancing accountability by ensuring transparency in forestry interventions and initiatives.

Key Stakeholders and Use Cases

They outlined the diverse use cases and benefits for key stakeholders. For central and state governments, they outlined how GIS-based systems can monitor forest cover, agroforestry, and plantation activities, while ecosystem monitoring can assess the impact of interventions on soil moisture, biodiversity, and groundwater. They also discussed the potential to mitigate human-animal conflicts through data-driven solutions.

The private sector's role was emphasized in sustainably accessing forest produce and utilizing data to participate in carbon markets. They described how NGOs and civil societies could use forestry data to report project outcomes and improvements in forest cover to donors. For communities, they highlighted benefits such as higher income from better pricing for forest produce and access to advisory services for agroforestry, alongside digital payment solutions.

Structure of the Digital Forest Stack

The proposed Digital Forest Stack was described as a four-layered framework. The data layer would integrate siloed datasets, including project data from state forest departments, carbon stock data from FSI, satellite imagery, and land ownership records, while creating standardized registries for seamless interoperability. The analytics layer, they explained, would make data interpretable and accessible to governments, researchers, startups, and investors through APIs. The application layer would enable practical use cases such as forest health monitoring, biodiversity tracking, and agroforestry advisory services. Finally, the infrastructure layer would establish a robust technological backbone for data storage, exchange, and analysis.

Ongoing Projects and Proof of Concepts (POCs)

They shared details of ongoing projects and POCs under the Digital Forest Stack. They elaborated on efforts in forest health monitoring, which include GIS-based systems to track forest cover changes and ecosystem outcomes for better decision-making. Tools for periodic carbon stock estimation were also being developed to aid in carbon project registration.

Highlighting efforts in human-elephant conflict mitigation, they discussed initiatives in West Bengal where early-warning systems and other data-driven approaches are being implemented. They also spoke about data strategy exercises underway in Rajasthan and West Bengal, aimed at identifying data sources and strategies for effective integration and use.

Benefits and Opportunities

Shri. Naik & Shri. Kunte emphasized the scalability of these initiatives, explaining that collaboration across states could lead to the establishment of a unified forestry data infrastructure, much like the Agri and Health Stacks. They highlighted the potential for digitized project data to simplify carbon credit preparation, monitoring, and trading, making carbon markets more accessible. Public-private collaborations were presented as a key opportunity to engage forest departments, IT departments, private tech developers, and academia, enhancing project outcomes and increasing the efficiency of forestry management.

Challenges and Recommendations

The presentation also addressed several challenges that must be overcome. They explained the need for standardizing data storage and naming conventions across states to address inconsistencies and stressed the importance of validating digital Monitoring, Reporting, and Verification (MRV) systems to make them acceptable for carbon credits. Capacity building was another critical area, as stakeholders need to be trained to use technology effectively in forestry management. They further recommended aligning forestry projects with state and national policies to ensure smoother integration and broader impact.

Conclusion

They concluded by emphasizing the transformative potential of the Digital Forest Stack in revolutionizing forestry management. By drawing parallels with the successes of the Agri and Health Stacks, they demonstrated how a Digital Forest Stack could bring unprecedented efficiency, accountability, and impact to forestry projects. They called for collaboration among stakeholders to scale these initiatives nationally, ensuring forestry projects effectively contribute to climate change mitigation and adaptation efforts.

PRESENTATION ON RELEVANCE AND IMPORTANCE OF TREE PLANTATION OUTSIDE FOREST AREAS- AGROFORESTRY, PERI URBAN AND URBAN FORESTRY

By Shri. Venkatesh Prabhu, IFS, DFO, Tamil Nadu Forest Department

Shri. Venkatesh Prabhu, IFS, District Forest Officer of the Tamil Nadu Forest Department, introduced the session by discussing the relevance and importance of tree cultivation outside forest areas and emphasized the development of agroforestry, urban forestry, and peri-urban forestry as critical components in addressing climate change and human-wildlife conflicts. Highlighting that climate change is no longer a distant phenomenon, he cited extreme events such as cloudbursts and droughts as clear evidence of its immediate impacts.

Tamil Nadu's Collaboration with JICA

The Tamil Nadu Forest Department's collaboration with JICA spans over three decades, beginning with the Tamil Nadu Afforestation Project in 1997 and over the years, the partnership has evolved through multiple phases, including the Tamil Nadu Biodiversity Conservation and Climate Change (TNBCC) project and described the Forest Project Management Unit (PMU) as the "hippocampus" of the project, preserving institutional memory to guide successful implementation.

Scope for Agroforestry and Urban Forestry

Tamil Nadu's forest and tree cover, spanning 30,843.5 square kilometers, represents 23.71% of the state's geographical area, which is below the national average, this gap underscores the significant potential for expanding agroforestry and urban forestry initiatives and historically, the Tamil Nadu Forest Department has played a pivotal role in creating a robust network linking farmers and forestry initiatives. Through capacity building, training, and public awareness campaigns, the department aims to empower farmers with knowledge of sustainable livelihood opportunities.

Green Tamil Nadu Mission and Climate Resilience

He highlighted the Green Tamil Nadu Mission, which seeks to establish a carbon sink of 30–35 million tons. Designating District Forest Officers as District Climate Officers is a key initiative to address climate resilience at the local level and mentioned that Agroforestry in Tamil Nadu focuses on utilizing 1.9 million hectares of fallow lands to meet the growing demand for timber, which currently stands at 1.68 million tons annually.

Urban Forestry and the "3-30-300" Mantra

The TNBCC project incorporates a unique "3-30-300" mantra, where three trees should be visible from every window, 30 trees should exist in every neighborhood, and every individual should have access to a green space within 300 meters. This approach aims to enhance urban greenery, combat rising temperatures, and address challenges posed by decreasing rainfall and extreme weather events.

Integrated Measures for Sustainability

The project emphasizes a combination of engineering and vegetative measures to ensure sustainability, while engineering interventions like percolation pits provide immediate solutions, vegetative measures, such as the introduction of nitrogen-fixing plants, ensure long-term ecological benefits, the project aims to cover 60,000 hectares annually, with the plantation of 68.4 lakh saplings.

Conclusion

Shri. Prabhu concluded by emphasizing the importance of collaboration and adaptive approaches in implementing forestry projects. The Tamil Nadu Forest Department's efforts to integrate modern techniques with traditional knowledge demonstrate the state's commitment to addressing climate change, promoting sustainable development, and enhancing livelihoods.

Theme 3: Where Forest Meets Concrete - Addressing Man-Animal Conflict

PRESENTATION ON MAN- ELEPHANT CONFLICT

By Shri. Bibhuti Prasad, Senior Scientist, Aaranayak

Introduction to Human-Wildlife Conflict

Shri. Bibhuti Prasad began by addressing the critical challenges posed by human-wildlife conflicts, focusing on human-elephant interactions in Assam, Meghalaya, and the surrounding regions. He highlighted the significant toll these conflicts take, with over 500 fatalities annually, including approximately 100 human deaths and 70-80 elephant deaths due to retaliation and other factors. These incidents not only affect humans but also threaten elephant populations, emphasizing the pressing need for sustainable solutions.

Causes of Conflict and Vulnerable Regions

Shir. Prasad identified key causes of these conflicts, including habitat loss and fragmentation driven by developmental projects and infrastructure encroachment, which disrupt migration corridors and displace elephant populations. He expressed concern over intentional electrocution of elephants, particularly in Assam, and highlighted the complex cultural dynamics where elephants are simultaneously revered and feared. Specific conflict hotspots, such as the foothills of the Himalayas, the Garo Hills in Meghalaya, and areas along the Assam-Meghalaya border, including Dipai, were noted as highly vulnerable regions.

Community-Based Strategies

Shri. Prasad outlined several community-driven strategies to mitigate these conflicts. Sensitization programs have been implemented to educate communities about the risks of cultivating crops attractive to elephants in migration corridors while promoting alternative livelihoods. He highlighted the success of single-strand solar fencing, installed with community involvement to ensure maintenance and effectiveness. Volunteer networks, such as the Asian Elephant Conservation Networks, and WhatsApp-based alert groups have also proven effective in providing real-time updates on elephant movements.

Role of Technology in Conflict Mitigation

Shri. Prasad emphasized the role of technological innovations in mitigating conflicts, such as Android-based apps for location-specific alerts and AI cameras for early detection of elephant movements. These tools have significantly improved response times for Rapid Response Teams (RRTs), reducing delays from several hours to just 18 minutes. Additionally, livelihood support programs have introduced alternative crops like sesame, mustard, and garlic to discourage traditional farming practices in conflict-prone areas, helping reduce human-elephant encounters.

Long-Term Conservation Efforts

In discussing long-term conservation efforts, Shri. Prasad stressed the importance of habitat restoration, including the regeneration of grasslands, forests, and water bodies, to support both grazers and browsers. He emphasized the need for ecological and genetic studies to map functional elephant corridors and preserve migration routes. Payment for Ecosystem Services (PES) was advocated as a mechanism to incentivize conservation efforts, while the ecological significance of Meghalaya, with its recent discoveries of new butterfly, spider, and moth species, highlighted the importance of robust biodiversity management.

Recommendations for Future Projects

Shri. Prasad concluded with recommendations for future projects, emphasizing the necessity of scientific mapping to replace traditional methods for corridor identification and wildlife management. He called for cross-platform collaboration among stakeholders to bridge knowledge gaps and design next-generation projects that prioritize conflict resolution and biodiversity conservation while continuing afforestation efforts.

Conclusion

In his concluding remarks, Shri. Prasad expressed gratitude to the organizing team and participants, urging the adoption of collaborative, science-driven, and community-centric approaches to ensure the coexistence of humans and wildlife in the region. He underscored the urgency of implementing sustainable and innovative solutions to mitigate the challenges posed by human-elephant conflicts.

PRESENTATION ON HOLISTIC APPROACHES TOWARDS HUMAN- WILDLIFE CONFLICT MITIGATION

By Smt. Sumana Bhattacharya, IFS, CCF and Project Director, West Bengal

Smt. Sumana Bhattacharya, IFS, CCF, delivered an insightful presentation on the ongoing efforts and challenges associated with mitigating human-wildlife conflicts in West Bengal. Representing the state's forest department and JICA's current project, she provided a comprehensive overview of the region's innovative landscape-based approach to wildlife conservation, focusing on three primary zones: the hilly terrain of North Bengal, the lateritic and alluvial tract in the central region, and the lower deltaic region of the Sundarbans.

Challenges in Wildlife Management

She highlighted the primary challenges in managing human-wildlife conflicts, emphasizing the mounting pressure on forest lands and wildlife habitats due to population growth and land use changes. The North Bengal and South Bengal regions face significant conflict due to their proximity to human settlements and expanding agricultural activities.

One key area of focus was Jhargram, a forest division in the lateritic zone bordering Odisha, where human-elephant conflicts are particularly severe. Bhattacharya discussed the socio-ecological complexities of the region and how innovative measures are being implemented to address these challenges.

Mitigation Measures Implemented by the Forest Department

Smt. Bhattacharya detailed a range of strategies undertaken to mitigate human-wildlife conflicts across the state. Some of the most notable measures include:

1. Protection Infrastructure: Construction of watchtowers and protection camps at strategic locations for enhanced vigilance.

2. Community Alerts: Deployment of a Bulk SMS system to notify residents and authorities about elephant movement in their vicinity.
3. Specialized Vehicles: Deployment of eight "Airavat" vehicles equipped with modern tools to address conflict situations effectively.
4. Fencing and Lighting: Installation of solar-powered fencing along vulnerable village boundaries and solar streetlights in high-risk areas to deter wildlife.
5. Rapid Response Teams (RRTs): Establishment of RRTs to manage conflict situations swiftly, minimizing harm to both humans and wildlife.
6. Communication Networks: Strengthening of wireless networks to improve response times.
7. Sundarbans Measures: Deployment of 168 km of nylon net fencing to prevent tigers straying into human-dominated landscapes.

