

11th International Training Programme on

“Introduction to Environmental Auditing” conducted in two batches from 11th to 15th March 2024 and 18th to 22nd March 2024

International Centre for Environment Audit & Sustainable Development (iCED), as the Global Training Facility (GTF) of INTOSAI Working Group on Environmental Auditing (WGEA) organised 11th International Training Programme on “Introduction to Environmental Auditing” in two batches to facilitate participation from SAIs in different time zones from 11th to 15th March 2024 (Batch-I) and 18th to 22nd March 2024 (Batch-II) through virtual mode. A total number of 93 participants (63 in Batch- I & 30 in Batch-II) represented 28 SAIs in the training programme.

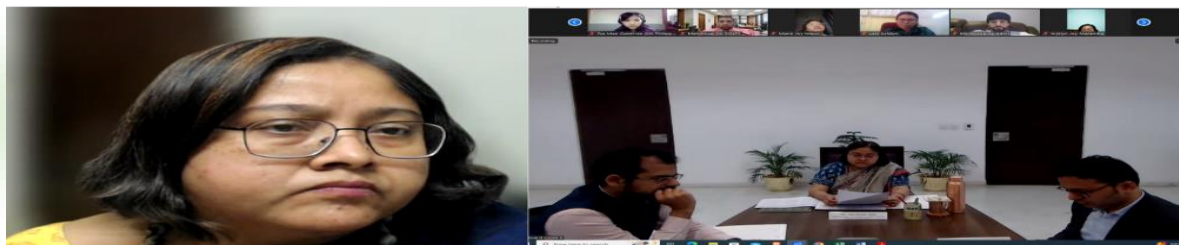
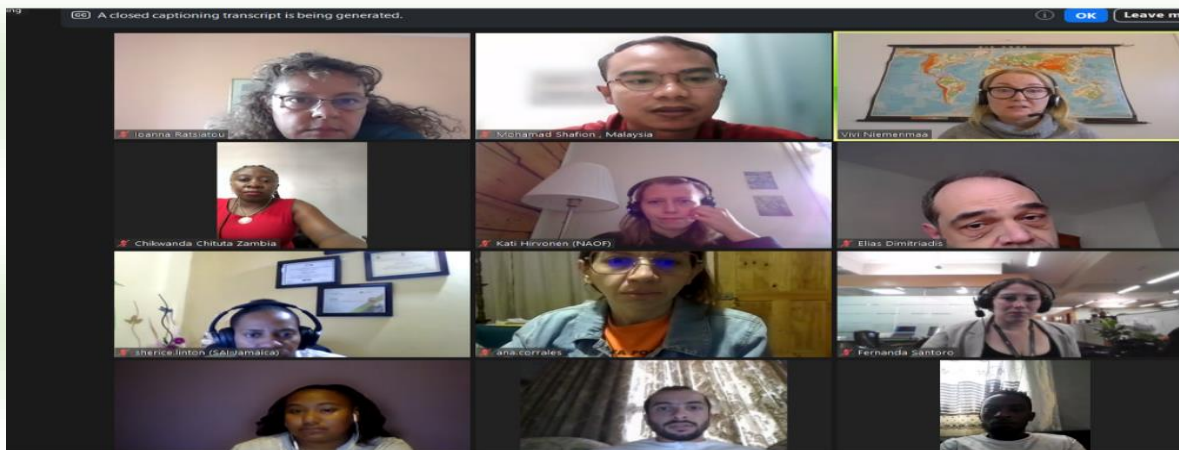


Ms. Sayantani Jafa, ADAI & DG, iCED addressing the participants during Inauguration

During the inaugural sessions Director (Training & Research), iCED in his welcome address greeted Ms. Sayantani Jafa, Additional Deputy Comptroller and Auditor General & Director General, iCED, participants, and the honourable guest speaker Dr. Vivi Niemenmaa, Secretary General, INTOSAI WGEA.

Ms. Jafa madam in her inaugural addresses highlighted that the environmental issues know no borders and affect beyond borders, environmental audits are essential not just within nations, but globally and beyond, therefore it is imperative for the audit community to diligently uphold environmental auditing principles worldwide. She reiterated the importance of international cooperation and expertise in ensuring that auditing practices meet regulatory standards.

She further apprised the participants about the establishment of a Centre of Excellence on Blue Economy at iCED under the guidance of the Hon'ble C&AG of India, Shri Girish Chandra Murmu for augmenting and disseminating SAI India's efforts towards capacity development in the field of audit of Blue Economy in addition to its existing endeavours for environmental auditing and sustainable development as the Global Training Facility for the INTOSAI WGEA, WGEI etc. Moreover, iCED, Jaipur on behalf of SAI India entrusted with the role of technical focal point for the research projects the "Climate Scanner", and "Environmental Accounting", under the "Climate and Biodiversity Hub" and "Green Economy Hub", respectively of the INTOSAI WGEA Work Plan 2023-2025.



