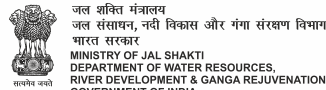


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PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON

ESG TRANSVERSALITY FOR SUSTAINABLE WATER-ENERGY- HEALTH AND ENVIRONMENT NEXUS



SUSTAINABILITY → NEXUS → TRANSVERSALITY



2nd Edition

Water Transversality Global Awards & Conclave 2026

6th-7th March, 2026

India International Centre, New Delhi



भारत सरकार, डाक विभाग

भारत सरकार, डाक विभाग



मुख्य पोस्टमास्टर जनरल, दिल्ली पत्रिका, नई दिल्ली-110001

मुख्य पोस्टमास्टर जनरल, दिल्ली पत्रिका, नई दिल्ली-110001



2nd Edition Water Transversality Global Awards and Conclave 2026

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India Water Foundation (IWF)

www.indiawaterfoundation.org

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ACKNOWLEDGEMENTS

We take this opportunity to express our heartfelt gratitude to our esteemed collaborators, including the South and South-West Asia Office of UN ESCAP, South and South-West Asia Network on the Sustainable Development Goals, Government of India's NITI Aayog, Ministry of Power, Ministry of Jal Shakti, Ministry of Social Justice and Empowerment, Ministry of Heavy Industries and Ministry of Environment, forest and climate change for their unwavering support and partnership. We would also like to acknowledge the invaluable contributions of individual experts who have played a pivotal role in the formulation of this report and in ensuring the success of the Water Transversality Global Awards and Conclave 2026.

Our sincere thanks extend to all the jury and advisory committee members for their valuable suggestions during the advisory committee discussions and related meetings. Special appreciation goes to our collaborating organizations, including Government of Uttar Pradesh, Gujarat Narmada Valley Fertilizers & Chemicals, Anondita Medicare Ltd, Indian Oil Corporation, Meghalaya Basin Development Authority, GAIL India Ltd., BPCL, HPCL, AI Engineering services ltd., Delhi Metro Rail Corporation, Sulabh International, and SM Sehgal Foundation whose contributions were instrumental in bringing this conference to fruition.

We are also deeply grateful to the dignitaries and members of our knowledge partners, such as the World Water Council (WWC), the Global Alliance for a Sustainable Planet (GASP), the Institute of Studies on Industrial Development (ISID), the International Union for Conservation of Nature (IUCN), UNOPS, the International Commission for Irrigation and Drainage (ICID), Global Water Partnership, Wetlands International, BBC Media Action and Integrated Centre for Adaptation to Climate Change, Disaster Risk Reduction and Sustainability ICARS- IITR. Their participation and contributions to enriching our discussions during the two-day conference have been immensely valuable.

We also wish to recognize the remarkable efforts of our speakers, panellists, and attendees, whose active participation, insightful ideas, and collaborative spirit have transformed this conclave into a dynamic platform for innovation and action. A special thanks is due to the students who participated, offering fresh perspectives and emphasizing the vital role of youth in shaping a sustainable future.

Lastly, we acknowledge the tireless efforts of the organizing committee, volunteers, and technical staff, whose diligent work ensured the event's resounding success. Your commitment and teamwork have made this conference a meaningful platform for dialogue, collaboration, and the advancement of sustainable water, energy, and environmental solutions. Together, we have laid the foundation for meaningful change and collaborative solutions to address the interdependencies of water, energy, and the environment.

We would also like to place on record our sincere appreciation for the editorial team and all other organizations and individuals who contributed to the formulation of this report.

युगल जोशी

प्रोग्राम डायरेक्टर

Yugal Joshi

Programme Director

W&L Resources,

Drinking Water & Sanitation

Tourism & Culture,

School Education, Youth Affairs and Sports



सत्यमेव जयते

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FOREWORD

The twenty-first century confronts humanity with an array of crises that are neither separate nor sequential. Climate disruption, water stress, severe biodiversity loss, energy insecurity, pandemic and widening public health vulnerabilities are threads of the same fraying fabric. For too long, development policy responded to these challenges in silos, treating water as an infrastructure problem, energy as a supply-chain concern, health as a welfare burden, and the environment as a residual externality of growth. However, we now understand that all these issues are inter-dependent; that the water is energy, the energy shapes environmental outcomes, that environmental quality determines health, and that health is the foundation of productivity and social equity. It is within this framework of deep systemic interdependence that the concept of ESG Transversality — theme of the Second Edition of Water Transversality Global Awards and Conclave 2026 acquires both its rigour and its urgency.

Honourable Prime Minister's vision of a Viksit Bharat by 2047 is fundamentally a vision of progress, prosperity, harmony and sustainability at scale. The whole of governance approach, the approach of cooperation, collaboration and coordination with States, is writing a shining chapter of inclusive development in Indian history.

The work of Water and Land Division in NITI Aayog on Water Budgeting framework for Aspirational Blocks, demand-side strategies on water, Rejuvenation of Water bodies, Water-use efficiency studies and Reuse of Treated used water etc. reflects one consistent conviction: that water, energy, health, and environmental systems must be governed as a unified nexus if India is to achieve inclusive, climate-resilient prosperity at scale.

India has, over the past decade, assembled one of the most substantive ESG disclosure architectures among emerging economies. The Ministry of Corporate Affairs' National Guidelines on Responsible Business Conduct, the Securities and Exchange Board of India's transition from Business Responsibility Reports to the rigorous Business Responsibility and Sustainability Reporting framework, and the introduction of BRSR Core with 49 key performance indicators spanning climate, water use, energy, labour rights and governance all converge in this direction. Reserve Bank of India's 2024 draft disclosure framework on climate-related financial risks aligned with the Task Force on Climate-related Financial Disclosures represent

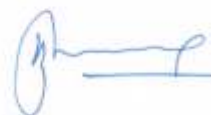
From pre-page

a structural shift from aspirational reporting to an auditable, decision-grade sustainability information. India's capital markets are also evolving: green bonds, sustainability-linked debt instruments, and the planned RB-CRIS climate risk data repository are creating a scaffolding of cohesive sustainable-finance architecture. Reaching net zero by 2070 looks achievable with ESG frameworks.

In this backdrop, Second Water Transversality Global Awards and Conclave 2026, organised by the India Water Foundation convened with the participation of global thought leaders, multilateral institutions, regulators, and corporate practitioners, offers a timely and significant contribution. The Conclave's central proposition ESG Transversality for a Sustainable Water-Energy-Health-Environment Nexus is more than a thematic aspiration. It is a call for a new governance architecture, one in which ESG principles are not confined to the balance sheets of listed corporations but are systematically embedded across every node of the water-energy-health-environment system such as basin-level water governance, procurement decisions of energy utilities, health risk assessments, land-use choices of rural development authorities, and in the investment mandates of development finance institutions.

The Conclave's deliberations spanning ESG-aligned finance and its role in combating greenwashing, nexus-based policymaking, corporate sustainability leadership, and the application of artificial intelligence and digital technologies for integrated water-energy management reflect the kind of cross-sectoral, evidence-grounded dialogue that the ecosystem needs at this juncture.

I commend the India Water Foundation, its President Dr. Arvind Kumar, and their distinguished team of advisers, partners, and global collaborators for their intellectual leadership in advancing the water-sustainability discourse. The Second Water Transversality Global Awards and Conclave 2026 has produced a report that is rigorous in its analysis, inclusive in its stakeholder architecture, and practical in its recommendations. It is my sincere hope that this document will be widely read, actively debated, and earnestly acted upon by policymakers, regulators, investors, corporate leaders, and civil society practitioners and that its insights will find reflection in the policies, strategies, and investments that will be useful for a resilient, equitable, and sustainable future.



(Yugal Joshi)

Place- New Delhi
Dated- 21/07/2026

PREFACE

Environmental, Social, and Governance (ESG) principles have emerged as a defining framework for building resilient, responsible, and future-ready economies. Far beyond a compliance agenda, ESG provides a strategic lens through which governments, businesses, and institutions can manage environmental and social risks, strengthen governance, create long-term value, and enhance sustainable development outcomes. At India Water Foundation, we view ESG as an enabler of systemic transformation; one that fosters cross-sector collaboration, responsible resource management, and inclusive growth to address the interconnected challenges of our time. It is with this conviction that we present the proceedings of the 2nd Edition of the Water Transversality Global Awards and Conclave 2026, convened on 6–7 March 2026 at the India International Centre, New Delhi, under the theme “ESG Transversality for a Sustainable Water–Energy–Health–Environment Nexus.”

Over two intensive days, more than a hundred speakers parliamentarians, ministers, global leaders, scientists, industry captains, civil society champions and young innovators came together to confront a simple but urgent truth: the crises of climate instability, water insecurity, biodiversity loss and public health vulnerability can no longer be addressed in isolation. They are interlinked, and so must be our responses. This conclave sought to move ESG beyond a compliance checklist and reposition it as a transformative civilizational paradigm, one rooted in transparency, accountability and long-term planetary stewardship.

The deliberations captured in this report traverse an extraordinary range of ground: climate-resilient water management, ESG finance and the fight against greenwashing, nature-based solutions, wetlands as nexus infrastructure, digital and AI-enabled governance, circular economy transitions, and the indispensable role of behavioural change and community ownership in sustaining every technical and policy gain we make. Time and again,



Dr. Arvind Kumar
President, India Water Foundation

our speakers reminded us that water is not a sector unto itself but, as one eminent voice put it, the “bloodstream of development” connecting agriculture, industry, energy, public health and human dignity.

I am deeply grateful to our Chief Guest and distinguished dignitaries, our government partners, knowledge institutions, corporate collaborators and grassroots organizations, whose collective wisdom and commitment gave this conclave its depth and direction. This gathering also coincided with the 18th Foundation Day of India Water Foundation, a milestone that reminds us how far the journey of water diplomacy and advocacy in India has come and how much further it must go.

This report is not merely a record of what was said; it is a call to translate dialogue into durable action through integrated governance, credible ESG frameworks, innovative financing and, above all, the collective will of governments, institutions and citizens working together. I hope these pages inspire that action, and I invite every reader to join us in carrying forward the spirit of water transversality.



सत्यमेव जयते

अध्यक्ष, लोक सभा
SPEAKER, LOK SABHA
INDIA



MESSAGE

It is a matter of great pleasure that the India Water Foundation successfully organised the 2nd Edition of the Water Transversality Global Awards & Conclave 2026 from 6th to 7th March, 2026 in New Delhi on the theme of "ESG Transversality for Sustainable Water-Energy-Health-Environment Nexus".

In an era marked by resource scarcity, climate volatility and evolving regulatory frameworks - water, energy, health and environmental sustainability have emerged as the vital pillars of resilience and future readiness. The integration of sustainable practices is no longer optional but an essential imperative for organisations and governments striving for enduring prosperity and inclusive growth.

India's renewable energy programs, progressive water conservation initiatives and the promotion of sustainable lifestyles through people-centric movements all demonstrate the country's dedication to Environmental, Social and Governance (ESG) principles. Strong political and social will, as well as transparent, accountable and responsive governance supplement these efforts.

It is heartening to note that the Conclave highlighted the interdependence of the water, energy, health and environment sectors, emphasising the need for an integrated approach to sustainable development, with a focus on policy convergence, institutional coordination and active public participation.

I am confident that the outcomes of this Conclave will contribute meaningfully towards shaping forward-looking policies, strengthening international partnerships and securing a sustainable and resilient future for generations to come.

I commend the India Water Foundation for fostering a global platform that advances the concept of "transversality" in addressing multifarious sustainability challenges. Such initiatives not only catalyse knowledge exchange and innovation but also reinforce India's role as a responsible global leader and a guiding force in advancing ESG-driven, sustainable and inclusive development.

I extend my best wishes to all the awardees of the Water Transversality Global Awards, the participants who contributed to the success of the Conclave, and the entire team of the India Water Foundation for their remarkable efforts.

With best wishes for future endeavours.


(Om Birla)

हर्ष मल्होत्रा

HARSH MALHOTRA



सत्यमेव जयते

राज्य मंत्री
सड़क परिवहन और राजमार्ग
एवं कारपोरेट कार्य मंत्रालय
भारत सरकार
Minister of State for
Road Transport & Highways
and Corporate Affairs
Government of India

5th May, 2026

MESSAGE

I extend my sincere felicitations to the India Water Foundation for convening the Water Transversality Global Awards and Conclave 2026 on the theme "ESG Transversality for a Sustainable Water-Energy-Health-Environment Nexus." This theme is both timely and strategic, reflecting the growing recognition that Environmental, Social, and Governance (ESG) principles are no longer peripheral consideration.

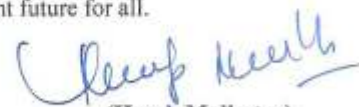
The interlinkages between water, energy, health, and the environment demand precisely such an ESG-led, transversal approach. Water security, sustainable energy transitions, public health resilience, and environmental protection are deeply interconnected challenges that require corporations to move beyond compliance and adopt a value-driven, impact-oriented mindset. Platforms like this conclave play a vital role in aligning stakeholders across sectors to adhere to an integrated approach.

It is particularly encouraging to witness the recognition of organizations and leaders who are championing innovation and sustainability through the Water Transversality Global Awards. Such recognition reinforces the importance of ESG leadership in driving measurable outcomes, whether in efficient water management, clean energy adoption, or health-sensitive environmental practices.

By embedding ESG principles into governance structures, risk assessment frameworks, and investment decisions, businesses can contribute significantly to building resilient infrastructure, ensuring equitable resource access, and mitigating climate risks.

As we deliberate on the pathways toward an integrated water-energy-health-environment nexus, it is imperative that ESG transversality becomes a guiding framework across industries and institutions. Strengthening partnerships, fostering innovation, and ensuring accountability will be key to achieving long-term sustainability outcomes.

I commend the India Water Foundation for its visionary leadership in bringing together diverse stakeholders on such a critical agenda. Let us collectively work towards embedding ESG at the heart of development, ensuring a sustainable, inclusive, and resilient future for all.


(Harsh Malhotra)

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डॉ. राज भूषण चौधरी
Dr. Raj Bhushan Choudhary



जल शक्ति राज्य मंत्री
भारत सरकार
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MINISTER OF STATE FOR JAL SHAKTI
GOVERNMENT OF INDIA
NEW DELHI - 110001

MESSAGE

I take this opportunity to extend my felicitations to the India Water Foundation for its outstanding efforts in hosting the Water Transversality Global Awards and Conclave 2026, centered on the theme "ESG Transversality for a Sustainable Water-Energy-Health-Environment Nexus." This timely and forward-looking theme underscores the critical interlinkages between environmental stewardship, social responsibility, and governance frameworks in shaping a resilient and sustainable future.

The conclave, held at the prestigious India International Centre, New Delhi, represents an extraordinary convergence of global thought leaders, policymakers, researchers, and practitioners. Such a platform is essential to collectively address the increasingly complex and interconnected challenges of our time, and to drive transformative, ESG-aligned solutions.

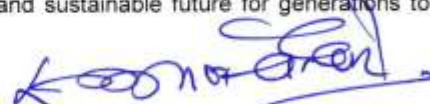
Water remains the foundation of life and development, intrinsically linked with energy systems, public health outcomes, and environmental sustainability. Through this conclave, the India Water Foundation has advanced the dialogue on integrated and ESG-driven approaches to managing these interconnected domains. The deliberations on climate-resilient water systems, sustainable energy transitions, and health-centric environmental policies provide a robust framework for future action.

The recognition of outstanding individuals and organizations through the Water Transversality Global Awards is particularly commendable. These honours not only celebrate innovation and leadership in water and environmental stewardship but also inspire broader commitment to ESG principles across sectors.