Leveraging Technology: Proof of Concept in Jhargram

Smt. Bhattacharya showcased a Proof of Concept (PoC) initiative piloted in Jhargram to mitigate human-elephant conflicts using AI-enabled Trail Guard technology. Developed in collaboration with RESOLVE, a digital partner, the system leverages motion sensors and AI algorithms to detect and transmit real-time alerts about elephant movement.

Key features of the AI Trail Guard include:

· Durability and Camouflage: Small-sized, easily concealed cameras.
· Efficiency: AI algorithms filter out irrelevant images, reducing data volume.
· Connectivity: Real-time transmission via GSM, long-range radio, or satellite.
· Battery Optimization: Low-power mode and edge processing to minimize false alerts.

The results of the PoC were promising, with 175 real-time detections enabling RRTs to act promptly based on Standard Operating Procedures (SOPs). This technology has proven effective in detecting lone bulls, small groups, and herds, minimizing conflicts and ensuring safety.

Community-Centric Initiatives

She also highlighted the importance of involving local communities in conservation efforts:

· Alternative Livelihoods: Initiatives such as beekeeping, animal husbandry, and eco-tourism reduce villagers' dependence on forests.
· Awareness Programs: Regular workshops and campaigns educate residents about coexistence and safety measures.
· Ex-Gratia Payments: Swift compensation to families affected by wildlife-related incidents ensures support and trust.

Conclusion

Smt. Sumana Bhattacharya's presentation underscored the significance of combining traditional conservation practices with cutting-edge technology to address human-wildlife conflicts. The multi-pronged approach adopted by the West Bengal Forest Department, supported by JICA, not only mitigates conflict but also fosters community resilience and participation. The innovative use of AI technology, rapid response mechanisms, and community engagement sets a benchmark for similar conservation efforts across the country.

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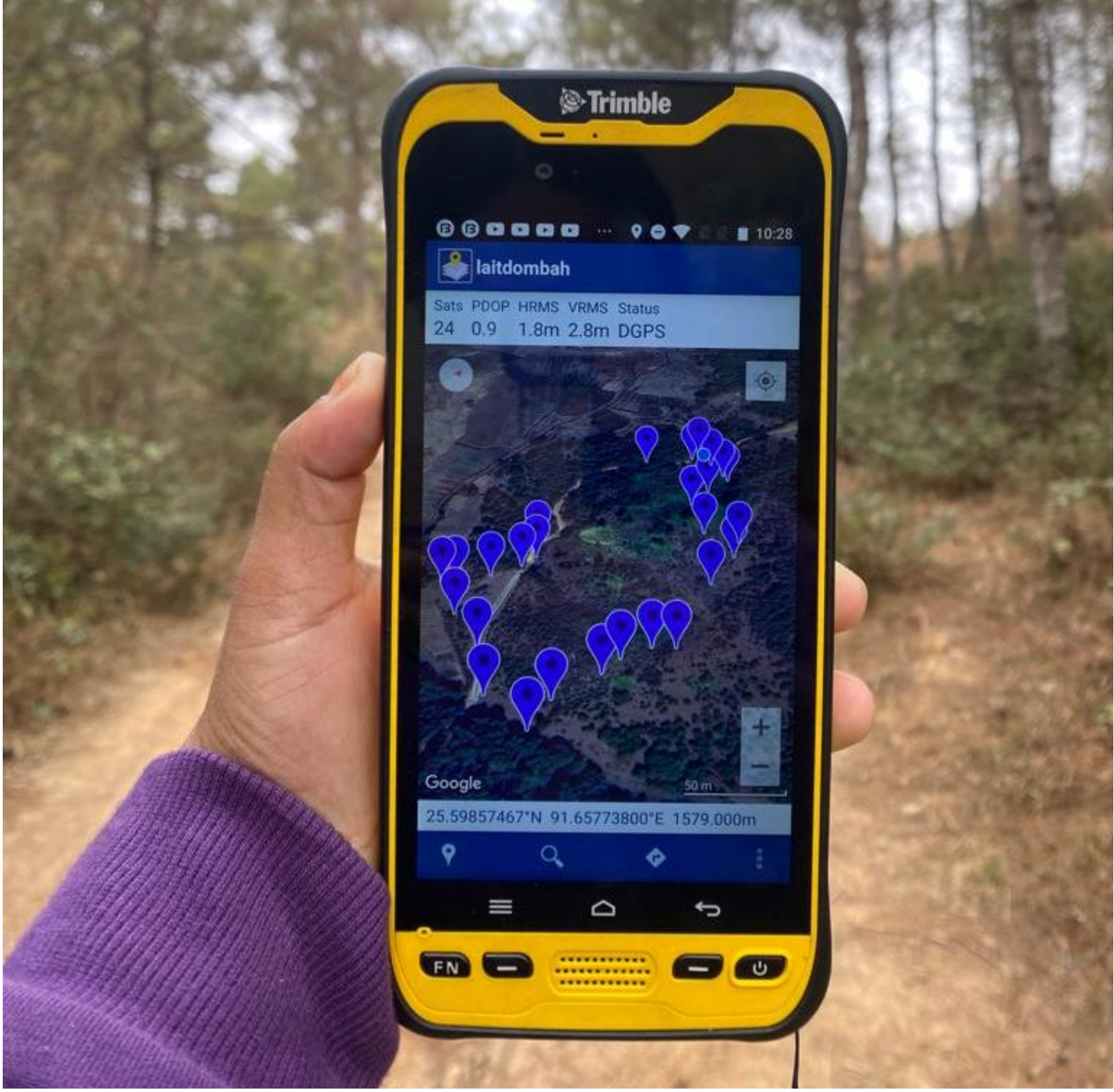

TECHNICAL SESSION 2: TRANSFORMATIVE TECHNOLOGY

Theme 1 - Unleashing The Power of Digital Technology for Strengthening Project Implementation

PRESENTATION ON THE ROLE OF TECHNOLOGY IN ENABLING ACTION AT SCALE

By Shri. Subrata Singh, Executive Director, FES

Introduction and Context

Shri. Subrata Singh, began by providing an overview of the organization's journey, highlighting its work in over 14 states for the past 38 years. The organization primarily focuses on managing common resources outside forested areas, aiming to secure land tenure for communities, establish governance institutions, and provide access to financial resources, tools, and technology. This integrated approach, Shri. Singh explained, aims to improve ecological health and ensure resilient livelihoods. To achieve large-scale restoration, the organization has collaborated with programs like FDA and MegLIFE, utilizing innovative tools such as the Composite Land Assessment and Restoration Tool (CLART) to plan and execute ground-level interventions.

Purpose and Functionality of CLART

Shri. Subrata Singh introduced CLART as a digital tool designed for bottom-up planning, integrating scientific methodologies with community knowledge. He elaborated on its objectives, emphasizing its ability to empower communities to plan and execute restoration initiatives effectively.

The tool demystifies science, enabling even frontline functionaries and village-level facilitators to grasp complex planning methodologies. CLART combines geospatial data with local insights to generate actionable recommendations, thereby bridging gaps in understanding and implementation.

Key Features of CLART

He presented the following features of the tool:

1. **Geospatial Mapping:** CLART generates color-coded maps, categorizing areas into high recharge, moderate recharge, low recharge, and conservation zones, simplifying complex data for community use.
2. **Mobile Accessibility:** The tool is available as an Android-based application, ensuring accessibility for Village Community Facilitators (VCFs).
3. **Design and Cost Estimation:** It enables users to create intervention designs and cost estimates for proposed activities, fostering ownership and efficiency.
4. **Capacity Building:** The tool supports the training of VCFs in resource management, GPS mapping, and hydrological investigations.

Applications and Use Cases

Shri. Singh shared that CLART is actively used across states like Karnataka, Andhra Pradesh, Chhattisgarh, and Odisha for agriculture, forest management, and other restoration programs. It empowers district and state-level officials by providing clear visualizations of proposed interventions, enabling informed decision-making and process improvements.

He explained the multi-tiered workflow facilitated by CLART:

1. **Data Collection by VCFs:** VCFs utilize mobile devices to collect field data and understand the land's characteristics.
2. **Community Engagement:** Communities engage in discussions based on CLART's recommendations to decide on actionable interventions.
3. **Approval and Monitoring:** Officials at the block and district levels review intervention plans supported by photographic evidence and geospatial data, ensuring accountability and accuracy.

They emphasized that the iterative nature of the tool allows continuous quality improvements, adapting to changing conditions and challenges over time.

Impact and Achievements

1. **Community Involvement:** By equipping communities with knowledge and tools, CLART fosters better governance of common lands.
2. **Transparency and Accountability:** Its use of digital records and visual mapping ensures clarity in decision-making processes.
3. **Scalability:** CLART has been adopted for large-scale applications in sectors like agriculture and forestry, supported by departments in states like Chhattisgarh and Odisha.

Challenges and Future Directions

He also acknowledged certain challenges, such as limited baseline data and fragmented administrative structures. However, he reiterated the importance of using tools like CLART to address these issues effectively and emphasized the need for convergence between programs and cross-sector collaboration to scale such initiatives.

Conclusion

In closing, Shri. Subrata Singh reflected on the transformative potential of CLART, underscoring its role in empowering communities and improving natural resource management. By leveraging digital tools and fostering partnerships, they envisioned a future where restoration efforts are both scalable and sustainable, ensuring ecological and socio-economic resilience.

PRESENTATION ON MITIGATION OF NATURAL DISASTERS THROUGH INNOVATIVE TECHNOLOGIES

By Shri. Prasana Kumar Patro, CPD, Uttarakhand

Introduction

Shri. Prasana Kumar Patro, CPD, Uttarakhand began by introducing Uttarakhand, often referred to as the "Land of Gods," as a region rich in opportunities but fraught with challenges, particularly natural disasters such as slow failures and landslides. These recurring disasters significantly impact the state, with news of such events appearing frequently. To address these issues, the Public Works Department (PWD) and the National Highway Authority of India (NHAI) have traditionally relied on methods such as retaining walls, mesh links, jute mats, and rock bolting. However, the introduction of the Technological Transport Operation Project by JICA represents a transformative approach to managing these disasters.

Overview of the Project

In his presentation, he stated that this project is one of the first technical cooperation projects under JICA and focuses on transferring advanced Japanese technologies to address landslides and similar disasters. The project leverages expertise from both long-term and short-term Japanese experts, supported by training programs and exposure visits. A Joint Coordination Committee (JCC) was established to ensure smooth implementation and interdepartmental collaboration. The JCC includes representatives from key stakeholders such as PWD, Forest Department, Disaster Management, and PMU, alongside JICA experts and Japanese counterparts. The committee's primary role is to review project progress, facilitate interdepartmental coordination, and approve annual work plans.

The project includes seven sites, divided into three model sites and four candidate sites. The model sites were designed with direct input from Japanese experts, while candidate sites were designed by

Indian technical teams under Japanese supervision. This setup ensures the effective transfer of advanced technological knowledge and skills.

Japanese Technological Innovations

In his Presentation, he included the key aspect of the project is its focus on addressing the root causes of landslides, rather than merely treating surface-level symptoms. Japanese technology emphasizes examining subsurface conditions, identifying water channels, fractures, and soil layers, and designing interventions accordingly. This comprehensive approach, which includes geotechnical and seismic surveys, requires extensive groundwork and takes approximately 1 to 1.5 years to complete for each site.

Implementation Process

The implementation process involves multiple phases, including general, topographic, and longitudinal surveys, geotechnical investigations, and final design development. Advanced instruments and methodologies are used for these surveys, with a particular emphasis on quality control during execution. Every design and structural intervention are rigorously tested to ensure long-term stability and effectiveness.