11th ITP snapshots

The inaugural addresses were concluded by expressing gratitude to the Chair of INTOSAI Working Group on Environmental Auditing, Auditor General of the National Audit Office Finland Mr. Sami Yläoutinen and his team, for extending their support in organising this training programme by welcoming all the participants and guest faculties.

During the training programme, experts from European Court of Auditors (ECA), SAI USA, SAI Brazil, SAI Finland, SAI India and other renowned Institutions and think tanks such as Observer Research Foundation (ORF), The Energy and Resources Institute (TERI), National Remote Sensing Centre (NRSC) Hyderabad etc. shared their perspectives with relevant case studies to elaborate the various aspects of Environmental Auditing. The session-wise details are given below:

| S. No | Resource Person | Session | Date |
|-------|--|--|---|
| 1. | Dr Vivi Niemenmaa, SAI, Finland | Basics of Environmental Auditing and Evolution of Environmental Auditing, INTOSAI WGEA | 11.03.2024 (Batch-I) & 18.03.2024 (Batch- II) |
| 2. | Mr Souvik Bhattacharjya Associate Director, Resource Efficiency & Governance Division, TERI, New Delhi | Environmental Governance and its importance in Environmental Social Governance (ESG) Framework | 11.03.2024 (Batch-I) & 19.03.2024 (Batch-II) |
| 3. | Dr. Akhilesh Mishra, Scientist, Department of Science & Technology, Government of India | Overview and Impact of Climate Change, Mitigation and Adaptation Efforts | 12.03.2024 (Batch-I) |
| 4. | Dr. Kathiresan Kandasamy, Former Dean and Director, Faculty of Marine Sciences, Annamalai University | Climate Change and Marine Biodiversity with special focus on Mangroves | 12.03.2024 (Batch-I) & 18.03.2024 (Batch-II) |
| 5. | Dr. Nanda Dulal Das, SAI India | Auditing Waste Issues with Special Reference to Plastic Waste | 13.03.2024 (Batch-I) |
| 6. | Mr. Milan Smid and Ms. Marika Meisenzahl, Directorate – Sustainable use of Natural Resources, European Court of Auditors (ECA) | Designing Audit of Climate Change and Cooperation in Climate Change related Audits | 13.03.2024 (Batch-I) & 20.03.2024 (Batch-II) |
| 7. | Mr. Mehul Grover, SAI India | Global Water Challenges and Audit of Water related Issues | 14.03.2024 (Batch-I) & 21.03.2024 (Batch- II) |
| 8. | Dr. Sanjay Sood (IFS-1993), Addl. PCCF(Res. & Trg.), Himachal Pradesh Forest Academy | Biodiversity Governance: Global Overview and Auditing Biodiversity | 14.03.2024 (Batch-I) |

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|-----|---|--|--------------------------|
| 9. | Dr. Nilanjan Ghosh, Director, Centre for New Economic Diplomacy & ORF Kolkata Centre | Green Finance: Public and Private Financing | 15.03.2024 (Batch-I) |
| 10. | Shri G. Rajashekar, Group Director, Forestry & Ecology, RSAA National Remote Sensing Centre (NRSC) Hyderabad | Use of Remote Sensing and GIS in Environmental Auditing | 15.03.2024 (Batch-I) |
| 11. | Ms. Zoe Need, Mr. Joe Thompson , Ms. Adriane Kline, Government Accountability Office(GAO), USA | Audit of Climate Change Mitigation and Adaptation Efforts: Experience Sharing | 19.03.2024 (Batch-II) |
| 12. | Mr. Pravinjith K.P, Managing Director, Paradigm Environmental Strategies (P) Ltd. Bangalore | Auditing Waste Issues with Special Reference to Plastic Waste | 20.03.2024 (Batch-II) |
| 13. | Ms. Paula Hebling Dutra, Specialist, SAI Brazil | Biodiversity Governance: Global Overview and Auditing Biodiversity | 21.03.2024 (Batch-II) |
| 14. | Ms. Mannat Jaspal, Associate Fellow, ORF India | Green Finance : Public and Private Financing | 22.03.2024 (Batch-II) |
| 15. | Shri Rajiv Kumar, Group Head, Soil Resources & LUMG, National Remote Sensing Centre (NRSC) Hyderabad | Use of Remote Sensing and GIS in Environmental Auditing | 22.03.2024 (Batch-II) |



Dr. Vivi Niemenmaa

Dr. Vivi Niemenmaa, SAI, Finland during her talk laid focus on importance of environment, climate change, environmental governance, and evolution of environmental auditing. She discussed about the extreme weather events, and their impact upon biodiversity, ecosystem and recent trends in environmental governance and auditing. During the sessions, initiatives undertaken by the INTOSAI WGEA Secretariat related to climate change, biodiversity, and the green economy, as well as recent developments in environmental governance and auditing were also highlighted.