Such initiatives reinforce the relevance of policy frameworks and government missions aimed at sustainable resource management. Programs like the Jal Jeevan Mission exemplify how integrated approaches can deliver tangible social impact by ensuring access and equity for all. However, platforms like this conclave are crucial to scaling such efforts, fostering innovation, and aligning stakeholders under a unified ESG vision.

There is a clear need to embed ESG transversality across all sectors and activities. Strengthening partnerships, encouraging innovation, and adopting integrated governance frameworks will be key to building a future where water, energy, health, and the environment are harmonized.

I extend my sincere appreciation to the India Water Foundation for its visionary leadership in convening this critical dialogue. Let us collectively reaffirm our commitment to advancing ESG-driven solutions to secure an equitable, healthy, and sustainable future for generations to come.


(Dr. Raj Bhushan Choudhary)

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Mantralaya, Mumbai 400 032



Devendra Fadnavis
Chief Minister
Maharashtra

CMO/PR/345/2026
Date: 28th April, 2026

MESSAGE

I extend my warm felicitations to the India Water Foundation for organizing the Water Transversality Global Awards and Conclave 2026 on the theme “ESG Transversality for a Sustainable Water–Energy–Health–Environment Nexus.” This theme holds profound relevance for Maharashtra, a state that is actively advancing integrated and sustainable development pathways through progressive policies and people-centric initiatives.

Maharashtra has consistently demonstrated leadership in addressing the complex interlinkages between water security, clean energy, environmental sustainability, and public health. Flagship initiatives such as the Jalyukt Shivar Abhiyan have strengthened community-driven water conservation and drought resilience across thousands of villages, reinforcing the principle that every drop of water must be conserved and utilized efficiently.

At the same time, the state is accelerating its transition towards sustainable energy systems. Programs promoting solar-powered agricultural infrastructure and decentralized renewable energy are not only reducing carbon intensity but also improving farmer resilience and energy access. These efforts reflect a strong alignment with ESG principles, where environmental responsibility and social impact go hand in hand with economic growth.

Maharashtra’s commitment to environmental governance is further evident through its climate action frameworks and urban sustainability missions. The Mumbai Climate Action Plan, for instance, provides a long-term roadmap for achieving low-carbon, climate-resilient, and inclusive urban development, addressing critical areas such as water management, air quality, and sustainable mobility. Additionally, state-wide initiatives like urban greening, plastic waste reduction, and circular water economy policies are contributing to improved environmental and public health outcomes.

The convergence of water, energy, health, and environment through an ESG lens is not merely a policy direction, it is a necessity for ensuring long-term resilience and inclusive growth. Platforms such as this conclave play a critical role in fostering dialogue, enabling cross-sector collaboration, and driving actionable solutions that align governance with sustainability outcomes.

I commend the India Water Foundation for its visionary leadership in convening this important dialogue and for recognizing excellence through the Water Transversality Global Awards. Let us collectively reaffirm our commitment to advancing ESG-led, integrated approaches to development, ensuring a resilient, inclusive, and sustainable future for Maharashtra and the nation.




(Devendra Fadnavis)

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HARSH SANGHAVI
Deputy Chief Minister
Gujarat



No.: Dy.CM/Guj.Stater/504/2026
Home, Police Housing, Jail, Border Security,
Gruh Rakshak Dal and Gram Rakshak Dal,
Civil Defence, Prohibition and Excise,
Transport, Law and Justice, Sports and Youth
Services, Cultural Activities, Co-ordination of
Voluntary Organisations, Industries, Micro,
Small and Medium Industries, Salt Industries,
Printing and Stationery, Tourism and
Pilgrimage Development, Civil Aviation
Government of Gujarat

Date: 24 APR 2026

I extend my warm felicitations to the India Water Foundation for organizing the Water Transversality Global Awards and Conclave 2026 on the theme "**ESG Transversality for a Sustainable Water-Energy-Health-Environment Nexus.**" This theme is both forward-looking and deeply aligned with Gujarat's development philosophy, which integrates sustainability, innovation and governance excellence as core drivers of growth.

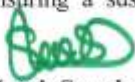
Gujarat continues to strengthen its position as a national leader in sustainable and responsible development. The state's progress reflects a strong commitment to ESG principles balancing rapid industrial growth with environmental stewardship, social inclusion and transparent governance frameworks.

It has emerged as a frontrunner in clean energy transition, setting benchmarks at the national level. The state contributes significantly to India's renewable energy capacity, with a substantial share of its power consumption now being met through sustainable sources such as solar and wind energy. This leadership is further reinforced by progressive policies like the Integrated Renewable Energy Policy and continuous investments in decentralized and rooftop solar infrastructure, positioning Gujarat as a model for energy security and low-carbon growth.

The state is advancing innovative approaches such as water reuse policies and large-scale conservation initiatives, aimed at reducing groundwater dependency and promoting circular water economies across urban and industrial sectors. Environmental governance in Gujarat is underpinned by robust institutional mechanisms and climate action strategies. Equally significant is Gujarat's focus on governance and economic sustainability. Through global engagements such as participation in the World Economic Forum, the state actively positions itself as a hub for responsible investment, innovation and ESG-aligned industrial growth. This approach not only strengthens investor confidence but also ensures that development remains inclusive, transparent and future-ready.

The convergence of water, energy, health and environment through an ESG lens is essential for addressing the complex challenges of our time. Gujarat's experience demonstrates that when sustainability is embedded within governance and economic systems, it leads to resilient infrastructure, improved public health outcomes and inclusive growth.

I commend the India Water Foundation for its visionary leadership in convening this important dialogue and for recognizing excellence through the Water Transversality Global Awards. Let us collectively advance ESG-driven, integrated approaches to development, ensuring a sustainable, resilient and inclusive future for Gujarat and the Nation.


(Harsh Sanghavi)



Soil is the Solution

When I was at one of the UN agencies, they asked me, "Sadhguru, what are those three things which we must focus on to reverse climate change, global warming and water scarcity? I said, "Soil, soil and soil!" because it is connected to everything.

People think water comes from a tap, a river, a lake or a well. No, water comes to all these places only from the soil.

Soil is the largest water soak on the planet. If soil is rich, there will be water. If soil is rich and there is enough vegetation on it, the air will be purified. Soil is also important in terms of carbon sequestration and reversing global warming. Healthy soil is one of the best carbon sinks, even better than the ocean in terms of square footage.

This is why our attention has to shift to soil urgently. The latest scientific studies say that if we do nothing to safeguard soil, as global temperatures rise, water scarcity will go up tremendously in the world.

This is why we have taken up the Conscious Planet – Save Soil movement, which aims to bring about a global policy that there must be a minimum of 3-6% organic matter in agricultural land, based on regional conditions.

Taking care of the soil, ensuring that desertification and degradation of soil does not happen is the most vital responsibility that we have as a generation of people. This one thing should be taken up as an express mission by every citizen and every government of the many nations on this planet. Let us make it happen.



Sadhguru



Foreword

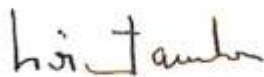


Water is no longer only an environmental concern; it is a defining political, economic, and human challenge of our century. At the Water Transversality Global Awards & Conclave 2026, Loïc Fauchon, President of the World Water Council, underscored the urgent need for nations to place water security at the center of development and governance.

Reflecting on India's growing leadership in the global water discourse, he described this period as "India's water moment," recognizing the country's proactive efforts to address challenges ranging from climate-induced floods and droughts to sustainable water access for its vast population. Drawing from his visit to India Water Week 2024 and interactions with Minister of Jal Shakti Shri C.R. Paatil, Fauchon highlighted India's potential not only as a beneficiary of global solutions, but also as a provider of innovation and solidarity for the Global South.

He emphasized the World Water Council's guiding principles: Preserve, Serve, Reserve, calling for the protection of ecosystems, universal access to safe water and sanitation, and long-term investment in resilient water systems, including groundwater management, recycling, desalination, and modern storage infrastructure.

As the world prepares for the 2026 United Nations Water Conference and the 11th World Water Forum in 2027, this message serves as a reminder that water security is inseparable from human dignity, economic stability, and peace. It is also a call to transform commitments into measurable action, with India poised to play a decisive role in shaping the global water future.



Loïc Fauchon
President of the World Water Council

WORLD WATER COUNCIL - CONSEIL MONDIAL DE L'EAU - CONSEJO MUNDIAL DEL AGUA

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United Nations Nations Unies
Economic and Social Commission for Asia and the Pacific
South and South-West Asia Office

11 May 2026

Message from Ms. Mikiko Tanaka
Head, ESCAP Subregional Office for South and South-West Asia (ESCAP-SSWA)

I would like to extend my sincere congratulations to the India Water Foundation for the successful organization of the Second Edition of the Water Transversality Global Awards and Conclave 2026 at the India International Centre, New Delhi.

At a time when climate change and environmental challenges are becoming increasingly complex, the Conclave highlights the importance of integrated and inclusive approaches to sustainable development. By bringing together over 30 partners and 115 distinguished speakers, it demonstrates the value of multi-stakeholder collaboration in addressing the interlinked challenges of water, energy, health, and environmental sustainability through an ESG transversality lens.

Water security, clean energy transitions, and climate resilience are closely interconnected and require coordinated policy action, knowledge sharing, and strong institutional partnerships across sectors and borders.

ESCAP values its longstanding collaboration with the India Water Foundation, including through its active engagement in the South and South-West Asia Network on the Sustainable Development Goals (SANS). Such platforms play an important role in connecting governments, research institutions, and civil society to accelerate progress on the Sustainable Development Goals. We look forward to further strengthening this partnership to support evidence-based policymaking and scalable solutions.

I also look forward to the recommendations emerging from this Conclave, which will help inform practical and forward-looking pathways for sustainability, inclusivity, and resilience.



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Message

Integrating Water Resources Management

Climate change and environmental degradation are escalating global water pressures, threatening economies, ecosystems, and societies. Water is central to climate adaptation, food security, energy transition, and sustainable development, yet it is often managed in silos, limiting effective responses.

Water is both a key climate impact vector and a critical adaptation tool. Integrated Water Resources Management (IWRM) at the basin level aligns development with sustainability, manages shared risks, and strengthens long-term resilience. The basin approach, championed by organizations like INBO, is proven to enhance water security and sustainability.

Water is not solely a public sector issue, the private sector must engage. While many companies recognize water risks, few implement comprehensive strategies. IWRM helps businesses integrate water risks into ESG frameworks, participate in coordinated management, and collaborate with public authorities. Valuing water economically drives investment and sustainable allocation.

Effective governance depends on transparent, shared data systems. Integrating public and private data (leveraging digital tools, satellites, and analytics) enables innovation and equitable decision-making.

Strong, inclusive governance at the basin level is essential. The private sector can act as a partner and catalyst through financing, innovation, and advocacy for coherent water policies.

The three key priorities for action cover scale existing solutions, including digital tools and adaptation financing, innovating by combining technology with local capacity-building and fostering cross-sector and cross-border collaboration.

By adopting integrated, inclusive, and partnership-driven approaches, we can transition from fragmentation to coordination, securing water, climate resilience, and sustainable development for future generations.

Dr. Eric Tardieu
Secretary General of the International Network of Basin Organizations (INBO)
General Director of the International Office for Water



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The 2nd Edition of the Water Transversality Global Awards & Conclave 2026, held on 6–7 March in New Delhi, reaffirmed the central role of water as a cross-cutting driver of sustainable development, climate resilience, and inclusive growth. Bringing together global leaders, policymakers, scientists, and practitioners, the Conclave underscored that water is not a standalone sector, but a unifying element across food systems, energy transitions, ecosystems, and socio-economic development.

In line with the mission of the International Water Resources Association (IWRA), the Conclave strongly emphasised the importance of strengthening the science–policy interface to address today’s complex water challenges. Evidence-based decision-making, grounded in robust scientific knowledge and informed by local and indigenous expertise, is essential to design effective, scalable, and equitable water solutions. At the same time, translating science into actionable policy requires inclusive governance, institutional coordination, and sustained dialogue between researchers, decision-makers, and stakeholders.

Building on the principles of the 2030 Agenda, discussions highlighted the urgent need for integrated, multi-sectoral approaches that align water governance with climate action, biodiversity protection, and sustainable livelihoods. A key takeaway was the importance of transversality: breaking silos to ensure that policies and investments reflect the interdependence of water, energy, food, and environment systems.

The Awards recognised outstanding initiatives that embody this science–policy interface — demonstrating how innovation, data, and knowledge can be effectively translated into impactful policies and practices on the ground.

The Conclave also reinforced the imperative of equity and inclusion, ensuring that vulnerable communities, women, and youth are actively engaged in decision-making processes and benefit from sustainable water management strategies.

Ultimately, the 2026 edition stands as a call to action aligned with IWRA’s vision: to advance knowledge-driven, policy-relevant solutions that bridge disciplines, sectors, and scales—accelerating collective action towards a resilient, equitable, and water-secure future.

Ignacio Deregibus
IWRA Executive Director

Bridging the global water gap requires a **multistakeholder, systems-based approach** that accounts for the spatial and temporal distribution of resources and the deep interconnections between the water sector and other critical sectors. The **Water–Energy–Food (WEF) Nexus** provides a powerful framework for identifying the most suitable interventions in contexts where sectors compete for limited resources and where operational disruptions must be avoided. Although these solutions are holistic and locally adaptable, they continue to face persistent challenges, including policy misalignment, financing constraints, and limited institutional capacity.

As the nexus framework evolves, **health** is emerging as a vital fourth pillar. Integrating health into the WEF Nexus reframes the entire system—shifting the focus beyond resource management toward the ultimate objective of **human well-being**. This expanded perspective recognizes that water, energy, food, and health outcomes are inseparable and must be addressed collectively.

The benefits of this systems approach are substantial. The nexus framework enables decisionmakers to select the most effective combination of WEF interventions to ensure that essential services - municipal, industrial, mining, agricultural, and power generation - operate without interruption. By optimizing resource flows across sectors, primary resources can be conserved, environmental impacts reduced, and long-term sustainability strengthened.

Looking ahead, **systems thinking** will be central to advancing the circular economy that increasingly shapes our world. More research is needed to understand how nexus-based scenarios can be applied across multiple scales and to identify diverse management practices that support resilience. The food and agricultural sector, in particular, stands to benefit from such analysis. Determining the optimal levels of irrigation, fertilizer, and chemical inputs is essential, as outcomes can vary significantly when inputs are fine-tuned for efficiency and sustainability.