Site-Specific Challenges and Solutions

He highlighted several project sites, including the Nirgarh site, with slopes ranging from 12 to 70 degrees, and the Jaldi site, which presented extreme logistical challenges due to steep gradients and remote locations. Japanese innovations such as double-walled check dams, slope stabilization techniques, and prefabricated structures were deployed, ensuring cost-effectiveness and timely completion.

Other interventions included road diversions, erosion control beds, wicker fencing, and gabion walls. These solutions, though adapted for Indian conditions, were heavily influenced by Japanese standards and practices. He particularly emphasized the quality control measures, which are integral to ensuring the success of structural designs. In addition, Standard operating procedures (SOPs) were developed for every aspect of the project, and daily sampling and testing were conducted to maintain high standards.

Key Innovations

1. **Slope Stabilization:** Using advanced materials like prefabricated micro-steel structures.
2. **Check Dams:** Deploying double-walled structures designed for rapid installation and high durability.
3. **Channel Works:** Introducing new methods for road diversions and water flow management.
4. **Safety Protocols:** Ensuring worker and public safety, particularly along national highways.

The formwork system was also highlighted as a first-of-its-kind intervention in the country, showcasing unique designs and materials that were soft-graded and deployed on steep slopes.

Knowledge Sharing and Capacity Building

Shri. Kumar expressed gratitude to the Japanese experts, who played a pivotal role in introducing these advanced technologies. The project is not just limited to implementation in Uttarakhand; it aims to transfer this knowledge to other Himalayan states facing similar challenges. Over the last eight to ten years, the project team has accumulated valuable expertise in managing landslides and natural disasters, and they are eager to share this knowledge with other regions.

He invited participants to visit the demonstration sites and assured them of the project team's readiness to assist other states in adopting these technologies. The goal of this technical cooperation project is to ensure that advanced disaster management solutions are widely accessible across the country.

Conclusion

The session concluded with a call for collaboration among states to leverage the innovations introduced through this project. By addressing core challenges, ensuring rigorous quality control, and fostering knowledge sharing, the project exemplifies the potential of international cooperation in tackling natural disasters effectively. He reaffirmed their commitment to supporting other states in adopting and implementing these transformative technologies.

Theme 2- Artificial Intelligence and Other Emerging Technologies– Potential for The Natural Resource Management Sector

PRESENTATION ON UTILIZATION OF ARTIFICIAL INTELLIGENCE IN SUSTAINABLE FOREST MANAGEMENT, WILDLIFE MANAGEMENT, CHALLENGES AND OPPORTUNITIES

By Shri. Sanjay Srivastava, Retired IFS, Retired PCCF

Shri. Sanjay Srivastava, IFS introduced the relevance of artificial intelligence (AI) in forestry, explaining its foundational concepts and practical applications. AI, which emulates human thinking, encompasses two main subsets: machine learning and deep learning. While machine learning involves algorithms that learn from data without explicit programming, deep learning uses complex algorithms to enable systems to make decisions autonomously, mimicking human neural processes.

He elaborated on the structure of artificial neural networks, comparing them to the human brain's synaptic networks. These networks consist of an input layer, hidden layers where complex computations occur, and an output layer. Shri. Srivastava shared an example from his 2004 dissertation, where he successfully applied artificial neural networks for forest monitoring, demonstrating the potential of feed-forward and back-propagation methods in achieving desired outcomes.

Forest Monitoring and Analysis

Shri. Srivastava added that AI offers a wide range of applications in forest monitoring, from assessing diseases and tracking forest fires to monitoring deforestation and carbon sequestration. Using supervised and unsupervised classification, machines can process datasets to classify forest and non-forest areas. He also shared an example from Meghalaya, where AI was used to analyze landscape changes over 20 years, delineating impacts of shifting cultivation.

Forest Inventory and Resource Assessment

He went on adding that AI facilitates tree counting, species identification, and growth prediction, enhancing urban and rural forestry management. By merging spectral and spatial images, AI can identify plantation types, assess vegetation changes, and optimize forest resource management. Advanced techniques enable detailed analysis of forest resources using satellite imagery, topographic maps, and climate data, providing insights into vegetation changes over time.

Fire Detection and Management

He elaborated on how AI plays a pivotal role in wildfire detection and management, offering capabilities such as fire spread prediction, post-fire analysis, and daily fire alerts. Shri Srivastava highlighted the development of a fire likelihood model that integrates positive and negative factors for fire occurrences. Using 10 years of satellite data, this model provided robust predictions, aiding in proactive fire management strategies.

Biodiversity Monitoring and Conservation

In addition to the above he also stated on the AI significant potential in biodiversity monitoring and wildlife habitat management. By employing drones and machine learning, it becomes possible to analyze habitat preferences, track species movements, and even identify animals based on indirect markers like footprints. He mentioned Tamil Nadu's work in human-elephant conflict management, where AI is used to map elephant occurrences and crop damage, contributing to conflict resolution.

Applications in Carbon Accounting and Climate Change

Similarly, he added on AI aids in carbon accounting by monitoring soil carbon and sustainable harvesting practices. It optimizes supply chain processes in forestry, ensuring quality control and defect management. Additionally, AI supports climate change mitigation through reforestation planning and building climate resilience into forestry initiatives.

Challenges and Future Directions

Shri. Srivastava acknowledged the challenges in adopting AI, including data availability, cost, accessibility, and ethical considerations. Interoperability of algorithms and technical expertise also pose barriers. However, he emphasized that leveraging AI could lead to more informed decision-making and enhanced productivity.

Conclusion

In his concluding note, Shri. Srivastava reminded the audience of the importance of balancing AI with human intuition and decision-making. He referenced the advancements in natural language processing, such as Alexa, as an example of AI's evolving capabilities, while cautioning against over-reliance on machines. He advocated for sticking to deep learning methods relevant to forestry projects like GNCA, ensuring that AI remains a powerful tool for enhancing sustainable development.

PRESENTATION ON DISRUPTIVE TECHNOLOGIES FOR ADDRESSING NEW WORLD CHALLENGES IN AN ERA OF GLOBAL CLIMATE CHANGE

By Shri. R.K. Srivastava, IORA Ecological Solutions

Shri. R.K. Srivastava began by emphasizing the importance of adopting technologies that simplify and enhance the work of field staff, particularly those operating at the last mile, such as forest guards. He elaborated that the hallmark of successful digital transformation lies in eliminating redundant, paper-based processes entirely, thus enabling more efficient workflows.

He stressed that data collection should be point-generated, meaning captured directly at the site of action, and process-generated, emerging naturally as part of operational workflows. And stated that actionable and accurate data forms the cornerstone of effective decision-making and management strategies.

Drawing from personal experiences, Shri. Srivastava highlighted the progress made during his tenure implementing projects under JICA in Karnataka. He recounted his role in establishing an ICT center in 2011, which spearheaded efforts to transition the forestry sector in Karnataka toward paperless processes. This digital transformation, he noted, had set a strong precedent for other regions to follow.

He provided an overview of ongoing initiatives by IORA Ecological Solutions, showcasing their potential to address contemporary challenges in forestry and environmental management:

- **Digital Monitoring, Reporting, and Verification (MRV) for Carbon:** Shri. Srivastava explained the development of a digital MRV tool aimed at enhancing carbon management. Although not yet a standard in India, pilot projects in Meghalaya and Telangana have demonstrated its promising potential.

- **Forest Health Monitoring:** He discussed the use of advanced remote sensing technologies such as L-band SAR (Synthetic Aperture Radar), which can penetrate sub-alluvial soil and snow layers. This technology, he added, offers applications in disaster management and forest degradation monitoring.

Shri. Srivastava elaborated on the integration of innovative tools to tackle climate change and resource management challenges. AI-driven tools, he explained, are being explored for conflict management, animal monitoring, carbon credit tracking, and forest restoration. These technologies aim to bridge gaps in climate change adaptation strategies.

Real-World Challenges

Acknowledging the limitations of current technologies, Shri. Srivastava highlighted a significant gap between data collection and actionable solutions. For instance, while data on animal movements is readily available, it has yet to translate into effective prevention of human-wildlife conflicts. He emphasized the need for practical solutions that go beyond data generation to address real-world challenges effectively.

Collaborations and Opportunities

Shri. Srivastava discussed IORA's ongoing efforts to foster collaborations with state governments, including Meghalaya, for disaster and forest management initiatives. He extended an offer to conduct free pilots for projects utilizing cutting-edge technologies such as L-band SAR, showcasing their efficacy in practical applications.

Conclusion

In conclusion, Shri. Srivastava emphasized that the true measure of success for disruptive technologies lies in their ability to solve real-world problems, particularly those arising from climate change and resource management. He acknowledged India’s significant progress in digitalizing forestry and environmental management but pointed out the persistent gap between data availability and actionable solutions. He urged stakeholders to focus on innovations that bridge these gaps, ensuring that technology serves as a meaningful tool in addressing pressing global challenges.

PRESENTATION ON A HOLISTIC APPROACH TO DIGITAL GOVERNANCE

By Shri. G.J. Kulkarni, CEO and Managing Director, Humanitics

Shri. G.J Kulkarni, commenced with an insightful reflection on the progress and hurdles encountered in implementing digital governance in Meghalaya over the past three years and highlighted the adoption of Meghalaya's Enterprise Architecture (EA), modeled on the India Enterprise Architecture (India EA), as a national benchmark for IT implementation. The program's innovative approach has not only set a standard for the nation but has also earned international recognition, including accolades at the United Nations World Summit in Geneva.

Key Features of the Digital Governance Program

He detailed the rapid advancements achieved through low-code and no-code platforms, which minimize the need for extensive coding expertise. These platforms integrate user-friendly tools like form builders, workflow designers, and analytics dashboards, enabling swift deployment of various citizen services.

The success of the program was attributed to a robust Enterprise Architecture framework, which clearly defines protocols and prioritizes service discovery, usability, and offline accessibility. This strategic approach has allowed Meghalaya to address the unique geographical and societal challenges of the region effectively.

Localized solutions were a focal point of the presentation. He elaborated on how digital governance tools have been customized to reflect Meghalaya's cultural and linguistic diversity, incorporating Khasi and Garo languages. He also highlighted ongoing initiatives to develop Large Language Models (LLMs) for these languages, which will enhance usability and foster more inclusive citizen interactions.

Implementation Highlights

Shri. Kulkarni added that the program on Digital governance has successfully rolled out more than 200 citizen service applications across various domains, including farmer registration, ID card issuance, and grievance redressal systems. Village Level Coordinators (VCFs) play an instrumental role in delivering these services to remote and underserved areas, ensuring accessibility for all residents.

Offline functionality was another critical feature of the program. He elaborated on the development of offline-first technology stacks, which guarantee uninterrupted service delivery in Meghalaya's challenging terrain. Tools with GPS tagging and polygon mapping capabilities have been integrated to support agriculture and forestry projects, ensuring that services remain operational even in areas with limited connectivity.

Artificial Intelligence has been pivotal in managing fragmented data systems. He explained how AI is used to harmonize inconsistencies across databases, such as EPIC directories and Aadhaar records, creating a unified and efficient data ecosystem that enhances analytics and decision-making.

Challenges and Solutions

Addressing data consistency issues, he described how AI-driven solutions have been implemented to harmonize fragmented data from multiple sources, ensuring compatibility and creating a streamlined data management framework.

The linguistic diversity of Meghalaya posed another challenge, particularly the lack of pre-existing LLMs for Khasi and Garo languages. The program is actively addressing this gap by developing these models to enable localized interactions and improve inclusivity.

The complexity of the terrain and limited connectivity in remote areas necessitated the development of offline-first technology stacks. These innovations ensure reliable service delivery even in the most geographically challenging regions of the state.

Achievements

Shri. Kulkarni proudly highlighted the program's measurable impact on service delivery efficiency. The median processing time for citizen services has been dramatically reduced from 26 days to just 3.4 days. Additionally, active user engagement has doubled, with more than 4,800 users regularly accessing the services.