Mr. Souvik Bhattacharjya, Associate Director, TERI provided insights into the evolving environmental landscape, carbon management, intersection of Sustainable Development Goals (SDGs) and Environmental, Social, and Governance (ESG) considerations, factors influencing sustainability within organizational strategies, and the role of International Standards Organizations, particularly the IS 14000



Mr. Souvik Bhattacharjya

Series, in environmental management and carbon management practices during the session on “Environmental Governance and its importance in Environmental Social Governance (ESG) Framework”.



Dr. Akhilesh Mishra

Dr. Akhilesh Mishra, Scientist, Department of Science & Technology, Government of India during his session on “Overview and Impact of Climate Change, Mitigation and Adaptation Efforts” described various models utilized for weather and climate prediction, recent trends in climate change, and global projections from Earth System Models (ESMs). Additionally, the various

signals indicating climate change impacts across multiple domains, including health, environment, and the economy were also elaborated. The effects of climate change on coastal regions and associated challenges were also highlighted during session and some specific recommendations regarding mitigation and adaptation efforts crucial for effectively addressing the climate change were suggested.

Dr. Kathiresan Kandasamy, Former Dean and Director, Annamalai University presented on "Climate Change and Marine Biodiversity with a Special Focus on Mangroves" explained the critical role of mangroves in ecological balance, shoreline stabilization, erosion prevention, and coastal protection against natural disasters such as storms and tsunamis. A significant role that auditors can play in combating climate change, particularly in areas such as



Dr. Kathiresan Kandasamy

biodiversity conservation was highlighted. The need for concerted efforts towards safeguarding the ecosystems, associated ecological services and a climate resilient and prosperous future for ecosystems and society as a whole, was emphasised during the session.

Dr. Nanda Dulal Das, SAI India discussed the policy landscape related to waste management with Special Reference to Plastic Waste and emphasised the critical importance of waste segregation as a foundational policy for an effective waste management.



Dr. Nanda Dulal Das

The session included outlining as well as designing and execution of audits for solid waste management. Emphasis was laid on importance of economy, efficiency, and effectiveness in audit processes and use of remote sensing and GIS as tools in auditing.

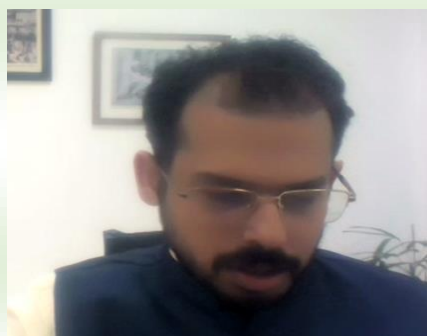
A case study from SAI India on the audit of solid waste management was discussed highlighting the best practices for adopting innovative and sustainable waste management practices and lessons learned to address environmental challenges effectively.



Mr. Milan Smid and Ms. Marika Meisenzahl

Mr. Milan Smid and Ms. Marika Meisenzahl from the European Court of Auditors (ECA) provided insights on designing audits on climate change related topics and promoting cooperation in climate change-related audits by outlining the main phases of the audit process, including planning, examination, reporting, and follow-up

and highlighted the need for thorough examination of climate change risks and the importance of collaboration among stakeholders to address these challenges effectively. Few examples drawn from their valuable experiences and audit findings were shared with participants. A prototype for conducting audits was also suggested, which could be replicated by other Supreme Audit Institutions (SAIs) during their audits.



Mr. Mehul Grover, SAI India provided an overview of the global water crisis, emphasizing the significance of water legality and key factors influencing water availability and quality under session's theme "Global Water Challenges and Audit of Water-related Issues" through case studies based on past audits conducted pertaining to water sector such as audit of wetlands, storm water drain management, water supply

systems, sewerage management systems, and groundwater management for assessing the economy, efficiency, effectiveness and compliance in water-related issues. Session included framing of some potential recommendations to address the challenges and for improving water resource management practices for sustainable water use and conservation efforts.