The **Water Transversality Global Awards and Conclave 2026** exemplifies this systems-thinking approach by highlighting the urgent need to address the interconnectedness of water with other systems. It showcases how water can serve as a catalyst for achieving sustainable development, offering real-world examples of integrated solutions that bridge sectors, regions, and discipline

Sincerely,
Rabi Mohtar

Professor Rabi H. Mohtar <rabi.mohtar@ag.tamu.edu>

Water Energy Food Nexus Initiative @ Texas A&M Energy Institute

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Senior International non-resident Fellow, **Policy Center for the New South**, Morocco

Governor, **World Water Council (WWC)**

Vice President, **International Water Resources Association (IWRA)**



ACRONYMS

- | | |
|---|---|
| 1. AI – Artificial Intelligence | 31. GIS - Geographic Information System |
| 2. AMRUT - Atal Mission for Rejuvenation and Urban Transformation | 32. GoI - Government of India |
| 3. ASR - Aquifer Storage and Recovery | 33. GRI - Global Reporting Initiative |
| 4. BIMSTEC - Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation | 34. GW - Gigawatt |
| 5. BLM - | 35. GWOPA - Global Water Operators' Partnerships Alliance |
| 6. BOD - Biochemical Oxygen Demand | 36. GWP – Global Water Partnership |
| 7. BRR - Business Responsibility Report | 37. HPV - Human Papillomavirus |
| 8. BRSR - Business Responsibility and Sustainability Report | 38. ICC - Integrated Command and Control Centre |
| 9. BSE - Bombay Stock Exchange | 39. ICP-MS - Inductively Coupled Plasma Mass Spectrometry |
| 10. CEEW - Council on Energy, Environment and Water | 40. IFBEC - International Fashion Business Exchange Council |
| 11. COVID - Coronavirus Disease | 41. IFRS S1 & S2 - International Financial Reporting Standards Sustainability Disclosure Standards S1 (General Requirements) & S2 (Climate-related Disclosures) |
| 12. CSR - Corporate Social Responsibility | 42. ILO - International Labour Organization |
| 13. CSRD - Corporate Sustainability Reporting Directive | 43. IMD - India Meteorological Department |
| 14. DMRC - Delhi Metro Rail Corporation | 44. IoT - Internet of Things |
| 15. DPI - Digital Public Infrastructure | 45. IRDAI - Insurance Regulatory and Development Authority of India |
| 16. DSS - Decision Support System | 46. ISO - International Organization for Standardization |
| 17. ECOSTRESS - ECOSystem Spaceborne Thermal Radiometer Experiment on Space Station | 47. ISSB - International Sustainability Standards Board |
| 18. EESL - Energy Efficiency Services Limited | 48. IUCN - International Union for Conservation of Nature |
| 19. ENSURE - Environmental Nature-based Solutions Utilization and Resource Evaluation | 49. IWRM - Integrated Water Resources Management |
| 20. ERM - Enterprise Risk Management | 50. KfW - Kreditanstalt für Wiederaufbau (German Development Bank) |
| 21. ERP - Enterprise Resource Planning | 51. KPI - Key Performance Indicator |
| 22. ESCO - Energy Service Companies | 52. LED - Light Emitting Diode |
| 23. ESG - Environmental, Social and Governance | 53. LiFE - Lifestyle for Environment |
| 24. ESRS - European Sustainability Reporting Standards | 54. MAR - Managed Aquifer Recharge |
| 25. ET - Energy Transition | 55. MBDA – Meghalaya Basin Development Authority |
| 26. EU - European Union | 56. MCA - Ministry of Corporate Affairs |
| 27. EV - Electric Vehicle | |
| 28. GDP - Gross Domestic Product | |
| 29. GHG - Greenhouse Gases | |
-

57. ML - Machine Learning
58. MODIS - Moderate Resolution Imaging Spectro-radiometer
59. MOEFCC - Ministry of Environment, Forest and Climate Change
60. MRV - Monitoring, Reporting and Verification
61. MSME - Micro, Small and Medium Enterprises
62. NAP - National Action Plan
63. NBFC - Non-Banking Financial Company
64. NbS - Nature-based Solutions
65. NGRBC - National Guidelines on Responsible Business Conduct
66. NITI AAYOG - National Institution for Transforming India
67. NIUA - National Institute of Urban Affairs
68. OECD - Organisation for Economic Co-operation and Development
69. OECM - Other Effective Area-Based Conservation Measures
70. PES - Payment for Ecosystem Services
71. PFRDA - Pension Fund Regulatory and Development Authority
72. PM – Particulate Matter
73. PM SURYA GHAR - Pradhan Mantri Surya Ghar
74. PPP - Public-Private Partnership
75. RB-CRIS - The Reserve Bank – Climate Risk Information System
76. RBI - Reserve Bank of India
77. REDD+ - Reducing Emissions from Deforestation and Forest Degradation Plus
78. RO - Reverse Osmosis
79. ROI - Return on Investment
80. RSS – Rashtriya Swayamsevak Sangh
81. SADC - Southern African Development Community
82. SAF - Sustainable Aviation Fuel
83. SAR - Synthetic Aperture Radar
84. SASB - Sustainability Accounting Standards Board
85. SCADA - Supervisory Control and Data Acquisition
86. SDG - Sustainable Development Goals
87. SEBI - Securities and Exchange Board of India
88. SFDR - Sustainable Finance Disclosure Regulation
89. SPI - Sustainability Performance Index
90. SOx - Sulphur Oxides
91. SOE - State-Owned Enterprise
92. SROI - Social Return on Investment
93. STP - Sewage Treatment Plant
94. SWAT - Soil and Water Assessment Tool
95. SWV - Square Wave Voltammetry
96. TCFD - Task Force on Climate-related Financial Disclosures
97. TNFD - Task Force on Nature-related Financial Disclosures
98. TRISHNA - Thermal infraRed Imaging Satellite for High-resolution Natural resource Assessment
99. UJALA - Unnat Jyoti by Affordable LEDs for All
100. ULB - Urban Local Body
101. UN - United Nations
102. UNESCAP - United Nations Economic and Social Commission for Asia and the Pacific
103. UNGPs - United Nations Guiding Principles on Business and Human Rights
104. URMPs - Urban River Management Plans
105. US - United States
106. WASH - Water, Sanitation and Hygiene
107. WEF - Water-Energy-Food Nexus
108. WEHE - Water, Energy, Health and Environment Nexus
109. WRIMS - Water Resources Information Management System
110. WRIS - Water Resources Information System
111. XBRL - eXtensible Business Reporting Language

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Executive Summary

The 2nd Edition of the Water Transversality Global Awards and Conclave 2026, convened under the transformative theme “ESG Transversality for a Sustainable Water–Energy–Health–Environment Nexus,” was held on 6–7 March 2026 at the India International Centre, New Delhi, India. Organized by the India Water Foundation in collaboration with distinguished international and national institutions, the conclave emerged as a catalytic global platform redefining the discourse on sustainability governance through the prism of transversality, systems integration, and planetary resilience.

At a time when the world confronts converging crises of climate instability, ecological degradation, water insecurity, public health vulnerabilities, biodiversity collapse, and widening developmental inequalities, the conclave asserted with urgency that humanity can no longer afford fragmented governance architectures or silo-driven policy responses. The deliberations unequivocally established that the future of sustainability lies not in isolated sectoral interventions, but in integrated, adaptive, and regenerative frameworks capable of harmonizing environmental integrity, economic transformation, technological innovation, and societal well-being.

The conclave brought together an extraordinary convergence of global leaders, parliamentarians, ministers, policymakers, multilateral institutions, scientific communities, urban practitioners, industry leaders, ESG experts, financial institutions, innovators, youth representatives, and civil society actors from across the world. Through an expansive two-day programme comprising ministerial plenaries, leadership dialogues, policy roundtables, technical sessions, innovation forums, and cross-sectoral consultations, the conclave generated a powerful intellectual momentum toward mainstreaming nexus-based governance and embedding ESG principles into the architecture of sustainable development.

My profound gratitude extends to every distinguished speaker, moderator, partner organization, knowledge institution, collaborator, and participant whose intellectual contributions and



Shweta Tyagi

Chief Functionary, India Water Foundation

institutional commitment transformed this conclave into a landmark global dialogue. Their collective engagement reflected an emerging international consensus that sustainability can no longer remain a peripheral policy aspiration; rather, it must become the organizing principle of governance, finance, production systems, infrastructure planning, and societal transformation.

A defining contribution of the conclave was its conceptual repositioning of ESG from a narrowly compliance-oriented reporting framework into a transformative civilizational paradigm for responsible governance and regenerative development. Participants emphasized that ESG must transcend performative disclosures and evolve into an accountability-driven ecosystem rooted in transparency, ethical leadership, measurable impact, and long-term planetary stewardship. Deliberations critically examined the growing risks of greenwashing, fragmented sustainability metrics, inconsistent disclosure mechanisms, and weak institutional accountability, while simultaneously

advocating for robust assurance systems, science-based standards, interoperable reporting frameworks, and transparent sustainability governance.

Thematic deliberations traversed an expansive range of critical global priorities, including climate-resilient water management, ESG finance and sustainability reporting, nature-based solutions, circular economy transitions, green industrialization, wastewater innovation, digital governance systems, urban resilience, ecosystem restoration, biodiversity protection, hydro-diplomacy, renewable energy transitions, planetary health frameworks, and responsible artificial intelligence for sustainability governance. Parallel sessions convened by SM Sehgal Foundation, India Water Partnership, BBC Media Action, IUCN, ICID and Wetlands International- South Asia further amplified discussions on integrated water resource management, ecosystem restoration, capacity building, climate adaptation strategies, and sustainable infrastructure pathways.

The conclave also foregrounded the strategic importance of technological innovation as a force multiplier for sustainability transformation. Participants showcased cutting-edge solutions including AI-enabled predictive governance systems, remote sensing technologies, IoT-driven monitoring frameworks, climate-risk intelligence platforms, decentralized wastewater treatment systems, renewable energy integration models, and digitally enabled water governance architectures. These innovations were presented not as isolated technological advancements, but as foundational enablers for anticipatory governance, evidence-based policymaking, and resilient socio-ecological systems.

Equally significant was the conclave's emphasis on behavioural transformation, ethical consciousness, and societal participation as indispensable dimensions of sustainability transitions. The discussions reaffirmed that no technological breakthrough or policy reform can succeed without corresponding shifts in human values, institutional cultures, and collective behavioural patterns.

Participants highlighted the transformative potential of community-led stewardship, women-led sustainability initiatives, youth engagement, environmental education, and Mission LiFE-inspired behavioural frameworks in fostering resilient and environmentally conscious societies.

A major highlight of the conclave was the Water Transversality Global Awards 2026, which recognized outstanding institutions, innovators, industries, academic bodies, grassroots organizations, and community leaders for their pioneering contributions toward sustainability, climate resilience, environmental stewardship, water conservation, green infrastructure, wastewater innovation, and ESG leadership. The awards celebrated transformative models capable of generating scalable impact while reinforcing the principle that sustainable futures must be built through collaborative action, institutional courage, and shared accountability.

The conference outcomes collectively articulated a compelling call for systemic transformation. Participants emphasized the urgent need for integrated governance frameworks capable of aligning water, energy, health, environment, urbanization, finance, and industrial systems within a unified sustainability architecture. The recommendations strongly advocated institutional reforms, cross-sectoral coordination mechanisms, decentralized renewable energy systems, advanced water treatment technologies, climate-resilient infrastructure, ESG-integrated financing models, and strengthened science-policy interfaces. Particular emphasis was placed on enhancing local capacities, mainstreaming nature-based solutions, strengthening sustainability literacy, and democratizing access to climate adaptation technologies.

This conclave was therefore not a culmination, but the beginning of a larger global journey — a journey toward reimagining governance, redefining development, and rebuilding humanity's relationship with the planet through innovation, accountability, resilience, inclusivity, and collective purpose.

INTRODUCTION

Environmental, Social and Governance (ESG) has emerged over the past two decades as a unifying language for embedding sustainability, ethics and accountability into financial markets, corporate strategy and public policy, evolving from earlier traditions of ethical and socially responsible investing in the 1970s and the sustainable development discourse crystallised by the Brundtland Commission in 1987. The term itself was formally coined in 2004 through the United Nations Global Compact-led “Who Cares Wins” initiative, convened by then UN Secretary-General Kofi Annan with leading financial institutions to develop guidance on integrating environmental, social and governance considerations into asset management, securities brokerage and research, marking ESG's entry as a set of material risk and opportunity factors for mainstream investment analysis rather than a peripheral moral agenda. Since then, ESG has expanded from a UN corporate-responsibility experiment into a global phenomenon, now shaping investment decisions for assets under management estimated in the tens of trillions of dollars, as institutional investors, sovereign funds and development finance institutions adopt ESG mandates and stewardship codes.

This mainstreaming has been accompanied by the proliferation and gradual consolidation of reporting standards and regulatory regimes: early voluntary frameworks such as the Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB) and the Task Force on Climate-related Financial Disclosures (TCFD) have been progressively integrated into the International Sustainability Standards Board's (ISSB) IFRS S1 and S2 baseline, while the European Union's Corporate Sustainability Reporting Directive (CSRD), EU Taxonomy and Sustainable Finance Disclosure Regulation (SFDR), alongside emerging climate-disclosure rules by the US Securities and Exchange Commission, are transforming ESG data from narrative disclosures into decision-grade, audited information. Together, these developments reflect a global recognition that systemic risks such as climate change, water stress, biodiversity loss, social inequity and governance failures are deeply interdependent and must be governed through integrated, cross-sectoral frameworks precisely the spirit captured in this Conclave's theme of “ESG Transversality for a Sustainable Water–Energy–Health–Environment Nexus,” which positions ESG not as a narrow compliance checklist but as a lens for understanding and managing the complex feedbacks between natural systems, human well-being and economic development.

In India, the ESG agenda has followed a distinct yet increasingly convergent trajectory, moving from voluntary corporate responsibility norms to a dense architecture of mandatory disclosures, stewardship expectations and nascent sustainable-finance instruments. Building on the Companies Act 2013 and mandatory corporate social responsibility (CSR) provisions, the Ministry of Corporate Affairs' National Guidelines for Responsible Business Conduct (NGRBC) and the Securities and Exchange Board of India's (SEBI) transition from Business Responsibility Reports (BRR) to the more rigorous Business Responsibility and Sustainability Report (BRSR) in 2021 have created one of the Global South's most detailed ESG disclosure regimes, requiring the top 1,000 listed entities to report quantitative and qualitative indicators across environmental performance, social outcomes and governance practices. The introduction of BRSR Core in 2023 anchored in the nine NGRBC

principles and aligned with global standards further tightens this regime by identifying a focused set of 49 key performance indicators on climate, water use, energy, labour and governance that must be independently assured, with a phased roadmap that extends reasonable assurance requirements from the 150 largest companies to all top 1,000 listed firms by financial year 2026–27, signalling a structural shift from aspirational reporting to auditable ESG data.

Parallely, SEBI's framework for green and ESG debt securities and the Reserve Bank of India's 2024 draft disclosure framework on climate-related financial risks explicitly aligned with TCFD pillars on governance, strategy, risk management and metrics are embedding ESG into capital markets and prudential supervision, even as global investors increasingly scrutinise Indian issuers' BRSR performance as a proxy for credibility and access to sustainable finance.

Yet, as speakers and deliberations at the Water Transversality Global Awards and Conclave 2026 repeatedly underscored, India's ESG landscape remains fragmented across sectors, largely concentrated among larger listed entities, and insufficiently attuned to the interconnected realities of water, energy, health and environmental systems, with persistent risks of greenwashing, data gaps, uneven capacity among MSMEs and limited integration of nexus thinking into regulatory and investment practice. It is precisely against this backdrop that this report advances the concept of ESG transversality: the systematic embedding of environmental stewardship, social justice and governance integrity across the entire water–energy–health–environment nexus, and the articulation of practical guidelines and frameworks tailored to India's policy, regulatory and market context, so that ESG can evolve from a disclosure obligation into a coherent governance architecture capable of steering finance, technology, institutions and behaviour towards genuinely resilient, inclusive and low-carbon development pathways.



INAUGURATION CEREMONY

The Inaugural Session of the Water Transversality Global Awards and Conclave 2026, convened under the overarching theme of “ESG Transversality for a Sustainable Water–Energy–Health–Environment Nexus,” set a compelling and intellectually rigorous tone for the deliberations that followed. Bringing together an eminent assemblage of policymakers, parliamentary leaders, global experts, industry stakeholders, academia, and civil society, the session underscored the imperative of transitioning from fragmented approaches to holistic, systems-based frameworks in addressing contemporary sustainability challenges.

The proceedings were ceremonially inaugurated through the traditional lamp-lighting ritual, emblematic of enlightenment, collective aspiration, and the pursuit of knowledge-driven solutions. At its core, the inaugural session foregrounded the concept of ESG transversality as a transformative paradigm, one that seeks to embed environmental stewardship, social equity, and governance integrity across policy, finance, and development architectures. The discussions emphasized the intricate interdependencies between water, energy, health, and environmental systems, advocating for integrated policy design, cross-sectoral collaboration, and evidence-based decision-making.