The program's success was further validated through its recognition at the United Nations World Summit, where it was awarded the Best Project for its holistic and citizen-centric approach to digital governance.

Conclusion

He concluded by emphasizing Meghalaya's innovative approach to leveraging technology for inclusive and efficient governance. The program's emphasis on rapid development, cultural adaptation, and offline accessibility has delivered transformative benefits for the diverse communities across the state. Looking forward, he expressed optimism about the potential of emerging technologies such as AI and LLMs to further enhance digital governance initiatives. This forward-thinking strategy, he asserted, positions Meghalaya as a pioneering leader in digital governance, serving as an example for other regions to emulate.

DAY 2

14TH NOVEMBER 2024

RECAP DAY 1: SUMMARY BY SHRI. G. S. RAJU, MEGLIFE

Shri. G.S Raju, stated that the first day of the 13th JICA National Workshop on Forestry Projects in India commenced with an impactful inaugural session. The Honorable Governor of Meghalaya, Shri. C.H. Vijayashankar, graced the occasion as the Chief Guest. Delivering the keynote address, he highlighted five critical priorities for the forestry sector. These included the need to address monoculture practices to prevent ecological imbalance, prioritizing indigenous species in forestry efforts, conserving endangered native species, ensuring the purity of air and water, and promoting afforestation on non-forest lands.

The opening session also featured a presentation by Shri. Vineet Sarin, who provided a comprehensive overview of JICA's extensive engagement in India's forestry sector across four project generations from 1991 to 2024. He elaborated on the key outcomes of these projects, the guiding principles for their formulation, and the sub-themes of the workshop. Shri. Gunanka D.B., IFS, Additional Project Director of MegLIFE, followed with an insightful presentation on the Meghalaya Basin Development Authority's role in implementing the MegLIFE Project. He underscored the project's achievements, innovative technologies, and contributions to sustainable forest management. The first day comprised two technical sessions, which explored five critical themes for forestry and natural resource management.

MEGHALAYA BECAME THE FIRST STATE TO INTRODUCE PAYMENTS FOR ECOSYSTEM SERVICES (PES), EMPOWERING COMMUNITIES TO ACTIVELY PARTICIPATE IN FOREST CONSERVATION. THIS TRANSFORMATIVE PROGRAM HAS ENABLED COMMUNITIES TO COLLECTIVELY MANAGE AND CONSERVE OVER 50,000 HECTARES ACROSS THE STATE.

Scan here to watch Payment for Ecosystem Services Video

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TECHNICAL SESSION 3: COMMUNITY APPROACH FOR SUSTAINABILITY

Theme 1- Leveraging On Community Institutions to Drive Climate Change Actions

PRESENTATION ON MITIGATING IMPACTS OF JHUM CULTIVATION FOR SUSTAINABLE FOREST MANAGEMENT

By Shri. Rajesh Kumar, IFS, DFO, Nagaland Forest Department

Shri. Rajesh Kumar, IFS, District Forest Officer, began by emphasizing the importance of traditional agricultural practices, particularly Jhum cultivation, in sustaining livelihoods in Nagaland and described Jhum cultivation as a resilient, time-tested method of land rotation, uniquely suited to the region's challenging hilly terrain where conventional crop rotation is impractical. However, he acknowledged that increasing population pressures have rendered this practice unsustainable, necessitating strategic interventions to preserve both the environment and the cultural heritage it represents.

Overview of the Nagaland Forest Management Project

The JICA-Assisted Nagaland Forest Management Project, launched in 2017, was introduced as a comprehensive initiative aimed at addressing these challenges while improving community livelihoods. He outlined the project's three primary objectives: enhancing forest intervention and biodiversity conservation, promoting alternative livelihood generation, and strengthening institutional frameworks. By focusing on increasing tree density in both active and fallow Jhum blocks, the project seeks to balance ecological restoration with economic benefits. Diversifying income sources through training programs for self-help groups (SHGs) has reduced community dependence on Jhum cultivation, while infrastructure development, including the construction of offices and quarters, has facilitated effective project implementation.

Community Development and Collaboration

Shri. Kumar highlighted the success of various entry-point activities (EPAs), including the construction of community halls, water-harvesting structures, and entry gates, and praised village participation, noting an instance where a community contributed ₹20 lakhs toward building a community hall and added that collaborative efforts with departments like NABARD and LRD addressed critical issues such as water scarcity, exemplified by transporting water from sources located 2 kilometers away. Regular training sessions for SHGs at district headquarters equipped communities with skills for alternative livelihoods, while collaborations with other departments strengthened hydrological investigation capabilities among community members.

Innovative Forest Management Models

In forest management, five innovative models were implemented to improve land use, enhance biodiversity, and sustainably manage underutilized areas, these efforts increased tree density in active Jhum blocks and improved forest coverage in fallow areas, marking significant progress in forest restoration.

Key Challenges and Solutions

Shri. Kumar addressed the challenges faced during the project, including the need to balance conservation and production to meet both ecological and economic objectives and engaging communities in Nagaland proved complex due to unique land ownership patterns, making participatory approaches essential. Despite resource constraints, inter-departmental collaboration maximized the impact of available resources, enabling the project to overcome these hurdles.

Notable Outcomes and Impact

· Enhancing water-harvesting structures to support agricultural and domestic needs.

· Launching an air gun surrender initiative to promote biodiversity conservation.

·Constructing 67 infrastructure projects, including a GIS laboratory to bolster technical capabilities and monitoring systems.

·Collaborating with health departments to organize medical camps in remote areas, addressing healthcare gaps in project villages.

Conclusion and Future Directions

In conclusion, Shri. Rajesh Kumar reflected on the project's success in harmonizing traditional practices with modern conservation techniques and emphasized the critical role of community-driven initiatives and inter-sectoral collaboration, advocating for long-term sustainability as the cornerstone of future forest management efforts in Nagaland. The presentation concluded with a call to continue empowering local communities, ensuring that ecological health and economic resilience remain interconnected goals.

PRESENTATION ON AGROFORESTRY TO CHECK DESERTIFICATION

By Shri. Venkatesh Sharma, IFS, Project Director, Rajasthan Forest Department

Shri. Venkatesh Sharma, IFS, Project Director, opened the session by acknowledging the significant contributions of JICA over the past 35 years, noting Rajasthan's advantageous position as a recipient of its initiatives, he highlighted a pivotal shift in focus from "desertification" to "land degradation," stressing the importance of agroforestry interventions at early stages of land degradation to prevent its progression into extreme desertification.

Understanding Land Degradation and Desertification

In his discussion on land degradation, Shri. Sharma described it as a temporary decline in land productivity, which evolves through three distinct phases, while stating that Natural degradation stems from inherent environmental factors, while human-induced degradation arises from unregulated and unsustainable anthropogenic activities. At its most severe stage, extreme degradation or desertification significantly impairs land resilience. Rajasthan's susceptibility to this phenomenon, driven by erratic rainfall, intensive farming, floods, and droughts, underscores the urgency for preventive measures.

Role of Agroforestry in Restoring Productivity

He emphasized the critical role of agroforestry as a practical solution to restore productivity on vast expanses of uncultivable and degraded lands in Rajasthan while referring to NITI Aayog's comprehensive report on agroforestry and wasteland restoration, he highlighted the use of a GIS-based agroforestry suitability index, this index provides a scientific foundation for targeted interventions, ensuring effective resource utilization and ecological restoration.

Challenges in Agroforestry Practices

Shri. Sharma identified several technological barriers, including the absence of high-tech nurseries, cloning techniques, and mass multiplication method and noted the limited availability of high-value tree species and quality planting materials as significant hurdles to advancing agroforestry practices.

Regulatory and Management Issues

He highlighted complexities in harvesting regulations and the lack of streamlined transit rules as critical obstacles and added, the absence of infrastructure for post-harvest processing and value addition prevents agroforestry from reaching its full economic potential.

Institutional and Market Limitations

A fragmented approach across agriculture, horticulture, and forestry departments was flagged as a challenge, emphasizing the need for greater coordination and pointed to market and infrastructure deficiencies, such as disorganized supply chains and the limited adoption of precision silviculture practices, as areas requiring immediate attention.

Recommendations for Enhancing Agroforestry

Shri. Sharma stressed the need to establish an Agroforestry Board to unify efforts across relevant departments and called for the development of funding mechanisms and business models tailored to promote agroforestry practices effectively.

Promotion of High-Value Species

He advocated for the cultivation of high-value species such as sandalwood, teak, agarwood, and mahogany; he also emphasized that investment in research and development for precision silviculture and innovative tree-crop combinations as a strategy to enhance productivity and profitability.

Capacity Building and Collaboration

Capacity building and collaboration were identified as essential for progress and recommended creating platforms for inter-departmental collaboration on agroforestry policies and initiatives. He emphasized the importance of training programs to equip farmers with best practices and access to quality planting materials.

Market Integration and Value Addition

Market integration was presented as a crucial area for development and urged the establishment of organized supply chains and the promotion of value addition for agroforestry products. Encouraging private sector participation was highlighted to enhance the economic viability of agroforestry practices in Rajasthan.

Conclusion and Call to Action

In conclusion, Shri. Sharma highlighted the vast potential of agroforestry in Rajasthan, given the state's extensive land resources and diverse opportunities and emphasized the need for a coordinated approach, robust institutional mechanisms, and technological advancements to transform agroforestry into a sustainable and profitable venture.

Theme 2- innovative models for sustainable income generation amongst climate vulnerable rural groups

PRESENTATION ON STRENGTHENING COMMUNITIES OR FOREST MANAGEMENT, CONSERVATION AND SOCIO-ECONOMIC DEVELOPMENT THROUGH SUSTAINABLE APPROACHES

By Shri. Swayam Mallik, IFS, Conservator of Forests, Odisha Forest Department

Shri. Swayam Mallik, IFS, Conservator of Forests, opened the session by emphasizing the project's dedication to fostering sustainable livelihoods through a market-driven approach, he outlined three core strategies underpinning this initiative: market-led interventions, cluster formation, and the promotion of indigenous agricultural practices together, these strategies aim to enhance income opportunities for local communities.

Market-Led Interventions

Shri. Mallik highlighted the integration of local producers into broader markets through partnerships with platforms like Amazon, Flipkart, and ONDC, stating that these collaborations have been instrumental in widening market access and ensuring better financial returns for producers. Efforts to enhance product appeal included branding, obtaining food licenses, organic certifications, and conducting product lab testing stating that these initiatives bolster credibility and consumer trust, ultimately improving market penetration and financial outcomes.

Cluster Formation for Economic Sustainability

Cluster formation was described as a strategic measure to drive economic sustainability, using product mapping and resource assessments, the project identified “star products” with high potential to attract attention and investment. GIS mapping was employed to cluster viable Village Self-Help Groups (VSS), enabling collective action, resource pooling, and unified economic activities that optimize the project’s impact.

Promoting Indigenous Agricultural Practices

A strong emphasis was placed on promoting indigenous agricultural practices, particularly aromatic paddy cultivation, which forms a key component of the Satoyama initiative, this effort involves 220 farmers across 10 EDCs, generating approximately ₹3.5 lakh in revenue during the previous year. Transitioning these farmers to organic practices is a priority, with organic certification processes underway to ensure sustainable, long-term outcomes.

Key Interventions and Outcomes

Shri. Mallik detailed several innovative interventions and their outcomes:

1. Marketing Initiatives: A division-level web portal developed under the project achieved sales worth ₹1 lakh in its first year. Collective marketing strategies empowered farmers to negotiate better prices through bulk sales. Participation in fairs was highly successful, with SHGs generating ₹20 lakh in revenue during a seven-day event.