Dr. Sanjay Sood

Dr. Sanjay Sood (IFS-1993) delivered his session on “Biodiversity Governance: Global Overview and Auditing Biodiversity”. Session outlined the principles of sustainable development, stressing the importance of balancing environmental, social, and economic considerations and provided insights into the status and

trends of global biodiversity, highlighting alarming trends in marine biodiversity loss. During session various concepts of global biodiversity governance including the role of international bodies such as the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and the Convention on Biodiversity (CBD) established in 1992 were also elaborated. Furthermore, the significance of the Conference of the Parties (COP) as the governing body of the CBD, responsible for reviewing progress and setting new targets for biodiversity conservation was also explained.

Dr. Nilanjan Ghosh, Director, ORF Kolkata Centre during his session on “Green Finance :

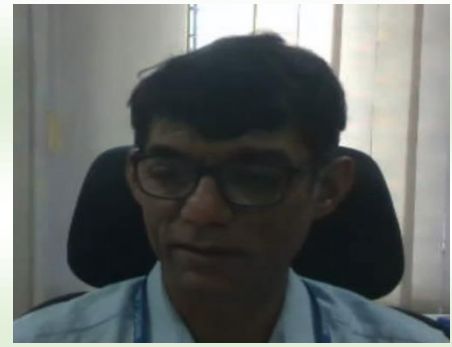


Dr. Nilanjan Gosh

Public and Private Financing” elaborated the concept of green finance encompassing both public and private financing mechanisms aimed at supporting environmental sustainability and addressing climate change challenges.

The various components of green finance include sources such as government grants, loans from development banks, and contributions from climate funds. Private financing which involves instruments like green bonds, sustainable investment funds, and impact investing, where investors prioritise environmental and social outcomes alongside financial returns. Sectors which can play a vital role in funding projects, initiatives, and businesses aligned with green finance principles to accelerate the transition to a low-carbon and sustainable economy were highlighted during the session.

Shri G. Rajashekar, Scientist from National Remote Sensing Centre (NRSC) Hyderabad during his session on "Use of Remote Sensing and GIS in Environmental Auditing." discussed the pivotal role of remote sensing and Geographic Information Systems (GIS) in enhancing the effectiveness of environmental auditing processes through leveraging these technologies to track and mitigate environmental risks, particularly in monitoring tropical forest



Shri G. Rajashekar

degradation for assessing the environmental changes and biodiversity loss. He outlined the concept of scale in ecological studies and underscored the importance of spatial and temporal scales while analysing the ecological phenomena and conservation strategies.

During the session the utilization of GPS Aided GEO Augmented Navigation (GAGAN) particularly in remote and forested area for effective forest management and conservation efforts was also explained.



Ms. Zoe Need, Ms. Adriane Kline, Mr. Joe Thompson

Ms. Zoe Need, Mr. Joe Thompson, and Ms. Adriane Kline from the Government Accountability Office (GAO), USA, provided an overview of GAO's audit process, approaches and methodologies for assessing various

government operations and shared valuable insights during session on "Audit of Climate Change Mitigation and Adaptation Efforts: Experience Sharing." GAO's approach to climate change audits and the importance of evaluating government actions and policies related to both mitigation and adaptation efforts were discussed. GAO's Disaster Resilience Framework as Criteria, which serves as a guide for assessing disaster preparedness, response, and recovery efforts in the face of climate change-related challenges was highlighted.

Additionally, various findings as case studies based on GAO's audits focused on reduction of greenhouse gas emissions for ensuring the commitments of climate change were also apprised.

Mr. Pravinjith K.P delivered during his session on "Auditing Waste Issues with Special



Reference to Plastic Waste" highlighted the detrimental effects of pollution on our natural resources, with a specific focus on the pervasive presence of plastic waste globally. The complexities of the waste value chain outlining the various stages involved in the generation, collection, transportation, treatment, and disposal of waste were

Mr. Pravinjith K.P discussed. The scope and methodology of waste audits and specific audit steps to guide auditors in conducting thorough and systematic assessments of waste management practices, particularly focusing on plastic waste were also elaborated.

Ms. Paula Hebling Dutra, a specialist from SAI Brazil, during her session on "Biodiversity Governance: Global Overview and Auditing Biodiversity" discussed the principles of sustainable development and emphasized the importance of balancing in economic, social, and environmental considerations in decision-making processes. She also outlined the concept of global biodiversity governance and the role of international platforms such as the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) in facilitating global cooperation and knowledge exchange status and provided insights about alarming trend in marine biodiversity.



Ms. Paula Hebling Dutra

Ms. Mannat Jaspal, Associate Fellow at ORF India, delivered a session on "Green Finance: Public and Private Financing". During the session the concept of green finance, which includes various public and private financing mechanisms aimed at supporting environmental sustainability and addressing climate change challenges was discussed.