Lamp Lighting (L-R): Dr. Arvind Kumar, President, IWF; Shri Om Birla, Speaker, Lok Sabha



Book Release (L-R): Dr. Arvind Kumar, President, IWF; Shri Om Birla, Speaker, Lok Sabha and Dr. Satya Tripathi, SG, GASP



Special Cover Release (L-R): Dr. Arvind Kumar, President, IWF; Shri Om Birla, Speaker, Lok Sabha; Dr. Satya Tripathi, SG, GASP; and Sh. Neeraj Kumar Jha, Postmaster General (Operations), Delhi Postal Circle



Honouring Chief Guest (L-R): Dr. Arvind Kumar, President, IWF; Shri Om Birla, Speaker, Lok Sabha.

DR. ARVIND KUMAR

President, India Water Foundation (IWF)



Dr. Kumar set a comprehensive intellectual and thematic foundation for the conclave by emphasizing the centrality of ESG transversality as an integrated framework for sustainable development across the water–energy–health–environment nexus. Reflecting on the day's deliberations, he underscored that sustainability must be embedded within governance, finance, and economic systems rather than treated as a peripheral concern. He highlighted critical discussions on ESG credibility and the risks of greenwashing, stressing the need for transparency, accountability, and measurable performance indicators. Dr. Kumar further emphasized the evolving role of corporate leadership as key drivers of sustainability through innovation, responsible supply chains, and ESG-aligned investments. A major highlight of his address was the articulation of interconnected systemic dependencies water for energy, energy for water systems, environmental conditions shaping water availability, and

their collective impact on public health forming the conceptual basis of “transversality.” He concluded by calling for global cooperation, interdisciplinary action, and political will, positioning the conference as a catalyst to translate conceptual insights into actionable, cross-sectoral solutions.

CHIEF GUEST, SHRI OM BIRLA

Hon'ble Speaker, Lok Sabha

Shri Om Birla delivered a policy-oriented and governance-focused address, reinforcing the importance of integrated, participatory approaches to addressing global sustainability challenges. He strongly endorsed the idea that water, energy, environment, and public health must be treated as an interconnected policy agenda rather than in silos, noting that such integration leads to more effective and far-reaching outcomes. Highlighting India's proactive role, he referenced national initiatives under the leadership of Prime Minister Narendra Modi, including water conservation, rainwater harvesting, renewable energy expansion (solar, wind, green hydrogen), and community-driven programs like “Catch the Rain.” A key emphasis of his speech was on public participation and behavioural change, asserting that sustainable outcomes depend not only on government policy but also on citizen engagement. He also drew attention to the global nature of challenges such as climate change and water scarcity, advocating for multilateral cooperation and parliamentary dialogue across nations. Importantly, he linked environmental sustainability with lifestyle choices, citing lessons from the COVID-19 period to promote environmentally responsible living. He concluded by appreciating the India Water Foundation's initiative in creating a global platform that integrates research, innovation, policy dialogue, and grassroots participation.



MS. SHWETA TYAGI

Chief Functionary, India Water Foundation – Vote of Thanks.



Ms. Shweta Tyagi delivered the vote of thanks by acknowledging the presence and contributions of the Chief Guest, Shri Om Birla, and expressing gratitude for his time and encouragement, which she described as highly motivating for stakeholders across sectors. She highlighted the collaborative strength of the conclave by recognizing a wide network of government partners, corporate collaborators, institutional supporters, and global knowledge organizations, reflecting the multi-stakeholder nature of the initiative. She expressed confidence that the deliberations over the two days would lead to tangible, solution-oriented recommendations for advancing sustainability within the ESG framework. A notable highlight of her remarks was the announcement marking the 18th Foundation Day of the India Water Foundation, adding institutional significance to the event. She concluded by inviting participants to continue informal engagement during the dinner reception, reinforcing the importance of sustained dialogue and partnership beyond formal sessions.

This was complemented by the release of a special publication and a commemorative cover, symbolizing the convergence of thought leadership and institutional commitment toward advancing the sustainability discourse.

- "Friday Epiphanies" by Dr. Arvind Kumar: Drawing upon his reflections spanning the past several years, these writings represent the author's insights and experiences shared through his weekly Friday blogs. The thoughtful perspectives shared therein have received wide appreciation from experts, influencers, colleagues, and followers alike. He has curated this compilation of his most compelling pieces, offering readers an enriching and reflective journey through themes of sustainable development and human progress
- A special commemorative cover was released by India Post to mark the occasion of the conclave, symbolizing national recognition of the growing importance of water transversality and sustainable development.

The release also coincided with the 18th Foundation Day of the India Water Foundation, adding further significance to the



ceremony by celebrating nearly two decades of the Foundation's contributions to advancing water, energy, environment, and climate discourse at both national and global levels.

The ceremony concluded on a high note, setting the stage for productive discussions and collaborations throughout the remainder of the Conclave.



(L-R): Mr. M.P. Singh, Ms. Shweta Tyagi, Dr. Satya Tripathi, Master Dhananjay Kumar, Mr. Pawan Tyagi, Shri Om Birla, Dr. Arvind Kumar, Mr. Pankaj Sharma, Mr. Sunny Pandya, Ms. Pratibha Pandya, Dr. Nagesh Kumar

OPENING MINISTERIAL PLENARY

SPEAKERS:

Dr. Arvind Kumar, President, India Water Foundation

His Holiness Shri Sadhguru Jaggi Vasudev, Spiritual Head, Isha Foundation

Mr. Loïc Fauchon, President, World Water Council

Ms. Ulrike Kelm, Deputy Executive Director, International Water Resources Association

Shri Yugal Kishore Joshi, Programme Director, DW&S/IT & Telecom/Tourism & Culture/WLR) and Lead (NER/Communication) NITI Aayog, Government of India

Ms. Shweta Tyagi, Chief Functionary, India Water Foundation

KEYNOTE ADDRESS:

Dr. Raj Bhushan Chaudhary, Hon'ble Minister of State, Ministry of Jal Shakti, Government of India

DR. ARVIND KUMAR

Dr. Arvind Kumar in his opening address, articulated a compelling vision for ESG transversality as a transformative framework for addressing the interconnected challenges of water, energy, health, and the environment. He emphasized that contemporary global crises ranging from climate change and water stress to biodiversity loss and public health risks are deeply interlinked, necessitating integrated, systems-based solutions rather than fragmented interventions. Positioning ESG as more than a compliance or reporting tool, he described it as an evolving philosophy of development that harmonizes economic growth with ecological sustainability and social inclusion. A key highlight of his address was the discussion on India's progressive policy landscape, including the Business Responsibility and Sustainability Reporting (BRSR) framework, sustainability-linked financial instruments, and emerging state-level ESG initiatives such as those in Kerala, which collectively demonstrate how regulatory and market mechanisms are embedding sustainability into development pathways. He further outlined the ESG finance, corporate leadership, nexus-based policy approaches, and global cooperation, underscoring the importance of credible governance, transparency, and cross-sectoral collaboration to combat challenges like greenwashing and ensure measurable impact. Reinforcing the concept of water as a unifying thread across ecosystems, economies, and societies, Dr. Kumar called for translating dialogue into action through policy innovation, technological advancement, responsible finance, and multi-stakeholder partnerships, positioning the conclave as a catalyst for advancing resilient, inclusive, and sustainable development.



HIS HOLINESS SHRI SADHGURU JAGGI VASUDEV

He delivered a deeply philosophical and action-oriented address, emphasizing the urgent need to cultivate a “conscious planet” as the foundation for sustainable living. He observed that the present generation has exerted unprecedented pressure on the Earth's resources, making it imperative to adopt responsible and regenerative practices to preserve the planet for future generations. Reframing the sustainability discourse, he stressed that the objective is not to “save the planet,” but to recognize that human well-being is intrinsically inseparable from the health of the planet itself. A central highlight of his address was the critical importance of soil



conservation, which he identified as the most pressing ecological priority, asserting that restoring soil health through enhanced green cover is fundamental to addressing water scarcity and air quality challenges. He advocated for expanding tree cover to at least 40% of land area and promoting tree-based agriculture, linking these measures to improved water retention, ecological balance, and climate resilience. Further, he underscored the need for behavioural and lifestyle transformations, including reducing excessive meat consumption and integrating more tree-based foods into diets, thereby freeing land for ecological restoration. Calling for a global, collective movement, Sadhguru emphasized that sustainability must be driven by conscious choices in everyday life how we consume, produce, and interact with natural systems while expressing his support for collaborative efforts to advance this vision at a planetary scale.

MR. LOÏC FAUCHON



Mr. Loïc Fauchon, delivered a compelling and strategic address positioning water at the core of global development and governance. Commending India's proactive leadership, he described the present as “India's water moment,” emphasizing that the country's rising global stature brings with it a heightened responsibility to lead on water security. He underscored that water must not be treated as a standalone sector but as the “bloodstream of development,” intrinsically linked to public health, food security, energy production, social stability, and peace what he termed a “five-finger alliance.” Highlighting the intensifying

dual challenges of floods and droughts in the context of climate variability, he called for a paradigm shift toward securing both the quality and quantity of water resources. A central pillar of his address was the strategic framework of “Preserve, Reserve, and Serve” advocating for the protection of ecosystems, forward-looking water resource management through innovations such as wastewater recycling and desalination, and ensuring universal access to safe water and sanitation. He further emphasized that water is not merely a technical or environmental issue but a political, economic, social, and moral imperative, urging a transition from commitments to concrete action in upcoming global platforms. Concluding on a forward-looking note, he affirmed India's potential to act not only as a beneficiary but as a global provider of water solutions, particularly in fostering cooperation across the Global South.

MS. ULRIKE KELM

Ms. Ulrike Kelm, delivered a thoughtful and forward-looking address underscoring the fundamental principle that water is the ultimate connector across ecosystems, economies, and human well-being. She emphasized that in the face of interconnected global challenges such as climate change, water scarcity, and rising pressures on natural resources solutions must transcend sectoral silos and be rooted in integrated, collaborative approaches. Highlighting the relevance of the conference theme on the water-energy-health-environment nexus and ESG governance, she called for stronger alignment between science, policy, and

practice, supported by multi-stakeholder partnerships. A key highlight of her address was a reflective call to action “not whether we are connected by water, but whether we act like it” urging stakeholders to translate knowledge into collective, decisive action. She further reinforced the role of global platforms and knowledge networks in advancing water governance, referencing international engagements such as the World Water Congress and the Marrakesh Declaration, which advocate elevating water on global agendas. Concluding with optimism, she stressed that innovation, nature-based solutions, and international cooperation, when effectively integrated, can enable a more resilient and sustainable future, aligning closely with the ethos of water transversality.



SHRI YUGAL KISHORE JOSHI



Shri Yugal Kishore Joshi, delivered a reflective and insight-rich address, drawing upon India's policy experience to underscore the imperative of holistic, non-siloed approaches to sustainability and development. Grounding his remarks in India's philosophical traditions such as Vasudhaiva Kutumbakam, he emphasized the inherent interdependence of all natural and human systems, aligning this worldview with the contemporary concept of ESG transversality. A key highlight of his address was the articulation of fundamental ecological truths such as the cyclical nature of water, the interconnected impacts of land, air, and water pollution, and the cascading consequences of disrupting ecological balance reinforcing the need for systems thinking in policy design. He showcased India's large-scale national missions, including Swachh Bharat Mission, Jal Jeevan Mission, and Atal Bhujal Yojana, as pioneering examples of integrated governance that combine infrastructure development with behavioural change, social inclusion, and environmental outcomes. He further highlighted the transformative concept of Mission LiFE (Lifestyle for Environment), advocating a shift from mindless

consumption to mindful and responsible resource use, supported by individual and collective action. Stressing that sustainability challenges must be addressed as human-centric rather than sectoral issues, he identified critical enablers of success political will, public financing, multi-stakeholder partnerships, and citizen participation transforming initiatives into mass movements (jan andolan). Concluding with a global

perspective, he called for the exchange of best practices and collaborative learning, positioning India's experience as a valuable model for advancing integrated, scalable, and inclusive sustainability solutions worldwide.

DR. RAJ BHUSHAN CHAUDHARY

Dr. Raj Bhushan Chaudhary, delivered a policy-driven and forward-looking address, emphasizing the imperative of integrated, cross-sectoral approaches to address the interconnected challenges of climate change, water stress, public health, and energy transition. He highlighted that sustainable development can no longer be pursued in silos, and that the water–energy–health–environment nexus must inform policy design and implementation. Underscoring India's commitment to this paradigm, he noted that ESG has evolved beyond a corporate compliance framework into a strategic architecture for responsible and resilient growth, supported by regulatory advancements such as Business Responsibility and Sustainability Reporting (BRSR), enhanced disclosure norms, and the integration of climate risk into financial systems.

A key highlight of his address was the emphasis on flagship national initiatives like the Jal Jeevan Mission, which he described as transformative not only in expanding access to safe drinking water but also in delivering broader social outcomes, including improved public health, women's empowerment, and community-led governance. He further pointed to India's progress in renewable energy, green hydrogen, and circular economy practices as examples of holistic development models that align economic growth with environmental stewardship. Stressing the importance of moving from concept to implementation, he outlined three critical priorities: operationalizing the nexus approach across sectors, strengthening transparency and credibility in ESG frameworks to combat greenwashing, and placing communities particularly women and local institutions at the center of sustainability efforts. Concluding with a global perspective, he reaffirmed India's commitment to collaborative, inclusive, and climate-resilient development, positioning the country as a key contributor to advancing sustainable solutions at both national and international levels.



MS. SHWETA TYAGI



Ms. Shweta Tyagi delivered brief remarks, extending a warm welcome to the distinguished dignitaries, speakers, and participants of the conclave. She expressed her sincere gratitude to the Hon'ble Chief Guest and eminent global leaders for their presence and valuable contributions, acknowledging the challenges posed by prevailing geopolitical circumstances that necessitated a hybrid format for the event. Despite these constraints, she underscored the successful convening of a diverse and high-level gathering, reflecting the strong commitment of stakeholders toward advancing sustainability dialogue. She also conveyed appreciation to the collaborative, institutional, and knowledge partners, whose collective efforts enabled the organization of the conference, highlighting the importance of multi-stakeholder collaboration in driving impactful and inclusive outcomes.

KEY TAKEAWAYS

- Interlinked crises across climate, water stress, biodiversity loss, and public health establish the water–energy–health–environment nexus as the foundational lens for sustainable development, demanding integrated rather than siloed interventions.
- ESG is repositioned from a narrow disclosure mechanism to a strategic development paradigm that aligns growth with environmental limits, social justice, and resilient governance architectures.
- Water is framed as the primary integrator in the nexus, structurally connecting ecosystems, economies, and human well-being, and therefore requiring elevation as a central planning and investment priority.
- Persistent fragmentation in institutions and policies demonstrates that governance design; not only technology is the key bottleneck, calling for policy coherence, cross-sectoral coordination, and joint accountability mechanisms.
- Credible ESG practice hinges on transparency and integrity, with robust standards and oversight needed to counter greenwashing and ensure that reported progress is measurable and outcome-oriented.
- Behavioural and lifestyle change emerges as a systemic lever, complementing policies, finance, and technology by embedding sustainability in everyday choices and community norms.
- Scaling innovative financing, regulatory reforms, and nature-based solutions is essential to turn the nexus from a conceptual framework into an operational pathway for climate-resilient, inclusive development.



SPECIAL ADDRESS

SHRI HARSH MALHOTRA

Hon'ble Minister of State, Ministry of Corporate Affairs & Ministry of Road Transport and Highways

Shri Harsh Malhotra, delivered a comprehensive and implementation-oriented address, emphasizing the necessity of integrated, multi-sectoral solutions to address the converging global crises of climate change, water stress, energy insecurity, and public health. He highlighted that forums such as the conclave play a critical role in fostering holistic dialogue, as isolated approaches cannot adequately address interconnected challenges. Showcasing India's progress, he underscored significant achievements in renewable energy expansion, including meeting ambitious non-fossil fuel targets ahead of schedule, alongside initiatives in green hydrogen, bioenergy, and ethanol blending to reduce carbon emissions.