2. Vermicomposting: The production of vermicompost emerged as a cornerstone activity for SHGs. This initiative supported departmental plantation demands while guaranteeing a steady income of ₹16,500 per unit every four months. Inter-divisional transfer mechanisms ensured consistent market access, making vermicomposting a reliable livelihood option.

3. Carbon Credit Initiatives: The agroforestry model has been successfully listed on Verra, setting the stage for carbon credit trading to begin in the following year. This development opens new avenues for sustainable income generation.

Foundational Principles and Monitoring Mechanisms

Shri. Mallik outlined the foundational principles guiding the project's implementation:

·Gender Mainstreaming: Emphasized as a critical factor for enhancing program effectiveness.

·Environmental and Social Management: Ensuring comprehensive planning and sustainability.

Monitoring mechanisms at the VSS level were established to evaluate project impact, focusing on parameters such as convergence, income generation, female participation, and repayment rates for revolving funds. Empirical evidence demonstrated that increased convergence led to higher income generation, while greater female participation significantly improved repayment rates, showcasing the success of income-generating activities and enhanced financial discipline.

Recommendations for Livelihood Resilience

In his recommendations, Shri. Mallik advocated for a gradual transition from forest-based activities to farm and off-farm pursuits. He emphasized the importance of diversification and sustainable practices as pathways to long-term livelihood resilience and success.

Conclusion

In conclusion, Shri. Mallik underscored the project's emphasis on market integration, community empowerment, and data-driven monitoring as essential pillars of sustainable livelihood development.

PRESENTATION ON SPECIAL LIVELIHOOD INITIATIVES UNDER THE PROJECT FOR IMPROVEMENT OF HP FOREST ECOSYSTEMS MANAGEMENT & LIVELIHOODS (PIHPFEM&L)

By Shri. Sameer Rastogi, IFS, PCCF and Chief Project Director, Himachal Pradesh Forest Department

Shri. Sameer Rastogi, IFS, Principal Chief Conservator of Forest, began by introducing Himachal Pradesh, a northern Indian state with a socio-economic structure deeply rooted in agriculture, highlighted that 71% of the state's farmers are marginal, while 66% of the population depends on agriculture, with 90% residing in rural areas. He emphasized that the state's economy, reliant on a few key sectors, faces significant risks from climate change, which jeopardize the livelihoods of its people.

Climatological Challenges and Ecological Vulnerability

Elaborating on the climatological challenges, Shri. Rastogi noted the rising temperatures and erratic rainfall patterns in Himachal Pradesh, which have resulted in heavy rainfall over short durations, causing excessive runoff adding that the state has experienced 23 drought spells—20 moderate and 3 severe—along with declining snowfall trends, further exacerbating ecological pressures, these conditions, combined with frequent ecological disasters, underscore the vulnerability of rural areas and the urgent need for targeted interventions.

Scope and Focus of the Project

He outlined the scope of a project operational in 7 of the state's 12 districts, emphasizing the engagement of Village Forest Development Societies (VFDS) and Biodiversity Management Committees (BMCs) in protected areas and adding that the initiative includes 911 self-help groups (SHGs), of which 95% are led by women, showcasing a commitment to inclusive and sustainable development. Advanced technologies such as GIS and drone systems have been integrated to monitor ecological restoration efforts, with VFDS maps guiding interventions and mentioning that the next comprehensive assessment is planned for 2027.

Addressing Human-Wildlife Conflict

In the cold desert region of Spiti Valley, particularly Demul Village, Shri. Rastogi described a community primarily reliant on barley farming and facing challenges from human-wildlife conflict, the excess donkeys, used for barley threshing, compete with wild herbivores like ibex and blue sheep, thus intensifying food shortages for snow leopards, the state animal and the feral dogs further exacerbate ecological challenges through competition and disease transmission.

Interventions included introducing diesel threshers to reduce reliance on donkeys, with the community agreeing to reduce the donkey population by 30%, the animal enclosures were constructed to protect livestock from snow leopards, and a sterilization program was launched to manage feral dog populations. Additionally, yak-based livelihood was promoted, focusing on the production of high-value carpets and the residents were also provided with solar water geysers to endure harsh winters, where temperatures can drop to -30°C.

Sundernagar – Aloe Vera Cultivation

In Sundernagar, located in the Mandi District of Lower Himachal, prolonged droughts had forced farmers to abandon traditional crops and highlighted the introduction of aloe vera cultivation as a drought-resistant alternative, which has already produced successful harvests. A buyback arrangement was established with Rudra Shakti Har Sahar Pvt. Ltd., an AYUSH-registered organization, ensuring a stable market for farmers, the aloe vera products were branded under the name Hemp Tradition, providing a distinct identity for the product. To support this initiative, a dedicated marketing company was engaged to promote products under the brand, achieving the dual objectives of livelihood sustainability and ecological balance.

Environmental and Marketing Initiatives

Shri. Rastogi discussed the project's environmental and marketing efforts, which are designed to ensure both ecological balance and market success, the initiatives in Spiti Valley and Sundernagar serve as scalable models for similar efforts across Himachal Pradesh, demonstrating the potential for sustainable economic development through innovative, community-driven approaches.

Conclusion

In conclusion, Shri. Rastogi emphasized the importance of leveraging innovative technologies, local resources, and inclusive approaches to mitigate the impacts of climate change and secure sustainable livelihoods. He highlighted the success stories of Spiti Valley and Sundernagar as scalable models for addressing climate challenges and promoting community-driven, environmentally conscious initiatives. These efforts showcase the potential for widespread positive impacts across Himachal Pradesh.

PRESENTATION ON TRIPURA-LIVELIHOOD DEVELOPMENT

By Shri. Praveen Agrawal, IFS, Chief Executive Officer and Project Director, Tripura JICA Project (SCATFORM Society), Tripura Forest Department

Shri. Praveen Agrawal, IFS, Project Director, began the discussion by highlighting the innovative initiatives undertaken in Tripura under the JICA Phase 2 SCATFORM Project. This initiative focuses on developing livelihoods centered on non-timber forest products (NTFPs), emphasizing sustainable forest management, soil and moisture conservation, and improving the living conditions of forest-dependent communities. He explained that the project aims to enhance forest quality in targeted catchments while simultaneously fostering socio-economic upliftment among local populations.

Key Components of the Project

The project is structured around four primary components:

1. Sustainable Forest Management: At its core, the initiative promotes eco-forestry practices to ensure responsible and regenerative use of forest resources.

2. Soil and Moisture Conservation: Efforts include constructing check dams to mitigate soil erosion and manage water runoff effectively.

3. Livelihood Development: This component involves the creation of 3,950 self-help groups (SHGs) across Tripura, organized into a three-tier model. These SHGs are clustered to focus on marketable NTFPs like bamboo, agarwood, and medicinal plants, with advanced processing units established through public-private partnerships to produce high-value products.

4. Institutional Strengthening: Capacity building and infrastructure development form the backbone of this component, aiming to ensure the long-term success of the project.

Agarwood: A Key Focus Area

The agarwood sector emerged as a major focus of the discussion and highlighted Tripura's vast reserves of approximately 15 million agarwood trees, which present a significant opportunity for economic growth. Agarwood's applications span global markets, including the Middle East, Asia, and Western countries, where it is used in products ranging from incense and luxury fragrances to medicines, he underscored the immense market potential, with the global agarwood sector projected to grow from $44 billion to $87 billion by 2023.

To capitalize on this opportunity, the project has established a Center of Excellence for research, production, and value addition in agarwood-based products. This initiative aims to drive innovation and enhance the value chain within this critical sector.

Challenges in the Agarwood Sector

Despite its potential, the agarwood sector faces significant challenges. Shri. Agrawal noted the regulatory complexities associated with agarwood export, particularly its classification under the Convention on International Trade in Endangered Species (CITES). These regulations often cause procedural delays, sometimes stretching up to six months. Furthermore, much of the trade remains informal, limiting the sector's potential for large-scale economic growth.

To address these issues, he proposed establishing an Agarwood Board, like tea and rubber boards, to streamline operations and formalize trade practices and emphasized the importance of collaborating with the central government to simplify export regulations and enhance efficiency.

Achievements and Market Expansion Efforts

The project's achievements were highlighted, with a particular focus on the annual agarwood buyer-seller meets hosted in Tripura, these events have successfully connected local producers with international buyers, fostering transparent trade practices and expanding market access and announced that the fourth such meet is scheduled for 2nd December 2024, which aims to further establish Tripura as a prominent player in the global agarwood economy.

With the right regulatory and infrastructural support, he projected that Tripura could transform the agarwood sector into a $2 billion export economy, unlocking substantial economic benefits for the state and its forest-dependent communities.

Conclusion

In his concluding remarks, Shri. Agrawal emphasized the significance of the agarwood sector for Tripura's economic future and its role in creating sustainable livelihoods for forest-dependent communities and stressed the need for formalized trade practices, supported by robust infrastructure and policy frameworks, to realize the full potential of this sector. Finally, he invited participants to the upcoming buyer-seller meet, envisioning it as a pivotal step toward achieving the ambitious goals of the SCATFORM Project.

Theme 3- Forestry And the Green Economies of The Future

PRESENTATION ON PRIVATE SECTOR ENGAGEMENT FOR SUSTAINABLE FOREST MANAGEMENT

By Shri. Shivam Srivastava, Manager Procurement, Terviva

Shri. Shivam Srivastava, Manager Procurement, began by expressing heartfelt gratitude to the Forest Department for planting millions of pongamia trees across India, which has enabled Terviva to establish connections between rural communities and the global food supply chain. Terviva, an agricultural technology company founded in 2010, is at the forefront of creating sustainable food ingredients through the cultivation of pongamia trees. With operations spanning the United States, Australia, and India, the company employs over 110 individuals and has raised $150 million to develop a robust and sustainable pongamia supply chain worldwide.

Sustainability and Climate Resilience of Pongamia

He highlighted the sustainability and climate resilience of pongamia, describing it as a nitrogen-fixing tree native to South Asia, the pongamia thrives under diverse soil and weather conditions with minimal inputs, making it ideal for carbon sequestration, soil restoration, and reduced water usage, it's adaptability not only addresses environmental challenges but also promotes regenerative agriculture.

Innovative Approaches in Pongamia Cultivation

The company's innovative approach was emphasized, with Terviva developing high-yielding pongamia varieties capable of producing three to five times more than soybeans, these advancements have paved the way for the creation of edible food products from pongamia beans, traditionally considered bitter, and to produce sustainable animal feedstock. These products are a testament to Terviva's commitment to combining cutting-edge technology with ecological preservation.

Community Empowerment and Engagement

He elaborated on Terviva's community empowerment initiatives, which focused on building a sustainable supply chain in partnership with tribal communities. By ensuring fair compensation and providing training, the company empowers local collectors and entrepreneurs. Programs like "Terviva Karanja Sakis" have already engaged over 900 women entrepreneurs and trained 50,000 collectors. Pilot projects in regions such as Mayurbhanj and Jharkhand have seen participation scale from 200 in 2023 to 1,000, with plans to expand to 10,000 participants in the near future.

Economic and Environmental Impact

Discussing the economic and environmental impact, Shri. Srivastava shared that pongamia plantations sequester approximately 115 metric tons of carbon per hectare over 30 years also stating that in a significant milestone, Terviva sold carbon credits from its 1,000-acre Florida plantation at $21 per credit, showcasing the economic viability of regenerative agriculture. Beyond environmental benefits, Terviva's efforts have transformed livelihoods, with 88% of surveyed women reporting an improved quality of life due to their involvement in the initiative.

Challenges in Scaling Efforts

However, he acknowledged the challenges faced in scaling these efforts, including exploitation by middlemen, limited awareness about monetizing pongamia, and supply chain scalability, to overcome these hurdles, Terviva is actively seeking collaborations with self-help groups (SHGs), Village Development Board Kharkhand (VDBKs), and forest institutions to establish scalable supply chains and secure forward contracts.