Ms. Mannat Jaspal

Public financing mechanisms include sources such as government grants, loans from development banks, and contributions from climate funds and described how these funds are essential for funding projects and initiatives that promote renewable energy, energy efficiency, sustainable infrastructure, and climate resilience. Carbon pricing as a key aspect of environmental sustainability efforts and how the carbon pricing mechanisms can play a crucial role in incentivizing emissions reductions and driving investment towards low-carbon technologies and projects were also touched upon during the session.

Shri Rajiv Kumar, Scientist from the National Remote Sensing Centre (NRSC) during the session on "Use of Remote Sensing and GIS in Environmental Auditing." emphasised the critical role of remote sensing and Geographic Information Systems (GIS) in enhancing the effectiveness of environmental auditing processes. Various remote sensing and GIS application and their use in environmental auditing were described for various types of



Shri Rajiv Kumar

environmental assessment such as land cover and land use, mapping of noise pollution in busy corridors, assessing groundwater quality and monitoring tropical forest degradation was explained. Use of Open-source GIS software options available in the market, such as QGIS and ArcGIS, as well as Google Earth, which are very user-friendly for conducting spatial analysis and visualization in environmental monitoring and assessment for auditors were also touched upon.

Feedback: - Feedback provided by participants on course designing, the time required, content, knowledge and its delivery by the resource persons etc. works out to 8.67 on a scale of 1-10, which was highly encouraging.

Participants of Batch I accorded highest feedback for Session on **“Green Finance : Public and Private Financing”** delivered by Dr. Nilanjan Ghosh, Director, Centre for New Economic Diplomacy & ORF Kolkata Centre and Participants of Batch II accorded highest feedback for Session on **“Basics of Environmental Auditing and Evolution of Environmental Auditing, INTOSAI WGEA”** delivered by Dr Vivi Niemenmaa, INTOSAI WGEA.

Valediction of the 11th International Programme: Ms Sayantani Jafa, ADAI and DG, iCED graced the valedictory session and extended heartfelt thanks to all the participants for their enthusiastic involvement throughout the programme, which significantly contributed to its successful execution. Participants were requested to explore iCED’s quarterly journal, “Green Files”, which attempts to highlight both local and global issues on environmental audit and sustainable development which also includes articles from renowned think tanks and global SAIs too. Participants were also informed about iCED’s research papers published under the Occasional Research Paper (ORP) Series which are focused on multi-dimensional aspects of Blue Economy and Climate Change and implored to have a look.

She further wished that the sharing of experiences and perspectives during this training would suitably equip all the participants to take the learning process forward. She outlined the importance of envisioning the broader picture while formulating audit approaches relating to the environmental auditing, encompassing multifaceted and interconnected aspects. While

concluding, she expressed thanks to all the SAIs who had nominated resource persons to deliver the sessions during the workshop.



Ms Sayantani Jafa, ADAI and Director General, iCED addressing the participants during valediction

Dr Nanda Dulal Das, Director (Training & Research), iCED conveyed vote of thanks to all the faculties for sharing their knowledge and experiences during the Programme. He also thanked all the participants for their active participation. He further conveyed sincere thanks to all the SAIs who nominated participants and supported iCED by contributing resource persons for the 11th International Training Programme and concluded the programme.

Testimonials

1. **Mr. Ram Chandra Ojha from SAI Nepal** - “I would like to extend my gratitude to iCED, mentors, and management team, and congratulate all the participants from various SAIs. Hope to meet everyone in person meeting soon”.
2. **Mr. Marlon D. Mangoba from SAI Philippines-** “Extending my gratitude to iCED, resource speakers, and all who were behind the success of this course. Hope to meet everyone in person soon “ .
3. **Mr Kiran Chipola from SAI Zambia-** “The test session and the preliminary works done were excellent as it gave chance to manage the internet issues well”.
4. **Mrs. Ruby L. Caballes from SAI Philippines-** “The timing and design of the course is helpful specially in the conduct of performance audit“.
5. **Ms. Marie Joy D. Marin from SAI Philippines** - “Providing a platform where all auditors can ask a question and view the answers of the resource persons”.

6. **Ms. Georgiana Francisca Braulete from SAI Ecuador** – “In general, the course was interesting, and I would like to have more experiences of the results obtained and the follow-up of subsequent audit recommendations”.
7. **Ms. Stacy-ann Dias from SAI Jamiaca-** “The overall choice selection as it relates to the presenters, and the design of the course was greatly satisfying. Thank you very much for hosting this training session and extending invitation to SAI Jamaica. I looking forward to participating in other similar trainings hosted by iCED”.