A key highlight of his address was the emphasis on green infrastructure development, including the concept of “green highways,” large-scale afforestation, tree transplantation with high survival rates, and the innovative integration of solar energy infrastructure along national highways. He also drew attention to substantial government investments in water conservation and river rejuvenation, citing efforts such as the Yamuna cleaning initiatives and the broader Clean Ganga Mission, while advocating for linking water management with economic models such as inland waterways and sustainable transport systems.

Further, he stressed the growing importance of Corporate Social Responsibility (CSR) as a critical enabler in advancing sustainability goals, highlighting how corporates are contributing to sectors such as water conservation, health, education, and environmental protection. He also referenced initiatives aimed at youth skilling and industry-academia integration, positioning them as essential for building future-ready human capital.



THEMATIC PLENARY 1: ESG ALIGNED FINANCE & GOVERNANCE TO COMBAT GREENWASHING

SPEAKERS:

Dr. Nagesh Kumar, Director,
Institute for Studies in Industrial
Development

Ms. Bharti Birla, Enterprise
Development Specialist,
International Labour
Organization

Mr. Saumitra Srivastava,
Director (Marketing), Indian Oil
Corporation Ltd.

Mr. Pankaj Sharma, Senior
Consultant, India Water
Foundation & Director – Green
Wattage

Dr. Priyadarshi Das, Associate
Professor, RIS

Chair:

Dr. Satya Tripathi, Secretary
General, Global Alliance for a
Sustainable Planet



*(L-R): Dr. Nagesh Kumar, Mr. M.P. Singh,
Dr. Satya Tripathi, Ms. Bharti Birla,
Mr. Saumitra Srivastava, Mr. Pankaj Sharma*

DR. SATYA TRIPATHI

Dr. Satya Tripathi reframed the discourse on ESG by situating it at the intersection of policy, politics, and science, asserting that while scientific evidence on climate change is unequivocal, the global response remains insufficiently aligned with its urgency. He emphasized that water must not be perceived as a standalone utility but as the very foundation of life and ecological balance, intricately linked to energy, agriculture, and environmental sustainability. Illustrating India's acute water paradox hosting a significant proportion of the global population with limited freshwater resources he cautioned against unsustainable groundwater extraction and fragmented policy approaches that ignore systemic interdependencies.

A compelling case was presented through the Andhra Pradesh Community Managed Natural Farming initiative, which exemplifies the power of nexus-based solutions. By eliminating chemical inputs, the model has demonstrated substantial reductions in water consumption, energy use, and fiscal burdens associated with subsidies, while simultaneously restoring soil health and ecological resilience. This, he noted, represents a scalable and globally replicable paradigm of integrated sustainability.



Dr. Tripathi further critiqued the global tendency to focus excessively on terminologies such as “sustainable finance” and “ESG frameworks,” advocating instead for a decisive shift towards “financing change” directing capital and policy interventions towards tangible, on-ground transformations. He concluded with a strong call for action-oriented governance, asserting that the true measure of ESG lies not in conceptual articulation, but in the implementation of systemic, cross-sectoral solutions that address the interconnected challenges of water, energy, health, and environment.

DR. NAGESH KUMAR



Dr. Nagesh Kumar underscored the imperative of aligning India's development trajectory with global sustainability commitments, acknowledging that while India's per capita emissions remain relatively low, its responsibility toward climate action is unequivocal. He highlighted India's ambitious climate targets, including achieving net-zero emissions by 2070, alongside significant interim milestones such as reducing emission intensity by 45% and scaling renewable energy capacity to 500 GW by 2030 an expansion reflective of both policy resolve and technological advancement.

A central focus of his intervention was the evolving role of the corporate sector in advancing sustainability through ESG integration. Referring to the Securities and Exchange Board of India-mandated Business Responsibility and Sustainability Reporting (BRSR) framework, he highlighted its effectiveness in catalyzing behavioural change among leading corporations. Dr. Kumar further observed that ESG reporting is not merely a compliance exercise but

a strategic instrument that fosters accountability, transparency, and long-term value creation. The increasing integration of sustainability into capital expenditure, research and development, and corporate governance structures signals a paradigm shift in industrial practices.

He concluded by advocating for the progressive expansion of ESG reporting frameworks to encompass a broader spectrum of enterprises, thereby embedding sustainability across the entire economic architecture. Such measures, he asserted, would not only strengthen environmental stewardship but also enable financial markets to align investment decisions with sustainability performance, ultimately contributing to a more resilient and future-ready economy.

MS. BHARTI BIRLA

Ms. Bharti Birla emphasized the critical intersection between the environmental and social pillars of ESG, underscoring that environmental actions inevitably carry labour and livelihood implications. Representing the ILO, she advocated for a human-centred “just transition” framework, ensuring that climate and sustainability policies safeguard workers' rights, enable reskilling, and promote social protection.

She cautioned that ESG implementation, if narrowly focused, risks “social washing”, where environmental gains are achieved at the expense of workers and small enterprises, particularly MSMEs within supply chains. Highlighting the disproportionate impact of climate change on labour through heat stress, occupational hazards, and job displacement she stressed the need to integrate occupational health, equity, and inclusion into sustainability frameworks.

Ms. Birla further argued that credible ESG must go beyond emission



metrics to prioritize creation of green and decent jobs, inclusive supply chains, and equitable access to sustainable finance. She concluded by calling for strengthened social dialogue, institutional support, and capacity-building mechanisms to ensure that the transition to a green economy is inclusive, just, and resilient, leaving no worker or enterprise behind.

MR. SAUMITRA SRIVASTAVA

Mr. Saumitra Srivastava emphasized that ESG has evolved into a core operating system for businesses, transitioning from a compliance framework to a data-driven, measurable and strategic imperative. He underlined that India's energy transition must balance rapidly growing demand, driven by urbanization and economic expansion, with its net-zero commitments (2070) and interim climate targets, making sustainability both an economic necessity and a resilience strategy.

Highlighting the energy sector's central role, he stressed that sustainability is not aspirational but execution-oriented, requiring robust infrastructure, verifiable metrics, and long-term capital deployment. He further noted that financing the transition at scale is critical, with instruments such as green and sustainability-linked bonds enabling measurable impact. Warning against greenwashing, he called for authentic, verifiable, and consistent reporting, asserting that credibility in ESG hinges on integrity in measurement.

Drawing on Indian Oil's initiatives, he highlighted investments in renewable energy expansion, sustainable aviation fuel, compressed biogas, and water recycling (up to 89%), alongside efforts in water body rejuvenation demonstrating how integrated ESG action can align environmental stewardship with business continuity.

He concluded that ESG must move beyond risk management to value creation, where ethical governance, technological viability, and innovative financing together drive a sustainable, resilient, and future-ready industrial ecosystem.



MR. PANKAJ SHARMA



Mr. Pankaj Sharma provided a sharp analytical perspective on ESG credibility and greenwashing, framing it as a systemic and financial architecture challenge rather than merely a communication issue. He defined greenwashing as the misrepresentation of sustainability performance that distorts capital allocation decisions, emphasizing that the real concern is not lack of ESG disclosures, but the absence of credible ESG signals amid excessive narrative “noise.”

He argued for a shift from narrative-driven ESG to evidence-based ESG, proposing an “ESG evidence stack” comprising four essential layers: measurement, methodology, independent verification, and accountability noting that true credibility emerges only when all four are present.

Introducing a financial lens, he recommended pricing “greenwashing risk”, where companies with weak, unverifiable ESG claims face higher capital costs, while credible performers benefit from a “credibility discount.” This, he suggested, would realign market

incentives toward genuine sustainability performance.

He further distinguished between “narrative ESG” (reporting-focused) and “operational ESG” (embedded in core business decisions such as engineering, supply chains, and capital expenditure), stressing that meaningful transformation lies in the latter.

As a forward-looking proposition, he introduced the concept of a “Transition Integrity Index” to evaluate the credibility of corporate sustainability pathways, based on governance, capital alignment, transparency, and verification mechanisms.

He concluded that strengthening ESG requires linking finance to performance, enhancing internal controls and assurance systems, and focusing on material, measurable impact, asserting that only when sustainability claims are auditable and financially consequential will ESG evolve into a true capital allocation framework rather than a branding exercise.

DR. PRIYADARSHI DAS

Dr. Priyadarshi Das underscored that the central question in ESG discourse is whether stakeholders are “financing real change or merely relabelling finance,” emphasizing that intent and implementation determine the outcome. He argued that ESG must evolve beyond compliance into a core business and policy strategy, enabling low-carbon growth while also creating economic value rather than being perceived as a regulatory burden.

He highlighted the need for a multi-level governance approach; spanning government (including international cooperation), corporate, and community levels to ensure effective ESG integration. While acknowledging significant regulatory progress in India (e.g., BRSR frameworks and financial sector alignment), he stressed the urgent need to mainstream MSMEs into the sustainability transition, addressing the disproportionate compliance burden they face.

He noted that development finance institutions (both traditional and new-generation) must transition from ESG compliance frameworks to strategic enablers of climate-aligned investments, ensuring stronger monitoring and accountability mechanisms. He further highlighted the importance of consumer behaviour, digital technologies, and data systems in strengthening ESG adoption and enabling informed decision-making.

He concluded that ESG should be viewed not as a luxury for developing economies, but as a long-term structural transition toward a sustainable, low-carbon economy, requiring behavioural change, technological deployment, and coordinated action across all stakeholders.



KEY TAKEAWAYS

- A structural gap persists between scientific evidence on climate and sustainability risks and the pace of policy response, underscoring the need for governance that can translate urgency into rapid implementation.
- ESG capital is shifting from terminology-driven investing toward financing demonstrable system-level transformations, favouring real-economy projects over box-ticking compliance.
- The credibility of ESG is becoming central to financial system integrity, requiring standardized metrics, independent verification, and enforceable accountability to build trust in sustainability claims.
- Market-based mechanisms and risk-pricing tools are needed to penalize unverifiable environmental and social claims while rewarding transparent, high-impact performance.
- The evolution from narrative to operational ESG demands integration of sustainability into core business functions like capital expenditure, supply chains, engineering, and operations rather than limiting it to reporting teams.
- A just transition lens is vital, with deliberate integration of labour rights, social protection, and MSME inclusion to ensure that the costs and benefits of transition are fairly distributed.
- Multi-tier governance, supported by digital data systems and development finance institutions, is necessary to scale credible ESG adoption across sectors and geographies.



THEMATIC PANEL DISCUSSION 1: ESG ALIGNED FINANCE & GOVERNANCE TO COMBAT GREENWASHING

PANELLISTS:

Ms. Sarika Gosain, Partner & Leader – ESG & Sustainability, Pierag Consulting

Mr. Ranjeet Pandey, Chairman, ESG & Sustainability Board, ICSI

Mr. Sanmit Ahuja, Director, CETFI

Ms. Surabhi Gupta, Chief General Manager, Securities Exchange Board of India

Dr. Rajan Sudesh Ratna, Chief Advisor, India Water Foundation; Former Deputy Head, UN ESCAP SSWA

MODERATOR:

Dr. Nagesh Kumar, Director, Institute for Studies in Industrial Development



(L-R): Mr. Sanmit Ahuja, Ms. Surabhi Gupta, Ms. Sarika Gosain, Dr. Nagesh Kumar, Dr. Arvind Kumar, Dr. Rajan Sudesh Ratna, Mr. Ranjeet Pandey

MS. SARIKA GOSAIN

Ms. Sarika Gosain highlighted that ESG reporting and assurance are at an early evolutionary stage, comparable to the development phase of financial accounting three decades ago, and require significant maturation to achieve reliability and standardization. She identified four critical challenges in ESG data management: limited data availability, fragmented data across value chains, lack of capacity among supply chain actors (especially MSMEs), and weak data ownership, leading to concerns over completeness and credibility of disclosures.

To address these gaps, she emphasized the need to institutionalize ESG data governance with the same rigor as financial reporting, including capacity building, standardized processes, and clear accountability mechanisms. She stressed that integration of financial and non-financial data systems is essential to ensure consistency and robustness in ESG reporting. Further, she underscored the importance of embedding ESG KPIs across organizational ecosystems, strengthening value chain participation, and leveraging global benchmarking practices to accelerate maturity.

Noting gradual improvements in ESG assurance practices among leading companies, she advocated for expanding the scope of mandatory ESG reporting and assurance beyond the top listed firms, to build a credible, scalable, and transparent sustainability reporting framework.



MR. RANJEET PANDEY

Mr. Ranjeet Pandey, emphasized that the core challenge in ESG adoption lies in effectively decoding ESG within the business context; identifying where and how an organization can meaningfully impact environmental, social, and governance parameters. He outlined a structured pathway for ESG integration: defining clear targets aligned with key performance indicators (KPIs), ensuring policy alignment with frameworks such as BRSR and NGRBC, and embedding ESG through top-down implementation supported by robust stakeholder engagement. He stressed that inclusive consultation across value chains vendors, employees, and partners enhances the realism and effectiveness of ESG strategies.

He further underscored the importance of institutional mechanisms such as dedicated board committees, continuous review systems, and transparent reporting frameworks grounded in global standards like GRI. However, he highlighted persistent challenges in ESG assurance, particularly concerning data reliability, ownership, and sampling methodologies, which complicate accurate reporting. Looking ahead, he identified technology and clearer regulatory guidance as critical enablers to strengthen data systems and improve ESG disclosures, noting that while the ecosystem is still evolving, it is steadily progressing toward greater maturity and accountability.



MR. SANMIT AHUJA



Mr. Sanmit Ahuja, highlighted the massive financing gap in global climate action, noting that with 57 gigatons of emissions and an estimated carbon price of \$200 per ton, the world requires nearly \$11.4 trillion annually, a scale of funding that currently lacks structured mobilization. While global assets under management exceed \$160 trillion, he argued that climate and environmental sectors remain underfunded because they are not yet structured as viable, investable asset classes.

He emphasized that critical sectors such as water, agriculture, and waste suffer from market distortions, including under-pricing of resources, informality, and absence of bankable revenue models. This disconnect prevents institutional capital especially from pension and insurance funds from flowing into sustainability projects, as these investors require predictable returns and long-term financial viability.

To address this, he outlined four key enablers for scaling climate finance: leveraging scale to reduce technology costs, funding first-of-a-kind commercial demonstration projects, creating market-making

mechanisms through long-term offtake agreements, and developing risk mitigation instruments, particularly to manage foreign exchange risks for global investors. He stressed that aligning sustainability investments with the risk-return expectations of institutional capital is essential to unlocking large-scale financing.

He concluded that transitioning sustainability from a “moral imperative” to a financially structured, data-driven investment ecosystem supported by formalization of sectors, robust financial instruments, and deeper engagement with global capital pools is critical for accelerating climate action at scale.

MS. SURABHI GUPTA



Ms. Surabhi Gupta, outlined the regulator's progressive efforts to strengthen ESG reporting and assurance frameworks in India, emphasizing the transition from the earlier Business Responsibility Reports (BRR) to the more standardized, quantitative, and outcome-oriented BRSR framework. This shift, supported by detailed guidance notes and the introduction of XBRL-based reporting, aims to improve data consistency, enable automated validation checks, and reduce ambiguity in disclosures.

However, she acknowledged persistent challenges, particularly inconsistencies and gaps in reporting, where companies may omit material disclosures raising concerns around both greenwashing and inadequate materiality assessment. To address this, SEBI is working towards sector-specific reporting formats that can better capture industry-relevant ESG metrics and reduce interpretational gaps.