Commitment to Sustainability and Transparency

He also underscored Terviva's commitment to sustainability and transparency, with the company adhering to certifications like ISCC, COSC, and Fairwild. Terviva's innovative product portfolio includes edible oil derived from pongamia (a world-first), sustainable animal feed, and even aviation fuel, demonstrating its versatility and global relevance.

Operating Models and Future Aspirations

Operating plantations in Florida, Hawaii, and India, Terviva employs orchard and agroforestry models to maximize impact. Looking ahead, the company aspires to scale pongamia utilization further while maintaining its commitment to environmental and social impact.

Conclusion

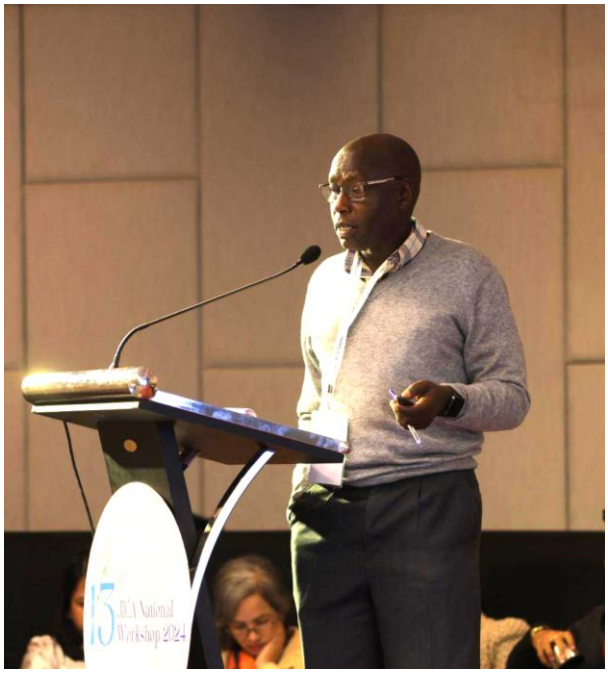
In conclusion, he emphasized Terviva's dedication to responsible sourcing, enhancing sustainable livelihoods, and tackling socio-economic challenges and collaboration with stakeholders and forest institutions remains integral to expanding pongamia's impact and achieving long-term sustainability. Terviva's innovative and community-driven model positions it as a global leader in regenerative agriculture, addressing climate challenges while empowering rural communities.

PRESENTATION ON PROJECT FOR STRENGTHENING FORESTRY SECTOR DEVELOPMENT AND COMMUNITY RESILIENCE TO CLIMATE CHANGE THROUGH SUSTAINABLE FOREST MANAGEMENT AND LANDSCAPE RESTORATION

By Shri. Abednego, Program Officer, and Shri. Paul Kipkorir Tuwei, Acting Deputy Director

Shri. Abednego, Program Officer (Climate Change) JICA Kenya Office introduced himself as the Prime Officer responsible for Climate Change at the JICA Kenya Office, beginning his address with gratitude for the opportunity to discuss the significant role JICA has played in Kenya's development. He framed the presentation by emphasizing the importance of collaborative efforts in tackling pressing environmental and socio-economic challenges and his objective was to provide a comprehensive overview of JICA's contributions to Kenya and underline the necessity of partnership in achieving sustainable solutions.

60 Years of Partnership: A Legacy of Commitment



Shri. Paul Kipkorir Tuwei, Acting Deputy Director, (Forests Research Support Service) reflected on the 60-year partnership between Japan and Kenya, describing it as a testament to shared values, mutual respect, and sustained dedication to progress and noted that this collaboration, initiated before many in the audience were born, has touched diverse sectors and has grown into a model of robust and future-focused development.

JICA's historical engagement in Kenya was presented as not merely a series of past achievements but a forward-looking framework, key areas of focus, such as renewable energy, forestry, and institutional capacity building, have underscored

the partnership's alignment with Kenya's developmental aspirations. He emphasized that this enduring collaboration is positioned to address both current and future challenges.

JICA's Strategic Support in Kenya

He outlined three principal pillars of JICA's interventions, each tailored to align with Kenya's national development goals:

1. Renewable Energy Development

JICA's pivotal role in advancing Kenya's renewable energy initiatives was highlighted. He commended Kenya's progress in clean energy, with JICA supporting capacity building, infrastructure development, and fostering innovation. These efforts aim to ensure sustainable energy production and widespread access, especially in underserved regions.

2. Grants for Infrastructure and Institutional Development

Financial grants from JICA have facilitated the development of critical infrastructure and institutional capacity in Kenya. These grants have been instrumental in equipping essential services, supporting impactful large-scale projects, and extending developmental reach to rural areas. He emphasized that such initiatives strengthen Kenya's ability to deliver transformative results.

Technical Cooperation in Forestry Management

JICA's technical cooperation in forestry was presented as one of its most impactful contributions to Kenya. Over the past 40 years, JICA has supported sustainable forestry practices by:

1. Conducting research on tree breeding, particularly for drought-resistant species.
2. Strengthening institutions such as the Kenya Forest Service (KFS) and Kenya Forestry Research Institute (KEFRI).
3. Promoting sustainable forest management and climate-resilient solutions that integrate livelihood improvements.

Addressing Kenya's Unique Challenges

He turned attention to the pressing environmental and socio-economic challenges faced by Kenya, particularly in its arid and semi-arid lands, which comprise 80% of the country's landmass. They elaborated on key issues and JICA's responses.

1. Desertification and Drought

Kenya's vulnerability to desertification and water scarcity has resulted in low agricultural productivity and ecosystem degradation. JICA has addressed these challenges through research on drought-resistant tree species and the promotion of land-use practices that restore degraded landscapes.

2. Low Forest and Tree Cover

Kenya's forest cover, currently at 12%, remains significantly below the global standard. The government's ambitious plan to increase this to 30% by 2032 was commended by him, who affirmed JICA's alignment with this vision through its support of the National Landscape Ecosystem Restoration Strategy.

3. Livelihoods and Poverty Alleviation

The integration of community priorities, such as agriculture, tourism, and sanitation, into forestry projects was highlighted as essential for ensuring both ecological restoration and socio-economic development. Sustainable forestry efforts not only enhance ecosystems but also create income opportunities for local communities, forming a dual-purpose solution.

4. Collaboration with the Kenyan Government and Institutions

He underscored JICA's close collaboration with Kenyan institutions to ensure alignment with national strategies and policies. Partnerships with the Ministry of Environment, Climate Change, and Forestry, KFS, and KEFRI were noted as key enablers of effective implementation. These partnerships facilitate:

· Policy alignment and strategic planning.
· Strengthened enforcement of forest conservation laws.
· Advancements in forestry research and innovation.

Shri. Tuwei advocated for a whole-of-government approach, which integrates efforts from central ministries, county governments, and local communities, ensuring a coordinated and inclusive response to climate and development challenges.

Conclusion

Shri. Tuwei concluded by emphasizing the global significance of Kenya's forestry and climate initiatives and noted that Kenya's efforts, supported by JICA, provide scalable models that can inspire similar solutions worldwide. JICA's commitment to Kenya's sustainable development was reaffirmed, with the encouraging continued partnerships to achieve shared goals.

Valedictory session

OPENING ADDRESS BY DR. D. VIJAY KUMAR, IAS, PROJECT DIRECTOR, MEGLIFE

Dr. D Vijay Kumar began the welcome address with heartfelt greetings to the Honorable Chief Minister, Shri. Conrad K Sangma, JICA representatives, senior officials of the Forest Department, and international delegates attending the Annual Workshop of JICA- Assisted Forestry Projects in India. He expressed deep gratitude to the Chief Minister for taking time out of his demanding schedule, especially given the recently concluded by-election, to attend this significant event.

He outlined the importance of this workshop, emphasizing JICA's global focus on knowledge exchange and collaboration. This annual event serves as a platform for projects across India to share insights, learnings, and strategies, with a special emphasis on the role of project directors in driving impactful outcomes. Hosting the workshop in Shillong during the cherry blossom season added to the event's charm, showcasing Meghalaya's natural beauty and vibrant culture. The participation and enthusiasm from all attendees were highlighted, including a Rhododendron Trek early in the morning, which was a testament to the active engagement of the delegates.

Dr. Kumar proudly spotlighted Meghalaya's innovative environmental initiatives, such as the Springs Initiative, Bamboo Mapping, Payment for Ecosystem Services (PES), and the use of advanced technologies in forest management. These efforts demonstrate Meghalaya's leadership in prioritizing natural resources and sustainability. A notable mention was made of inquiries from delegates about how Meghalaya has successfully implemented such forward-thinking interventions.

He also attributed these successes to the visionary leadership of Shri. Conrad K Sangma, who has consistently emphasized the importance of sustainability, environmental conservation, and community-driven approaches. The model adopted by the state—collaborating closely with

communities, incentivizing their participation, and integrating them into the process of sustainable development—was recognized as a fundamental reason for the state's progress. The Chief Minister's unwavering support, timely allocation of resources, and prioritization of natural resource management were praised as the driving forces behind these achievements.

In conclusion, he reaffirmed the value of the workshop as a learning platform, expressed appreciation for the active participation of delegates, and set the stage for the Chief Minister's address. The hope for continued collaboration and knowledge-sharing in the future was emphasized, reflecting the collective commitment to advancing forestry and sustainability efforts across the country.

HIGHLIGHT OF OUTCOMES OF THE WORKSHOP BY SHRI. VINEET SARIN, CHIEF OF DEVELOPMENT OPERATIONS, JICA, INDIA

Shri. Vineet Sarin address began with a warm greeting to the Honorable Chief Minister of Meghalaya, Shri. Conrad K. Sangma, and other esteemed dignitaries including Shri. Sampath Kumar, Principal Secretary of Forest and Environment, Dr. D. Vijay Kumar, Commissioner and Secretary of the MegLIFE project, senior officials from JICA, and other distinguished guests.

He expressed sincere gratitude to the Government of Meghalaya for its strong support of the MegLIFE project. Special mention was made of the leadership of Shri. Sampath Kumar and Dr. D Vijay Kumar, whose dynamic efforts, along with the support of Shri. Gunanka DB and the MegLIFE team have significantly contributed to the success of the project. he emphasized that MegLIFE stands out as one of the most successful projects in JICA's portfolio in India.

Shri. Vineet reflected on the workshop's success, highlighting the 20 presentations made by diverse contributors, including officials from various Indian states, technical experts, and international participants. These presentations, covering themes such as climate change adaptation and mitigation, transformative technologies, and community approaches for sustainability, enriched the participants' knowledge and provided valuable insights.

Following the presentations, engaging group discussions took place, where three sets of practical, forward-thinking recommendations were finalized. These recommendations, aligned with JICA's strategies and the Ministry of Environment, Forest, and Climate Change's priorities, will be fine-tuned

by MBDA and JICA and shared with participating states for further consideration. These recommendations will also serve as key inputs for future project development and policy formation.

JICA's longstanding commitment to supporting the forestry sector in India was highlighted, noting an impressive 70,225 crores in cumulative support over the past 33 years through 35 projects. He reiterated JICA's proactive collaboration with the Ministry of Environment, Forest, and Climate Change, which has fostered a strong partnership.

Acknowledgement was given to the Inspector General of Forest for attending the workshop, as well as to all the chief project directors, project directors, and officials from various states who traveled to Shillong. Their dedication and participation were crucial to the success of the workshop.

He also praised the exceptional organization of the workshop, acknowledging the efforts of the MegLIFE team led by Dr. Vijay Kumar, Shri. Gunanka DB, Shri. Raju, Shri. Wankit, and all staff members involved. Their efficient management made the event seamless and impactful.

In closing, he thanked the Honorable Chief Minister for his unwavering support to the MegLIFE project, emphasizing that with his leadership, the project will continue to be an exemplary model for sustainable forestry initiatives under JICA's portfolio.