A key structural limitation identified was the absence of standardized reporting boundaries, allowing companies discretion in defining the scope of disclosures, which may lead to selective reporting. Moving

forward, harmonizing financial and non-financial reporting boundaries is seen as critical to enhancing transparency and comparability.

On the assurance side, she highlighted the introduction of BRSR Core and supporting guidance, which facilitates verification; however, she stressed the need for a robust regulatory framework for assurance providers, including clear standards on competencies, governance, and conflict of interest. She concluded by noting that while ESG reporting in India is still in its early stages, there is encouraging momentum with over 1,000 companies already reporting and many voluntarily adopting assurance indicating a gradual but steady transition towards more credible, standardized, and accountable ESG disclosures.

DR. RAJAN SUDESH RATNA

Dr. Rajan Sudesh Ratna, emphasized the intrinsic linkage between ESG and the Sustainable Development Goals (SDGs), noting that environmental and social dimensions such as health, water, and air quality are deeply interconnected and must be addressed holistically. He illustrated this through the example of crop residue burning, where environmental degradation directly translates into public health crises, particularly urban air pollution affecting cities like Delhi despite originating elsewhere.

He highlighted that such challenges cannot be resolved through localized or regulatory approaches alone, but require integrated solutions combining policy, technology, finance, and international cooperation. Dr. Ratna underscored the importance of circular economy models, such as converting agricultural waste into biofuels, but stressed that these solutions must be economically viable across the value chain. Without adequate incentives, farmers lack motivation to adopt sustainable practices. In this context, he pointed to innovative financing mechanisms such as carbon credit frameworks under international agreements as a means to align environmental goals with stakeholder incentives.



He concluded that effective ESG implementation requires convergence of international cooperation, private sector participation, and integrated financial-policy-technology frameworks, ensuring that sustainability transitions are both scalable and inclusive, particularly for grassroots stakeholders.

DR. NAGESH KUMAR

Dr. Nagesh Kumar framed the session as a continuation and deepening of earlier deliberations on ESG, particularly focusing on BRSR-based corporate reporting and its evolving significance. He highlighted the need to move beyond broad conceptual discussions and examine practical dimensions of ESG implementation, drawing insights from a diverse panel comprising regulators, auditors, finance professionals, consultants, and international experts.

In his concluding reflections, he emphasized that BRSR reporting represents a foundational step in institutionalizing ESG practices in India, with early experiences indicating positive momentum and scope for refinement. He underscored the importance of expanding coverage beyond the current top 1,000 companies, as even voluntary disclosures act as powerful behavioural nudges by placing sustainability performance in the public domain.

He noted that such transparency not only increases corporate accountability but also enables investors and financial institutions to integrate ESG considerations into decision-making, thereby strengthening market discipline.

Finally, he stressed the value of international cooperation and knowledge sharing, arguing that cross-country exchange of best practices can significantly accelerate the maturation, standardization, and effectiveness of ESG frameworks globally.



KEY TAKEAWAYS

- ESG data ecosystems remain underdeveloped, with fragmented inputs, unclear data ownership, and limited MSME capacity undermining the reliability and auditability of disclosures.
- Convergence between financial and non-financial data systems is critical to maturing ESG reporting, enabling consistency, comparability, and integration of sustainability metrics into enterprise performance management.
- To translate ESG from disclosure into strategy, firms must contextualize ESG at the enterprise level through clear KPIs, board oversight, and governance mechanisms that cascade sustainability across hierarchies.
- Climate and sustainability finance remains constrained by a limited pipeline of investable assets in sectors such as water, agriculture, and waste, calling for market design that makes such projects compatible with institutional capital requirements.
- Regulatory evolution is moving ESG reporting toward standardized, technology-enabled, and sector-specific frameworks, yet unresolved questions around materiality and boundary-setting continue to limit transparency.
- Assurance of ESG information is nascent and requires clearer auditor standards, methodological rigor, and independence safeguards to strengthen confidence in reported data.
- Scalable ESG outcomes depend on incentive-aligned, economically viable models particularly at the grassroots linking circular economy approaches, carbon markets, and cross-border cooperation to tangible financial returns.

CEOs LEADERSHIP DIALOGUE

PANELLISTS:

Mrs. Pratibha Pandya, Founder,
Dian Foundation & Holistic
Wellness Practitioner

Mr. Amit Kumar, Chairman, AIESL

Ms. Anjali Makhija, CEO & Trustee,
S M Sehgal Foundation

Mr. S.A. Verma, Executive
Director- Environment, Delhi Metro
Rail Corporation

Dr. Priyadarshi Das, Associate
Professor, RIS

Moderator:

Dr. Rajan Sudesh Ratna, Chief
Advisor, India Water Foundation;
Former Deputy Head, UN ESCAP
SSWA



(L-R): Mr. Amit Kumar, Ms. Pratibha Pandya,
Mr. T.S. Bisht, Dr. Rajan Sudesh Ratna,
Dr. Arvind Kumar, Mr. S.A. Verma

MRS. PRATIBHA PANDYA

Mrs. Pratibha Pandya brought a human-centric and behavioural perspective to the sustainability discourse, emphasizing that despite advancements in policy, technology, and expertise, the core barrier to effective climate and water action lies in mind-set and individual disconnect from nature.

She argued that the prevailing “scarcity and commodification mind-set” where resources like water are treated merely as consumable goods undermines sustainability efforts. Instead, she stressed the need to rebuild a personal, value-based relationship with natural resources, rooted in respect and responsibility, as was traditionally practiced.

Highlighting the limitations of purely policy-driven approaches, she noted that implementation gaps arise when stakeholders lack emotional and practical alignment with sustainability goals. For leaders and organizations, she emphasized that ESG cannot succeed as a compliance exercise alone, but must be internalized through genuine engagement, shared purpose, and behavioural change.

She concluded that sustainable transformation requires not only systemic interventions but also a shift in individual consciousness, where people and institutions develop a deeper, more responsible connection with the environment to drive meaningful and lasting impact.



MR. AMIT KUMAR

Mr. Amit Kumar, underscored that ESG should not be viewed merely as a reporting or compliance tool, but as an operational and strategic necessity, particularly in high-impact sectors like aviation. He emphasized that sustainability must be embedded into core business functions, such as transitioning toward greener energy chains and improving fuel efficiency, rather than treated as a standalone program.

Highlighting sector-specific realities, he noted that aviation faces inherent cost pressures in adopting sustainability measures, including the high costs of Sustainable Aviation Fuel (SAF), fleet modernization, and energy transition. While these investments may impact short-term profitability, they are essential for long-term resilience and environmental responsibility.

He illustrated ongoing efforts such as solarization of operational infrastructure and electrification of ground handling through EV adoption, reflecting a gradual but committed shift toward decarbonization.

However, he raised critical concerns regarding fragmented and duplicative ESG reporting frameworks across jurisdictions, which increase compliance costs and complexity for global companies. He advocated for greater standardization and harmonization of reporting frameworks globally.

Finally, he stressed the need for industry-specific, practical KPIs, suggesting that metrics should focus on operational efficiency outcomes such as fuel consumption per flight hour rather than broad targets alone, to ensure ESG frameworks remain actionable, measurable, and aligned with sectoral realities.



MS. ANJALI MAKHIJA



Ms. Anjali Makhija emphasized that long before ESG and CSR frameworks gained prominence, grassroots institutions had already been operationalizing sustainability through integrated rural development models. She highlighted that water management, climate-resilient agriculture, and participatory governance particularly women's leadership form the foundational pillars of sustainable development.

A central theme of her intervention was the transformational role of women in sustainability governance. Through initiatives such as women water champions, “Krishi Sakhis,” and community-led institutions, she demonstrated that embedding women across all levels from grassroots implementation to boardroom leadership creates stronger ownership, better outcomes, and scalable impact. Leadership, she argued, is a cultural driver, and organizations that institutionalize inclusive leadership models achieve deeper and more sustained change.

Addressing ESG metrics, she cautioned against an over-reliance on quantitative indicators such as Social Return on Investment (SROI), arguing that community-driven and gender-inclusive interventions often yield high long-term systemic value that may not be immediately captured in conventional metrics. Therefore, ESG frameworks must evolve to better account for qualitative, social, and participatory dimensions of impact.

In conclusion, she called for stronger corporate partnerships and greater CSR engagement in water and agriculture sectors, advocating for scaling community-based, women-led sustainability models as a pathway to achieving meaningful and lasting ESG outcomes.

MR. S.A. VERMA

Mr. S.A. Verma, presented a compelling institutional perspective, illustrating how sustainability can be embedded organically within core infrastructure mandates, rather than treated as an external ESG obligation. Drawing from the experience of Delhi Metro Rail Corporation, he emphasized that although the organization's primary mandate was urban transport, sustainability became integral through visionary leadership and early policy foresight, even before ESG frameworks gained prominence.

He highlighted that as early as the late 1990s, DMRC proactively adopted environmental policies and management systems such as ISO 14001, despite the absence of regulatory mandates or industry benchmarks at the time. This required developing environmental standards, construction protocols, and compliance frameworks from scratch, particularly in a high-visibility public infrastructure context.

A key insight from his intervention was the importance of innovation-led sustainability transitions. DMRC's early adoption of solar energy (initiated in 2008) despite high initial costs demonstrates a long-term strategic approach. Today, a significant share of its energy requirements is met through solar power, with clear targets for further expansion. Similarly, the adoption of regenerative braking technology enabled the organization to become a global pioneer in monetizing carbon credits, including innovations in capturing modal shift emissions from private vehicles to metro systems.

He further underscored DMRC's role in standard-setting and knowledge leadership, including the development of green building norms for metro infrastructure and ongoing efforts to establish global decarbonization standards for urban transport systems. These initiatives position DMRC not merely as an implementer but as a framework creator influencing sector-wide transformation.

Importantly, he cautioned against treating sustainability as a public relations or certification-driven exercise, asserting that genuine progress lies in continuous improvement and operational integration, rather than compliance satisfaction. Organizations must avoid complacency and consistently raise ambition levels.

In conclusion, he emphasized the need to redefine net-zero pathways in sector-specific, practical, and achievable terms, particularly for complex infrastructure sectors like transport. By aligning innovation, policy, and operational execution, institutions can move beyond targets to deliver scalable, globally replicable sustainability models.



DR. RAJAN SUDESH RATNA

Dr. Rajan Sudesh Ratna, in his closing intervention reframed the ESG discourse by proposing a pragmatic, outcome-oriented paradigm shift. He argued that instead of viewing ESG as a standalone framework, sustainability outcomes are more effectively driven by three core levers: cost and risk management, operational efficiency, and regulatory mechanisms. When aligned strategically, these drivers inherently lead to sustainable outcomes, positioning ESG as a result rather than a starting point.

He further emphasized that while policy frameworks, financial instruments, and technological solutions are essential, the fundamental barrier lies in human behaviour and mind-set. Without a transformation at the level of individual and institutional attitudes from scarcity-driven thinking to responsibility and stewardship systemic change will remain limited. Thus, sustainability must be anchored not only in systems and structures but also in behavioural



and cultural shifts. Highlighting the financial dimension, he called for greater prioritization of green budgets, investments, and infrastructure, underscoring that scaling sustainability requires mainstreaming climate considerations into economic planning and capital allocation.

In conclusion, he reinforced that sustainability transformation requires a convergence of finance, governance, operational discipline, and human intent, supported by both domestic policy frameworks and international cooperation mechanisms.

KEY TAKEAWAYS

- Deep-seated behavioural and cultural norms, including consumption-heavy lifestyles, remain foundational barriers to sustainability, often diluting the impact of policy, finance, and technological interventions.
- In practice, ESG integration is advancing through operational pragmatism, where cost efficiency, risk mitigation, and regulatory preparedness act as entry points for embedding sustainability.
- Sector-specific transition pathways, particularly for hard-to-abate industries, require balancing decarbonization with cost, technological feasibility, and operational continuity within core business models.
- Fragmented global ESG reporting regimes impose disproportionate compliance burdens on multinational firms, reinforcing the need for harmonized and interoperable standards tuned to sectoral realities.
- Community-driven and gender-inclusive governance models showcase that qualitative, participatory dimensions can deliver high-impact, scalable sustainability outcomes and should be recognized in ESG evaluation.
- Institutions that adopt sustainability early can evolve from mere implementers to standard-setters, shaping sectoral norms, influencing regulation, and driving innovation across value chains.
- Long-term transformation depends on aligning financial priorities, infrastructure investments, and organizational intent with a stewardship mindset that treats natural and social capital as core assets.



THEMATIC PLENARY 2: NAVIGATING INTERDEPENDENCIES OF WATER-ENERGY-HEALTH AND ENVIRONMENT NEXUS

PANELLISTS:

Mr. Casper Mayland, Counsellor, Environment, Political and Economic Section, Royal Danish Embassy, New Delhi

Ms. Ulrike Kelm, Deputy Executive Director, International Water Resources Association

Dr. Akash Srivastava, Additional Director, Centre for Environmental and Occupational Health, Climate Change & Health; National Centre for Disease Control, Ministry of Health and Family Welfare

Dr. Paras Pujari, Chief Scientist & Head, Water Resources Group, CSIR-NEERI

Chair:

Mr. Ravi Singh, Secretary General & CEO, WWF India



(L-R): Mr. Ravi Singh, Dr. Satya Tripathi, Dr. Paras Pujari, Mr. Casper Mayland, Dr. Akash Srivastava

MR. RAVI SINGH

Mr. Ravi Singh, emphasized that the discourse on ESG and the Water-Energy-Health-Environment (WEHE) nexus has already evolved significantly, and the challenge today lies not in conceptualization but in effective integration and execution at scale. A central theme of his intervention was the need for integrated, landscape-level approaches to sustainability. He stressed that interventions must move beyond fragmented efforts and instead consider entire value chains and ecosystems from production to consumption.

He further highlighted the importance of adopting a basin-level approach to water management, arguing that water sustainability cannot be addressed in isolation. Rivers and water systems must be managed holistically, considering their linkages with industry, agriculture, energy use, and downstream ecosystems. Another key insight was the need to treat nature-based solutions as critical infrastructure. Protecting and restoring ecosystems such as wetlands, mangroves, and floodplains not only supports biodiversity but also delivers essential services like flood control, groundwater recharge, and water purification, thereby strengthening climate resilience.

He also introduced the importance of integrating the One Health approach into ESG and sustainability



planning, emphasizing the interconnected risks between environmental degradation, water systems, and human and animal health, including zoonotic and waterborne diseases. This calls for cross-sectoral coordination in land use planning, water management, and public health systems.

Addressing implementation challenges, he pointed out the need for greater institutional convergence, including joint risk management frameworks, shared data systems, integrated planning, and early warning mechanisms.

In conclusion, he highlighted that while the cultural and civilizational understanding of environmental interconnectedness is deeply embedded in India, the critical gap lies in operationalizing this knowledge through structured processes, collaboration, and scalable models.

MR. CASPER MAYLAND

Mr. Casper Mayland, underscored the critical interdependence of the water–energy–health–environment nexus, emphasizing that these domains must be addressed in an integrated rather than siloed manner. Drawing attention to India's development landscape, he highlighted that nearly 8–10% of the country's energy consumption is linked to water management, while non-revenue water losses can reach up to 35%. Simultaneously, only about 30% of wastewater is treated, pointing to significant inefficiencies with direct implications for environmental sustainability, public health, and economic losses.

Contrasting this with Denmark's experience, where energy use in water systems is below 2% and water losses are limited to 5–7%, he attributed such efficiency gains to sustained policy interventions, technological optimization, and lifecycle-based infrastructure planning. He emphasized that these disparities should not be seen as gaps but as opportunities for knowledge exchange and collaboration.

Mr. Mayland identified several “low-hanging fruits” for India, particularly in improving energy efficiency in water systems and reducing transmission losses. He cited practical examples of Indo-Danish cooperation, including capacity-building initiatives in Tamil Nadu for energy audits of water utilities, leading to the identification and upgrading of inefficient pumping systems through innovative public-private partnership models. He also highlighted advancements in Denmark where wastewater treatment plants are increasingly becoming energy-positive, generating more energy than they consume.

He concluded by stressing that scalable solutions lie in integrated planning, cross-sectoral collaboration, and adapting global best practices to local contexts. Strengthening international partnerships, he noted, can accelerate the transition toward efficient, resilient, and sustainable water-energy systems, ultimately contributing to improved environmental outcomes and economic efficiency.



MS. ULRIKE KELM



Ms. Ulrike Kelm, emphasized the fundamental interconnectedness of the water–energy–health–environment nexus, illustrating how disruptions in one domain cascade across others. Through the example of a drought-affected city, she demonstrated how water scarcity can simultaneously trigger energy shortages, strain health systems, disrupt agriculture, and degrade ecosystems highlighting that water challenges are inherently systemic rather than sectoral.

Positioning this within the global development framework, she noted that water lies at the core of multiple Sustainable Development Goals, extending beyond SDG 6 (water and sanitation) to directly influence health (SDG 3), energy (SDG 7), climate action (SDG 13), and ecosystems (SDG

15). The nexus approach, she argued, makes visible these interdependencies that communities experience daily. She underscored that effective solutions require breaking disciplinary silos and fostering collaboration among hydrologists, energy planners, public health experts, and environmental scientists. In this context, she highlighted the role of the International Water Resources Association in facilitating global knowledge exchange, multi-stakeholder dialogue, and science-based policymaking over the past five decades.

Ms. Kelm concluded by stressing that resilient societies and sustainable systems can only be achieved through integrated, cross-sectoral approaches, supported by international cooperation and shared learning. With the upcoming global engagements such as the United Nations Water Conference, she called for strengthened collaboration to accelerate progress, reiterating that water is the central thread connecting planetary sustainability, human well-being, and future resilience.



DR. AKASH SRIVASTAVA

Dr. Akash Srivastava, highlighted that the interlinkages between water, energy, health, and environment have long been recognized, but have become significantly more pronounced in the era of climate change. He emphasized that addressing these interconnected challenges requires strong institutional coordination, noting that India has established high-level platforms such as the Prime Minister's Council on Climate Change to facilitate cross-ministerial convergence and policy alignment.

Focusing on the water–health nexus, he underscored that access to safe water remains a critical determinant of public health, particularly in preventing water-borne diseases such as acute diarrheal infections. He highlighted ongoing collaboration between the Ministry of Health and the Ministry of Jal Shakti, including integrated data-sharing systems linking health surveillance platforms with water quality monitoring systems. This convergence is further

strengthened through joint standard operating protocols enabling coordinated action at district and state levels to identify and respond to water-related health risks.

He also emphasized the dual dimensions of water security, quality and quantity particularly in the context of climate variability. Initiatives such as rainwater harvesting in health facilities were cited as practical measures to enhance resilience and sustainability.

On the energy–health interface, Dr. Srivastava stressed the importance of reliable and clean energy for healthcare delivery, especially in remote and underserved regions. He highlighted the integration of solar energy solutions in health infrastructure as both a service enabler and a mitigation strategy, given that the health sector itself contributes to greenhouse gas emissions. Programs promoting clean household energy, such as the transition to cleaner cooking fuels, were noted for their significant public health benefits, particularly for women and children.

Addressing the environment–health dimension, he pointed to the growing burden of air pollution and climate-related health risks, including extreme weather events. He referenced national initiatives such as the National Action Plan on Climate Change and Human Health, along with state-level action plans, which aim to strengthen health system preparedness and resilience.

Dr. Srivastava concluded by emphasizing that while substantial progress has been made through government-led initiatives, achieving meaningful outcomes in the water–energy–health–environment nexus requires broader multi-sectoral collaboration, including active engagement from non-governmental stakeholders, to ensure comprehensive and sustainable public health protection.

DR. PARAS PUJARI

Dr. Paras Pujari emphasized the importance of adopting a basin- or watershed-level approach to addressing the water–energy–food nexus, arguing that resource management must transcend administrative boundaries to reflect natural hydrological systems. He highlighted that sustainable solutions require a systems-based framework integrating provisioning, regulating, and supporting ecosystem services, as conceptualized through the “critical zone” approach spanning from vegetation canopy to groundwater systems

Drawing on empirical research from central India, particularly in the Nagpur orange-growing region, he presented evidence of significant inefficiencies in groundwater and energy use. His study revealed that farmers extract approximately 67,000 litres of groundwater per tree annually using electric pumps, whereas actual plant water uptake is only about 1,000–1,500 litres. Water balance assessments further showed that nearly 47% of extracted water is lost as deep percolation, representing not only water wastage but also substantial energy inefficiency.

Through optimized irrigation scheduling and scientific interventions, the required water use could be reduced to approximately 3,000 litres per tree, resulting in savings of over 60,000 litres per tree without compromising yield or quality. The adoption of drip irrigation by participating farmers demonstrated the practical viability of these findings, though scaling remains constrained by limited stakeholder integration and last-mile dissemination challenges.

Dr. Pujari underscored that addressing such inefficiencies requires interdisciplinary collaboration involving hydrologists, soil scientists, ecologists, social scientists, and policymakers. He stressed the need for long-term environmental monitoring and sustained research funding, particularly in the context of climate change, to generate robust, evidence-based solutions. Concluding, he called for stronger institutional convergence and investment frameworks to translate scientific insights into scalable, field-level interventions for sustainable resource management.



KEY TAKEAWAYS

- The central challenge for the nexus has shifted from conceptual clarity to execution, placing the onus on institutional convergence and integrated implementation models.
- Basin and landscape scales are identified as appropriate governance units, aligning resource management with ecological systems rather than administrative borders to improve efficiency and resilience.
- Significant efficiency gains remain untapped in water and energy cycles, which can be realized through data-driven optimization, technological upgrades, and lifecycle-based infrastructure planning.
- Nature-based solutions are reframed as core resilience infrastructure, simultaneously supporting flood regulation, groundwater recharge, ecosystem restoration, and climate adaptation.
- Integrating the One Health framework explicitly couples environmental degradation, water systems, and public health risks, requiring coordinated risk management across sectors.
- Interoperable data systems and integrated monitoring are becoming foundational for nexus governance, enabling early warning, risk assessment, and synchronized policy response.
- Turning scientific insight into large-scale impact demands sustained investment in interdisciplinary research, long-term monitoring, and effective last-mile communication to practitioners and communities.

THEMATIC PANEL DISCUSSION 2: NAVIGATING INTERDEPENDENCIES OF WATER-ENERGY-HEALTH AND ENVIRONMENT NEXUS

PANELLISTS:

Dr. Ritesh Kumar,
Director, Wetlands
International–South Asia

Dr. Alok K. Sikka, Emeritus
Scientist, International Water
Management Institute

Dr. Sutirtha Sahariah,
Senior Vice President & Head of
Communications, Sulabh
International

Moderator:

Dr. Hitesh Vaidya,
Chief Technical Advisor,
India Water Foundation



*(L-R): Dr. Ritesh Kumar, Dr. Alok K. Sikka,
Dr. Hitesh Vaidya, Dr. Arvind Kumar,
Dr. Sutirtha Sahariah.*



DR. RITESH KUMAR

Dr. Ritesh Kumar, underscored the fundamental role of water as the central connective element across biodiversity, health, climate, and development systems, emphasizing that sustainable futures cannot be conceptualized without placing water at the core. Drawing on the Nexus Assessment, he highlighted a critical oversight in current planning paradigms the failure to recognize ecosystems, particularly wetlands, as functional infrastructure. He argued that wetlands should not be treated merely as geographic entities but as vital ecological assets that underpin urban water security and resilience.

Using the example of the Yamuna flood plains, he illustrated that once their hydrological and ecological functions are acknowledged, they emerge as indispensable infrastructure for cities like Delhi rather than expendable land parcels. Dr. Kumar stressed that prevailing urban water strategies, which prioritize distant resource extraction, often neglect these natural systems that historically

sustained urban settlements. He called for a decisive shift toward systems-based planning that fully integrates ecosystem interdependencies into policy and decision-making frameworks, asserting that without such reframing, proactive and sustainable water governance remains unattainable.

DR. ALOK K. SIKKA

Dr. Alok K. Sikka, emphasized the foundational role of the water–energy–food nexus as the core driver of sustainability challenges, noting that agriculture lies at the center of this interdependence, particularly in India where a significant proportion of irrigation is groundwater-dependent and energy-intensive. He highlighted that nearly one-fifth of national energy consumption is linked to agriculture, largely for groundwater extraction, thereby reinforcing the deep interconnections between water use, energy demand, and food production. He further stressed that climate change is intensifying these linkages, exacerbating groundwater depletion, water quality issues, and associated health risks, including emerging concerns such as antimicrobial resistance and arsenic contamination.

Addressing systemic challenges, Dr. Sikka identified persistent sectoral silos as a major barrier to effective nexus implementation, despite gradual institutional progress. He argued that fragmented policy frameworks often characterized by conflicting incentives such as energy subsidies and water conservation goals undermine sustainable resource management. To address this, he called for stronger inter-ministerial coordination mechanisms and the embedding of nexus thinking into infrastructure planning, particularly through nature-based solutions and integrated approaches at landscape, watershed, and basin scales.

He underscored the need to transition from conceptual discussions of the nexus to actionable, evidence-based tools, advocating for the development of integrated modelling frameworks, decision-support systems, and innovative instruments such as composite nexus indices to assess system performance. He also highlighted the potential of advanced approaches like digital twins and data-driven analytics to enhance real-time understanding and policy responsiveness. Concluding, Dr. Sikka stressed the importance of shifting from reactive to proactive, systems-oriented planning, supported by convergence across sectors and the operationalization of nexus principles into scalable, field-level interventions.



DR. SUTIRTHA SAHARIAH

Dr. Sutirtha Sahariah, highlighted the deeply interlinked nature of water, sanitation, health, and social outcomes, drawing on decades of grassroots experience of Sulabh International in addressing sanitation challenges across India. He emphasized that interventions in sanitation cannot be viewed in isolation, as they are intrinsically connected to issues of poverty, public health, gender equity, and education particularly noting how lack of access to clean water and sanitation disproportionately affects women and leads to outcomes such as school dropouts among girls.

He pointed out that while large-scale infrastructure initiatives have expanded access, critical gaps persist due to the absence of integrated nexus thinking. Citing field insights from Bihar, he illustrated how water supply systems often fail in practice due to unreliable energy access, leading to seasonal scarcity despite infrastructure availability. He also highlighted serious concerns such as arsenic

contamination in “improved” water sources, underscoring deficiencies in water quality monitoring and planning.

Addressing these challenges, Dr. Sahariah emphasized the need to move beyond siloed approaches toward integrated, data-driven frameworks. He outlined Sulabh's efforts to leverage artificial intelligence and ontology-based systems to map interlinkages across Sustainable Development Goals, enabling more holistic planning and targeted interventions. By integrating community-level data with national and global datasets,

such approaches aim to improve decision-making, identify research gaps, and enhance the efficiency of investments ensuring that single interventions generate multi-sectoral outcomes.

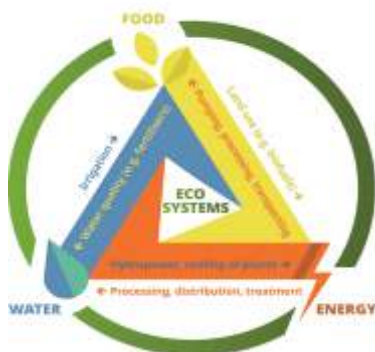
DR. HITESH VAIDYA

Dr. Hitesh Vaidya, underscored that the water–energy–food nexus is not an abstract construct but a lived reality manifest across ecosystems, agriculture, and communities, with the central challenge lying in translating this understanding into grounded action. He emphasized that the current development discourse must move beyond excessive frameworks, platforms, and conceptual language toward tangible, on-ground execution. Highlighting the transition from an “era of frameworks” to an “era of implementation,” he called for practical, results-oriented approaches anchored in synergistic and adaptive planning across sectors. Drawing from governance experience, he stressed the importance of integrated decision-making through joint planning, data convergence, and interdepartmental coordination to avoid fragmented outcomes. He further highlighted the critical role of community engagement, noting that sustainable solutions must be co-created with citizens particularly youth by communicating in relatable terms that foster ownership and participation. Concluding, he emphasized that effective nexus governance requires not only technical integration but also social alignment, ensuring that policies translate into visible, meaningful impact at the ground level.



KEY TAKEAWAYS

- Treating ecosystems as functional infrastructure reframes wetlands, floodplains, and other natural systems as indispensable for urban water security, climate resilience, and ecological stability.
- Agriculture remains the primary pressure point in the nexus, where groundwater-dependent, energy-intensive practices create reinforcing cycles of depletion and stress.
- Policy incoherence especially misaligned incentives between water conservation and energy subsidies undermines sustainable outcomes and must be addressed through aligned incentive structures and coordinated planning.
- Gaps between infrastructure creation and service delivery highlight the importance of reliability, quality, and last-mile integration in water and sanitation systems, including energy access and contamination control.
- Analytical and decision-support tools such as integrated models, composite indices, and digital twins are essential for real-time, evidence-based policymaking across the nexus.
- Emerging technologies like artificial intelligence and semantic data systems can map complex interlinkages and improve targeting, efficiency, and impact of multi-sectoral interventions.
- Effective nexus governance ultimately depends on co-creation with communities, especially youth, ensuring that context-specific sustainability solutions are socially anchored and locally owned.



GLOBAL LEADERS DIALOGUE

PANELLISTS:

Shri Anil Gupta, General Secretary, Rashtriya Swayamsewak Sangh (RSS) Delhi

Dr. Éric Tardieu, Director General of International Office of Water, Secretary General- International Network of Basin Organizations, and Vice President- World Water Council

Mr. Alex Simalabwi, Executive Secretary and CEO, Global Water Partnership

Ms. Ulrike Kelm, Deputy Executive Director, International Water Resources Association

Mr. Sunny Pandya, Chief Advisor – National Strategy & State Leadership, India Water Foundation and Managing Director, Dian Group of Companies

Dr. Ash Pachauri, Co-founder and Director of the POP Movement

Moderator:

Dr. Satya Tripathi, Secretary General, Global Alliance for Sustainable Planet



(L-R): Mr. Sunny Pandya, Shri Anil Gupta, Dr. Satya Tripathi, Dr. Arvind Kumar, Mr. Anupam Ghosh, Mr. Vinod Mishra



SHRI ANIL GUPTA

Shri Anil Gupta provided a unique perspective on Environmental, Social, and Governance (ESG) issues, framing sustainability as a principle deeply embedded in India's civilizational ethos rather than merely a corporate compliance requirement. He highlighted that, traditionally, nature, water, and air are regarded as sacred “Mother” and “God” respectively and that such reverence for the environment has historically guided societal conduct and governance. He stressed that modern ESG discussions often overlook this foundational perspective, which naturally integrates environmental protection, social equity, and governance ethics.

To illustrate governance principles rooted in India's heritage, Shri Gupta cited the Ramayana, particularly the chapter Aayodhya Kaand, where 74 questions posed by Bhagwan Ram covering governance, defense, environmental policy, education, and women's

protection, demonstrating that comprehensive governance frameworks existed in traditional texts. He further drew examples from Chhatrapati Shivaji's administration, highlighting his forward-thinking policies in defense, trade, shipbuilding, industrial development, and currency management. Shri Gupta emphasized that these examples reflect the integration of environmental stewardship, societal welfare, and structured governance long before the modern ESG framework.