ADDRESS BY SHRI. RAJESH S, IFS, INSPECTOR GENERAL OF FOREST, MINISTRY OF ENVIRONMENT FOREST AND CLIMATE CHANGE, GOVERNMENT OF INDIA

Shri. Rajesh S, IFS began by expressing gratitude and appreciation for the opportunity to be part of the 13th Annual Workshop of JICA-Assisted Forestry Projects, acknowledging the successful collaboration with JICA over the last three decades. This partnership has seen an investment of over 10,000 crores in forestry and natural resource management projects across India, with a focus on funding, technical expertise, validated knowledge, and innovations.

He commended the successful implementation of JICA projects in 14 Indian states, which have collectively restored over 2 million hectares of degraded forest, enhanced biodiversity, supported carbon sequestration efforts, and contributed to national climate goals. Particularly in the Northeast, JICA projects have improved over 3 lakh hectares of forest, fostering better habitats for biodiversity and supporting India's commitments under various international environmental frameworks, such as the Convention on Biological Diversity and the Paris Agreement.

Highlighting the community impact, he noted that over 500,000 forest-dependent households have been engaged in sustainable livelihoods, such as bamboo cultivation, eco-tourism, and forest-based entrepreneurship. The success of these initiatives is evident in the increase of average family incomes by 20-30% in JICA-supported areas, reflecting substantial progress toward the Sustainable Development Goals. Additionally, 35,000 self-help groups have been formed, with 500 committees in Meghalaya alone, demonstrating strong community involvement in forest management and conservation efforts.

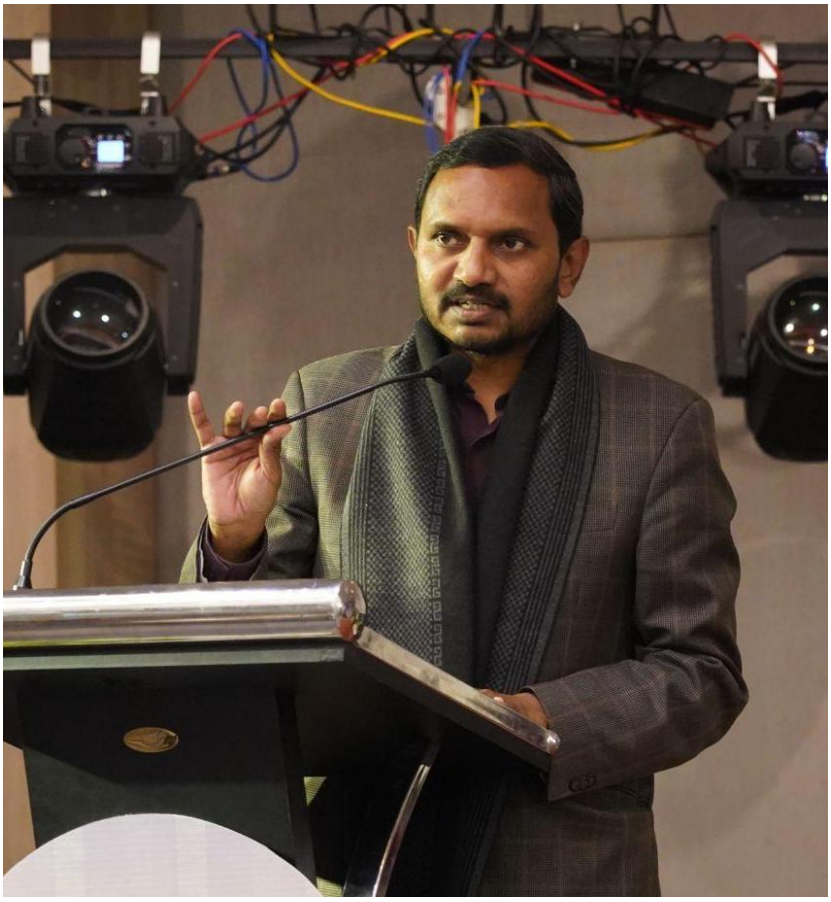
Training and capacity building were also key points of discussion, with over 1,500 forest officers trained in sustainable forest management, invasive species control, and climate resilience. Notably, technology integration, such as GIS-based monitoring systems and drone technology for fire detection, has been central to JICA projects, with the MegLIFE project serving as a prime example of how technology can support sustainable development.

He further praised MegLIFE's contribution to eco-friendly bamboo processing, benefiting over 2,000 households and reducing pressure on native forests. Addressing climate change, he reiterated the urgency of action, particularly in the Himalayan region, where climate vulnerability is a major concern. Emphasizing India's commitment to net-zero emissions by 2070, he highlighted the critical role of forests in achieving this goal.

Moving forward, he recommended streamlining project priorities, emphasizing measurable metrics for climate change response, biodiversity conservation, ecosystem restoration, and nature-based solutions. The importance of institutional convergence, resource synergy, and community involvement was also stressed as key factors for the sustainability of future projects.

In closing, Shri. Rajesh expressed gratitude to all partners—JICA, the Government of Meghalaya, the MegLIFE team, and the communities—for their collaborative efforts in building a resilient and sustainable future. He reiterated the Ministry's commitment to supporting international cooperation and expressed sincere thanks for the opportunity to participate in the workshop.

ADDRESS BY SHRI. SAMPATH KUMAR, IAS, PRINCIPAL SECRETARY OF FOREST AND ENVIRONMENT



Shri. Sampath Kumar, IAS, began his address with a warm acknowledgement of the Honourable Chief Minister of Meghalaya, Shri. Conrad K. Sangma, esteemed dignitaries, state representatives, senior officials from JICA, and participants from the Ministry of Environment, Forests, and Climate Change. Shri Sampath Kumar expressed his appreciation for the collaborative spirit displayed during the workshop and the valuable contributions of all attendees.

Shri. Sampath Kumar applauded the visionary leadership of the Honourable Chief Minister, highlighting its pivotal role in advancing Meghalaya's environmental agenda. He reflected on the landmark One Tree, One Citizen initiative, launched in 2018, which mobilized citizens across the state to plant trees, embodying the principles of community-driven environmental stewardship. This initiative, he emphasized, serves as a prime example of Meghalaya's ability to transform ambitious aspirations into tangible actions.

A significant element of Meghalaya's success, Shri. Kumar noted, is its strong emphasis on institution building. He commended the establishment of the State Climate Council, chaired by the Chief Minister, as a crucial step toward ensuring convergence and coordinated efforts among various departments. Additionally, he highlighted that Meghalaya allocates nearly 15% of its budget to climate-related initiatives, underscoring its resolute fiscal commitment to achieving sustainability goals.

Shri. Kumar shared how Meghalaya has empowered grassroots institutions, particularly through the formation of village-level Natural Resource Management Committees. These committees have taken proactive steps to safeguard vital ecosystems, with some acquiring private lands to conserve critical catchment areas. He praised this innovative approach, reflecting the state's deep-rooted culture of community-led environmental action.

Meghalaya's strides in building social capital also received recognition during his address. He proudly noted that over 14,000 young people have been trained in climate action, equipping them with technological tools and expertise to collaborate with village communities. This fusion of traditional knowledge and modern technology has created a scalable model of grassroots empowerment.

Acknowledging national and international recognition, Shri. Sampath Kumar noted the state's achievements, including endorsements from NITI Aayog and the Department of Economic Affairs. The establishment of the Government Innovation Lab, which facilitates cross-state partnerships, has further positioned Meghalaya as a trailblazer in environmental innovation. He reiterated the importance of fostering cooperative federalism and encouraged all stakeholders to strengthen partnerships aimed at shared sustainable development goals.

In his remarks, Shri. Sampath Kumar extended heartfelt gratitude to JICA for its invaluable support through two ongoing projects in the state. He described the collaboration as a testament to JICA's enduring commitment to advancing forestry and climate initiatives in India. He invited participants to leverage such opportunities for mutual learning and deeper engagement.

In conclusion, Shri. Kumar underscored Meghalaya's steadfast dedication to climate action, community empowerment, and institutional innovation, presenting the state as a model for sustainable development. He emphasized the transformative power of collective action, innovation, and knowledge sharing, while extending his best wishes to participants for a meaningful and enriching experience in Shillong.

ADDRESS BY THE CHIEF GUEST, SHRI. CONRAD SANGMA, HON'BLE CHIEF MINISTER OF MEGHALAYA

The Chief Minister of Meghalaya, Shri. Conrad K Sangma extended his warm regards to all present, including the Principal Secretary of Forest and Environment, Shri. Sampath Kumar, IAS, the JICA representative Shri. Eiji Wakamatsu, other dignitaries, and participants from across Meghalaya and other states. He congratulated MegLIFE, the organizing committee, and JICA for successfully hosting the workshop, highlighting the praise it garnered from participants.

He shared a recent interaction with representatives from Harvard Business School, who are conducting a case study on Meghalaya's remarkable achievement in reducing maternal mortality by 50% over the past three years. This success, driven by a systematic and focused approach, has attracted international attention and will likely be included in Harvard's curriculum. The Chief Minister emphasized that such milestones begin with a deep desire to effect change, inspired by the challenges and suffering faced by the community.

Drawing parallels between healthcare and environmental conservation, the Chief Minister recounted how witnessing deforestation in Meghalaya fueled his commitment to restoring the state's natural resources. Acknowledging the challenges, he stressed the importance of a shared vision, teamwork, and empowering individuals to work independently toward common goals. Capacity building and community participation remain central to the government's strategy, ensuring sustainable grassroots-level impact.

Highlighting innovative initiatives, he discussed the Payment for Ecosystem Services (PES) program, which integrates livelihood enhancement with forest conservation. The initiative demonstrates the larger value of preserving forests rather than allowing degradation, emphasizing long-term ecological and economic benefits. He also outlined Meghalaya's progress in mapping 5,000 springs using advanced technology, with plans for real-time water level monitoring and remote-controlled interventions to manage water resources effectively.

The Chief Minister expressed concern over agricultural challenges of areca nut plantation leading to crop diseases like "butt rot," and stressing the need for early disease prediction and alternative livelihoods. He encouraged leveraging technology to support farmers and enhance sustainability in the agricultural sector.

Reflecting on six years of governance, he highlighted the government's focus on strengthening systems, enhancing efficiency, and driving community-led initiatives across various sectors. Achievements in maternal health, tourism, and connectivity were shared as examples of the state's progress. He emphasized the interconnectedness of the Northeast region and the need for collaborative efforts to address environmental and climate challenges.

In his closing remarks, he reaffirmed the government's commitment to JICA's projects and their broader applicability across the Northeast. He expressed eagerness to review the workshop's outcomes and emphasized the state's readiness to learn and adapt for better governance. The Chief Minister concluded on a lighter note, inviting participants to credit the successes to him while attributing any shortcomings to the organizers.

VOTE OF THANKS BY SHRI. WANKIT K. SWER, DEPUTY PROJECT DIRECTOR, MEGLIFE

Shri. Wankit Swer began his speech by expressing gratitude to the Chief Minister of Meghalaya, Shri. Conrad K. Sangma, acknowledging his dynamic leadership and accessibility. The CM's hands-on approach and deep involvement in every aspect of the workshop and the state's natural resource management (NRM) and climate change efforts were particularly appreciated. His commitment to engaging with communities and addressing issues directly contributed significantly to the success of the workshop.
Next, he thanked Shri. Sampath Kumar, Principal Secretary of Forest and Environment, Development Commissioner, and CEO of MBDA, for his constant encouragement and innovative leadership. His efforts in pushing for cross-sectoral convergence and supporting the pursuit of new ideas were instrumental in the progress seen in various sectors in Meghalaya.

JICA representatives, Shri. Eiji Wakamatsu and Shri. Vineet Sarin was also thanked for their strong support and understanding of the projects, which have enabled the adoption of best practices and new initiatives across the state. He extended gratitude to Shri. Rajesh S. from the Ministry of Environment, Forest and Climate Change for sharing valuable insights and offering strong support from the central government.

Dr. D Vijay Kumar, another key figure with multiple roles, was thanked for his work in fostering convergence among departments, helping combine resources, knowledge, and technical capabilities across sectors to achieve common goals, including Meghalaya's State Council for Climate Change.

He also expressed gratitude to senior officials, non-departmental experts, and agency representatives for sharing knowledge during the workshop, especially on topics like AI, which expanded participants' understanding of new opportunities.

A special mention was made for APD Shri. Gunanka DB, whose dedication and leadership, often behind the scenes, helped make the event a success. He highlighted the hard work and team spirit within the MBDA staff, who had worked tirelessly in preparation for the workshop. The efforts of the staff from sister organizations were also acknowledged.

Lastly, thanks were given to the Taj Vivanta for providing the venue and to the vendors for their logistical support. The team's commitment was described as exemplary, and he concluded by wishing everyone the best and extending gratitude once again for the successful collaboration.

GROUP DISCUSSIONS

The two-day workshop featured interactive group discussions, where participants were divided into three groups, each focusing on a key theme:

1. Climate Change Adaptation and Mitigation

2. Transformative Technology and Policy for Natural Resource Management

3. Community Approaches to Sustainability

Their primary objective was to develop actionable recommendations and suggestions to enhance knowledge sharing among participants. Through collaborative efforts, participants exchanged diverse perspectives, fostering innovative ideas and strategies to strengthen communication, learning, and collective action.

GROUP 1 TOPIC: CLIMATE CHANGE ADAPTATION AND MITIGATION- Issues and Recommendations

Introduction

The workshop on climate change adaptation and mitigation highlighted critical issues impacting ecosystems, livelihoods, and development. These discussions underscored the need for a multi-dimensional approach integrating ecological restoration, sustainable practices, and innovative solutions. Below is a summary of key issues and actionable recommendations.

1. ***Degradation of Wetlands and River Ecosystems*** -Wetlands and river systems are integral to maintaining biodiversity and water security but face degradation due to climate change and human activities.

Recommendations:

- Integrate wetland management into climate action frameworks.

- Establish dedicated river rejuvenation working circles in forest management plans.
- Map wetland biodiversity through the lens of climate adaptation to enhance conservation efforts.

2. ***Insufficient Carbon Sequestration Efforts*** -The potential for locking carbon and creating carbon sinks remains underutilized due to limited awareness and resources.

Recommendations:

- Utilize lesser-valued timber species for carbon sequestration.
- Identify carbon stock for trading and marketing opportunities.
- Establish fast-growing carbon sinks using species like bamboo to offset emissions.

3. ***Unsustainable Agricultural Practices*** - Traditional agricultural practices often deplete resources and are not equipped to address erratic rainfall patterns or water scarcity.

Recommendations:

- Promote farming beneath solar panels to maximize land use efficiency.
- Implement water-saving techniques like the System of Rice Intensification (SRI) in rice cultivation with alternate wetting and drying cycles.
- Transition farmers to agroforestry models with site-specific approaches.

4. ***Limited Focus on Native Species and Biodegradable Alternatives*** - Native species are often overlooked in restoration projects, and biodegradable alternatives to single-use plastics (SUPs) are expensive and inaccessible.

Recommendations:

- Conduct research on native endemic species to ensure their conservation and use in ecological restoration.
- Add value to biodegradable alternatives to make them affordable and widely available, reducing dependence on SUPs.

5. ***Land Fragmentation and Urban Development Pressures*** - The rapid fragmentation of forests for development projects and urban sprawl compromises biodiversity and ecosystem services.

Recommendations:

- Create a land bank to prevent forest fragmentation for developmental diversions.
- Ensure urban planning includes land plots with designated green spaces to mitigate the urban heat island effect and enhance livability.

6. ***Inadequate Coordination and Institutional Support*** - The fragmented approach across forestry, agriculture, and horticulture departments limits the impact of climate adaptation measures.

Recommendations:

- Establish an Agroforestry Board to unify efforts across departments.
- Develop funding mechanisms and tailored business models to promote agroforestry practices effectively.
- Encourage inter-state coordination between upstream and downstream states for comprehensive resource management.

7. ***Weak Monitoring Systems and Technological Integration*** - Monitoring efforts are often sporadic and lack technological advancements, limiting the effectiveness of interventions.

Recommendations:

- Deploy drone-based surveys for long-term research and mapping.
- Utilize drone-based darting systems to safely immobilize wild animals during human-wildlife conflicts.
- Establish GIS-based tools for real-time monitoring and precision silviculture practices.

8. ***Need for Sustainable Livelihood Models*** - Communities reliant on traditional practices face challenges in transitioning to sustainable livelihoods.

Recommendations:

- Expand the Spring-Shed Management Project nationwide to enhance water security.
- Implement income-buffering mechanisms, such as Payment for Ecosystem Services (PES), to incentivize conservation efforts. Promote high-value tree species like sandalwood, teak, agarwood, and mahogany to boost economic returns.
- Integrate SHGs and private sector participation to improve market access and value addition.

Conclusion

Addressing climate change requires a nuanced approach that identifies core issues and implements targeted recommendations. By integrating technological innovation, institutional frameworks, and sustainable livelihoods, these measures aim to foster ecological restoration and community resilience. The workshop called for collective action, urging stakeholders to work together to mitigate climate risks while promoting sustainable development.

GROUP 2 TOPIC: TRANSFORMATIVE TECHNOLOGY - Issues and Recommendations

Introduction

The presentation highlighted the need for integrating transformative technologies to enhance the management of natural resources. Key discussions revolved around addressing technological, institutional, and policy challenges while proposing actionable solutions for sustainable and efficient resource management. Below is a summary of the identified issues and corresponding recommendations.

1. ***Lack of Appropriate and User-Friendly Technologies -*** Field stakeholders and technical teams often face challenges in adopting technologies that are not user-friendly or tailored to ground realities.

Recommendations:

- Identify and select technologies suited for field-level stakeholders and technical laboratories.
- Prioritize technologies that ease operational efforts and enhance usability.

2. ***Limited Data Accessibility and Integration*** **-** Data accessibility remains a critical bottleneck, with fragmented systems and limited interoperability hindering effective decision-making.

Recommendations:

- Develop comprehensive data stacks and related APIs to enable seamless data mining and sharing.
- Adopt open-source, customized software utilities to reduce reliance on proprietary systems.

3. ***Underutilization of Geospatial Technology*** **-** Geospatial technology remains underutilized despite its potential to transform natural resource management practices.

Recommendations:

- Invest in the development and deployment of advanced geospatial technologies.
- Ensure that geospatial data aligns with user needs through customization and field-level training.

4. ***Insufficient Capacity Building and Stakeholder Engagement*** **-** Stakeholders at various levels lack the necessary training and support to implement and benefit from transformative technologies.

Recommendations:

- Provide capacity-building programs and ongoing handholding for all stakeholders. \
- Conduct workshops and training sessions to familiarize stakeholders with emerging technologies.

5. ***Policy Gaps and Lack of Synergy Between Departments*** **-** Fragmented policy frameworks and a lack of coordination between departments limit the efficacy of technological interventions.

Recommendations:

- Establish a policy framework for technology and data sharing in line with the NSDI (National Spatial Data Infrastructure) framework.
- Foster synergy and collaboration among departments to ensure cohesive implementation.

6. ***Interoperability Issues*** **-** Interoperability challenges between different software and systems create inefficiencies and reduce the utility of technological solutions.

Recommendations:

- Address interoperability issues by adopting standardized protocols and ensuring compatibility across platforms.
- Encourage the use of open-source solutions to enhance flexibility and integration.

Conclusion

The integration of transformative technologies in natural resource management holds immense potential to address current challenges and optimize resource utilization. By focusing on user-friendly solutions, data accessibility, geospatial technology, capacity building, policy reform, and interoperability, stakeholders can ensure a more sustainable and efficient approach to resource management. The presentation emphasized the need for collaboration and innovation to unlock these opportunities.

GROUP 3 TOPIC ON: COMMUNITY APPROACH FOR SUSTAINABILITY – Issues and Recommendations

Introduction

The presentation emphasized the importance of adopting community-driven approaches to achieve sustainability. It highlighted critical issues related to institutional structures, financial models, and knowledge systems and proposed actionable solutions to foster inclusivity, transparency, and long-term impact. Below is a detailed outline of the identified issues and corresponding recommendations.

1. ***Lack of Financial Sustainability for Community Institutions*** **-** Many community institutions struggle to sustain operations due to insufficient funds and dependency on external resources.

Recommendations:

- Establish corpus funds where interest income can cover running costs.
- Introduce a grading mechanism to incentivize better-performing groups.

- Leverage external representation for transparency and ensure financial accountability.

2. ***Insufficient Recognition of Traditional and Specialized Knowledge -*** Unique community skills such as creating living root bridges or expertise in hydrogeology remain underutilized and unaccredited.

Recommendations:

- Promote and accredit specialized skills, ensuring they are formally recognized.
- Encourage the use of traditional ecological knowledge as a resource for sustainable development initiatives.

3. ***Fragmented Institutional Frameworks -*** Collaboration across multiple stakeholders often lacks cohesion and synergy, reducing the effectiveness of community-driven initiatives.

Recommendations:

- Foster convergence among actors with common goals, including internal and external stakeholders.
- Develop mechanisms to transition from project-based approaches to program-based frameworks for long-term impact.

4. ***Limited Community Participation and Ownership -*** Community engagement is often restricted due to a lack of inclusivity and awareness, hindering ownership and participation in sustainability efforts.

Recommendations:

- Implement flexible mechanisms to ensure inclusivity, accommodating both homogeneous and heterogeneous community groups.
- Expand ownership by recognizing and incentivizing contributions from individuals and community groups.

5. ***Lack of Reliable Socio-Economic Data for Planning -*** Planning processes are hampered by the absence of comprehensive community-level socio-economic data.

Recommendations:

- Develop and maintain a socio-economic database for communities to aid evidence-based planning.
- Use this data to design customized interventions that address specific community needs.

6. ***Weak Capacity Building and Knowledge Sharing Mechanisms*** **-** Limited access to capacity-building initiatives and networking opportunities reduces the impact of sustainability efforts.

Recommendations:

- Strengthen handholding support through training, mentoring, and networking platforms.
- Build community capacity with a focus on dynamic and flexible withdrawal strategies to ensure long-term independence.

Conclusion

The presentation highlighted the importance of integrating institutional, financial, and knowledge-based strategies to achieve sustainable outcomes. By addressing financial constraints, recognizing traditional knowledge, fostering collaboration, promoting inclusivity, and strengthening planning mechanisms, the community-driven approach can serve as a powerful tool for sustainability. The presentation concluded with a call for collaborative efforts to empower communities and ensure lasting impact.

GALLERY

DAY 1


13th JICA National Workshop 2024


13TH JICA NATIONAL WORKSHOP ON FORESTRY PROJECTS IN INDIA
ADAPTING TOGETHER: COMMUNITY DRIVEN SOLUTIONS FOR CLIMATE RESILIENCE
13th JICA National Workshop 2024

DAY 2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13th JICA National Workshop 2024
13TH JICA NATIONAL WORKSHOP ON FORESTRY PROJECTS IN INDIA
ADAPTING TOGETHER: COMMUNITY DRIVEN SOLUTIONS FOR CLIMATE RESILIENCE
13th to 15th November 2024
At Taj Vivanta, Shillong
Organised By
MEGHALAYA BASIN DEVELOPMENT AUTHORITY (MBDA)
under the auspicious of
Project for Community based Forest
Livelihoods Improvement in Meghalaya (MegLIFE)


Meghalaya
THANGKHARANG

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MEGHALAYA BASIN DEVELOPMENT AUTHORITY

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