Focusing on practical action, he detailed initiatives undertaken by RSS over the past five to seven years to translate these values into measurable impact. These include:

- **Greening barren lands** – Transforming degraded plots in Delhi, such as in Rohini Sector 24, into flourishing green spaces.
- **Dense forests in urban areas** – Establishing dense forest patches in colleges, which enhance oxygen flow and biodiversity, while promoting sustainable urban ecosystems.
- **Revival of traditional water bodies (Pawns)** – Restoring neglected water structures to support local water security and ecological balance.
- **Zero-waste colonies** – Developing Standard Operating Procedures for households, colleges, markets, temples, and residential societies to implement sustainable waste management practices. Two colonies in Delhi, Manopur Flats and Kashap Apartments, have successfully achieved zero-waste status.

Shri Gupta stressed that these community-led and culturally grounded interventions demonstrate the potential of grassroots participation in achieving ESG objectives. He noted that while ESG is often treated as a technical and corporate concept, its successful application requires embedding sustainability in daily life, leveraging community action, and aligning modern policies with traditional wisdom. He concluded by asserting that integrating these approaches provides a pathway for ESG to become more accessible, actionable, and transformative, ultimately bridging the gap between compliance frameworks and real-world sustainable development.

DR. ÉRIC TARDIEU

Dr. Éric Tardieu, emphasized the critical importance of integrated water resources management (IWRM) at the basin level as a foundation for water security, resilience, and sustainable economic growth. Highlighting that water management often remains fragmented between agriculture, industry, upstream and downstream users, and humans versus nature, he stressed that businesses and governments frequently underestimate water's central role in commerce and human well-being.

Drawing on over 30 years of experience with basin organizations, he outlined four core principles for effective basin-level integration: conjunctive management to ensure stable water supplies; long-term planning and inclusion of water risks in ESG frameworks; active stakeholder and private sector participation in basin governance; and shared monitoring and water information systems, including corporate data, to improve transparency and decision-making. Dr. Tardieu underscored that private sector involvement can catalyze action, provide funding, foster innovation through circular water systems, and advocate for stronger policies, aligning business interests with ecological sustainability. He also highlighted the potential of emerging technologies satellite monitoring and AI-driven systems to reduce costs, prevent conflicts, and optimize water management. Concluding, he emphasized the need for collaborative basin governance, climate adaptation, circular economy solutions, and active engagement of Indian companies in global water dialogues, reinforcing that integrated, cooperative approaches are essential to address shared water risks and achieve sustainable water security worldwide.



MR. ALEX SIMALABWI

Mr. Alex Simalabwi, emphasized the critical importance of integrated, multi-sectoral approaches to address the water-energy-food-environment nexus. He highlighted that water is not only essential for life but also underpins development, stability, and international cooperation. Despite its central role, water remains significantly underinvested, with more than two billion people lacking access to safe water and global demand projected to rise by 30% by 2050. Mr. Simalabwi stressed that the global water challenge cannot be solved through isolated sectoral planning; solutions must be coordinated across water, energy, agriculture, ecosystems, and public health. The Global Water Partnership has promoted integrated water resources management (IWRM) for nearly three decades, supporting governments in over 180 countries to align policies, infrastructure planning, and investment strategies with sustainable water use and climate resilience.



He provided concrete examples of the GWP's work in South Asia, Latin America, and Southern Africa, demonstrating the effectiveness of integrated approaches. In South Asia, governments in India, Nepal, and Bangladesh have strengthened climate-resilient water management through programs like the Integrated Drought Management Program, aligning hydropower development, irrigation expansion, and watershed protection. In Peru's Chira Pura Basin and Brazil, GWP facilitated coordination between water authorities, energy planners, and agricultural stakeholders, improving ecosystem protection and hydropower efficiency while benefiting local communities. In Southern Africa, the GWP-EU Water-Energy-Food Nexus Project engaged 14 countries to develop a regional nexus screening tool, enabling policymakers to identify integrated investment opportunities in multi-purpose water storage, irrigation, hydropower, renewable energy, and ecosystem restoration. These initiatives culminated in the adoption of the SADC Regional Water-Energy-Food Nexus Governance Framework, endorsed at the ministerial level, illustrating that moving beyond fragmented planning yields economically efficient, environmentally sustainable, and socially inclusive outcomes.

Mr. Simalabwi also noted a significant shift in global water leadership toward the Global South. He highlighted the relocation of the GWP global headquarters from Sweden to Africa, marking the world's first Global South-anchored intergovernmental organization focused on water cooperation and investment. This shift underscores that solutions to water challenges increasingly originate from the Global South, with India demonstrating leadership through large-scale water and sanitation programs and South-South cooperation initiatives. He concluded with a call to action, stressing that water cooperation and investment must be inclusive, and that the 21st century should be defined not by competition for natural resources but by strategic investments and cooperation to secure sustainable water systems globally.



MS. ULRIKE KELM

Ms. Ulrike Kelm, highlighted the critical challenge of greenwashing in the sustainability and water management sectors during her address. Speaking remotely, she emphasized that as environmental and climate governance initiatives expand, the risk of misleading claims by companies, institutions, and even governments also increases. She stressed that effective regulation is essential to safeguard credibility and ensure real environmental impact. Clear definitions of terms such as sustainable water management, climate-resilient infrastructure, and nature-based solutions are vital to remove ambiguity. She further underscored the importance of requiring evidence and

independent verification, advocating that organizations substantiate their claims with reliable data and third-

party assessment to build trust among communities, regulators, and investors.

Ms. Kelm also highlighted the need for enforcement mechanisms, arguing that rules without consequences are insufficient, and that incentives can motivate genuine engagement in sustainability practices. Transparency through standardized reporting is another key element, enabling stakeholders to differentiate genuine progress from marketing narratives. Finally, she stressed empowering stakeholders through guidance, labelling systems, and accessible community information to make environmental claims understandable and credible. In water management, these measures are crucial because infrastructure projects and nature-based solutions are often presented as sustainable, yet without clear standards and accountability, such claims can be superficial. She concluded that combating greenwashing does not restrict ambition but ensures that sustainability efforts are credible, tangible, and recognized, thereby promoting real environmental and societal performance in the water sector.

MR. SUNNY PANDYA

Mr. Sunny Pandya, highlighted India's practical advancements in water sustainability and technology-driven resource management. He underscored that India is actively implementing integrated solutions that combine water, energy, and technology to optimize efficiency and sustainability. One key example he shared was the Bangalore Water Supply and Sewerage Board project, which achieved annual savings of ₹40 crore through energy-efficient operations and proper system integration. He detailed how poorly designed pump sets led to excessive energy use and water wastage, and how technology interventions corrected operational inefficiencies to optimize thermodynamics, water flow, and energy consumption.

Mr. Pandya also described innovative projects in Gujarat, where 56 Nagar Palikas integrated preventive maintenance into centralized sewage networks using advanced machinery. Traditional cleaning involved multiple vehicles and freshwater use, often discharging into rivers or STPs. Through a newly implemented integrated system combining suction, jetting, and water reuse, each machine now saves 2–2.45 crore litres of water annually. Beyond water infrastructure, he noted India's progress in ethanol production, exceeding national targets with 1,500–1,600 crore litres yearly, demonstrating successful adoption of technology and global best practices. Mr. Pandya emphasized that sustainability is built on these practical, incremental innovations small changes in logistics, operations, and water handling yield massive reductions in energy consumption and emissions. He concluded by connecting these efforts to India's cultural reverence for water, affirming that these technological and operational strategies not only enhance efficiency but also honour the societal and environmental values embedded in Indian heritage.



DR. ASH PACHAURI



Dr. Ash Pachauri, underscored the urgency of adopting integrated and participatory approaches to address the interconnected challenges of climate change, ESG, and sustainable development. Drawing on the legacy of Dr. R. K. Pachauri and the work of the Intergovernmental Panel on Climate Change, he emphasized that the global response must move beyond top-down frameworks to mobilize the world's 1.8 billion youth through knowledge-driven, community-led action. He stressed that sustainability is most effective when solutions are locally identified and implemented, ensuring long-term ownership and resilience. Highlighting the concept of “transversality,” he argued that climate change is not experienced in isolation but manifests through water scarcity, food

insecurity, loss of livelihoods, and health crises, particularly among vulnerable and marginalized communities.

Dr. Pachauri further drew attention to the human dimension of climate impacts, noting that by 2050, up to 1.2 billion people could be displaced due to climate-related stresses such as droughts, floods, and resource conflicts. He emphasized that these crises disproportionately affect women and marginalized populations, exacerbating inequalities and increasing risks of conflict and migration. He also linked climate change to emerging health challenges, including zoonotic diseases resulting from ecological disruption. Framing the issue through the principle of “Vasudhaiva Kutumbakam” (the world as one family), he called for inclusive, equity-driven approaches that integrate health, environment, finance, and social dimensions. Concluding with a strong call to action, he urged collective, cross-sectoral, and intergenerational collaboration bringing together communities, businesses, and institutions to act within the rapidly narrowing window of opportunity and drive meaningful, scalable solutions for protecting the planet.

DR. SATYA TRIPATHI

Dr. Satya Tripathi synthesized the day's deliberations by emphasizing that water lies at the core of economic, environmental, and governance challenges, yet current systems suffer from significant inefficiencies, inequities, and misaligned incentives. Highlighting gaps in urban water management, he noted that nearly half of treated water is lost due to leakages, poor metering, and inefficient supply systems, underscoring the urgent need for demand-responsive infrastructure and rational pricing mechanisms. He stressed that solutions must move beyond problem diagnosis toward scalable, financially viable models, citing the example of large-scale natural farming initiatives in Andhra Pradesh as a transformative approach that integrates policy support, fiscal incentives, and international financing to achieve both environmental sustainability and economic returns. He further underscored the critical role of innovative financing mechanisms, particularly carbon markets and blended finance, in enabling low-cost, high-impact interventions such as bio-digesters that simultaneously reduce emissions, generate clean energy, and enhance rural livelihoods. Emphasizing global partnerships, concessional finance, and outcome-based investment models, he called for leveraging carbon economies and decentralized technologies to drive climate-positive transitions at scale. Concluding, he highlighted the transformative potential of empowering grassroots communities with accessible technologies and financial incentives, positioning them as central agents in advancing sustainable development and accelerating India's transition toward a climate-resilient, inclusive economy.



KEY TAKEAWAYS

- Embedding sustainability in civilizational values and cultural ethics can deepen ESG adoption by grounding environmental stewardship and social responsibility in lived societal practice.
- Basin-level governance models demonstrate that shared resource stewardship across institutions, businesses, and communities can enhance equity, conflict mitigation, and long-term water security.
- The global water agenda is increasingly shaped by the Global South, as emerging economies drive investments, innovations, and cooperation frameworks for sustainable resource management.
- Addressing chronic underinvestment in water requires reframing water as a strategic economic asset and designing integrated investments across energy, agriculture, and infrastructure portfolios.
- Sustainability integrity depends on clear, enforceable definitional standards and accessible verification mechanisms so that environmental claims are transparent and comparable for all stakeholders.
- Micro-level operational improvements in water and energy efficiency can cumulatively generate substantial economic and environmental benefits when replicated at scale.

FIRESIDE CHAT

GUEST:

Mr. Sampath Kumar, CEO,
Meghalaya Basin Development
Authority, Government of
Meghalaya

Shri Amit Kumar Ghosh,
Additional Chief Secretary,
Department of Medical, Health,
Family Welfare, and Medical
Education, Government of Uttar
Pradesh

Dr. Satya Tripathi, Secretary
General, Global Alliance for
Sustainable Planet

Moderator:

Mr. Ronak Patel, Journalist and
Editor, Asmita Tv, ABP Network



(L-R): Dr. Satya Tripathi, Shri Amit Kumar Ghosh,
Mr. Sampath Kumar, Mr. Ronak Patel

A High-Level Fireside Chat was convened featuring distinguished speakers focussing on environmental sustainability, public health systems, and the role of youth in driving transformative change.



MR. SAMPATH KUMAR

Mr. Sampath Kumar underscored the importance of institutional innovation in addressing ecological fragility while ensuring livelihood security. With nearly 75% forest cover and a predominantly indigenous population, the state has adopted a holistic approach integrating biodiversity conservation with socio-economic development.

A key institutional mechanism, the Meghalaya Basin Development Authority, has been instrumental in building state capacity by fostering convergence across water resource management, environmental protection, and livelihood generation. The Authority has enabled the mobilization of technical expertise and external financing, while also promoting decentralized knowledge systems.

Innovative mechanisms such as Payment for Ecosystem Services (PES) have been operationalized, providing financial incentives to

communities for forest conservation. Under this model, approximately ₹15,000 per hectare is allocated annually to discourage unsustainable practices such as shifting cultivation and to promote ecological stewardship.

The state has further invested in human capital development, training approximately 14,000 community professionals to manage spring-shed restoration and water security interventions. These efforts are supported by progressive policy frameworks, including a dedicated water policy and a climate emergency policy, positioning Meghalaya as a model for integrated and community-driven environmental governance.



SHRI AMIT KUMAR GHOSH

Shri Amit Kumar Ghosh, addressing the challenges of delivering healthcare in a high-population context, Shri Amit Ghosh outlined the transformative initiatives underway in Uttar Pradesh. With a population representing nearly one-sixth of India's total, the state has prioritized expansion of tertiary healthcare infrastructure and medical education.

Significant progress has been made in establishing medical colleges across districts, with only a few remaining underserved areas targeted for coverage through public-private partnership (PPP) models. The state has also expanded postgraduate and undergraduate medical education capacity, reversing historical outmigration of students seeking medical training.

Efforts are underway to further strengthen emergency and trauma care systems, including plans to double capacity in critical care services. In parallel, a strong emphasis is being placed on preventive

healthcare through early education interventions.

Collaborative initiatives between the health and education departments have introduced health awareness modules into school curricula, complemented by large-scale campaigns. A notable initiative includes the rollout of the Human Papillomavirus (HPV) vaccination programme targeting girls aged 9–14, aimed at long-term prevention of cervical cancer. Digital platforms, including dedicated social media channels, are also being leveraged to enhance youth engagement and health literacy.

DR. SATYA TRIPATHI

Dr. Satya Tripathi emphasized the pivotal role of youth as catalysts for sustainability transitions, noting that younger generations are increasingly driving accountability and environmental consciousness. He highlighted the need for intergenerational responsibility, framing sustainability as an ethical imperative.

Drawing on the example of Andhra Pradesh, he illustrated the transformative potential of large-scale community mobilization. Through the convergence of political leadership and grassroots institutions, the state has implemented one of the world's largest natural farming initiatives, transitioning approximately 1.8 million farmers primarily women to sustainable agricultural practices.

This initiative builds upon decades of social capital formation through self-help groups, resulting in improved agricultural outcomes, including increased yields and enhanced farmer incomes. The model demonstrates the viability of low-emission and climate-resilient agricultural systems, while also contributing to broader development objectives.



Dr. Tripathi further highlighted the emerging significance of carbon markets as a strategic opportunity for India, referencing global mechanisms such as the European Union Emissions Trading System. He emphasized that India's comparable emissions profile presents an opportunity to leverage market-based instruments for climate action and economic growth.

Commending Meghalaya's PES initiative, he noted its comparatively high valuation of ecosystem services, positioning it as a global best practice. He called for scaling such models through knowledge sharing and international collaboration.

KEY TAKEAWAYS

The discussion underscored several critical priorities:

- The importance of institutional innovation and decentralized governance in achieving sustainable environmental outcomes.
- The need for integrated approaches linking environment, livelihoods, and community participation.
- The expansion of equitable and resilient healthcare systems, complemented by preventive and educational interventions.
- The central role of youth and grassroots movements in advancing sustainability transitions.
- The potential of market-based mechanisms, including carbon markets, to catalyse climate action at scale.



THEMATIC PLENARY 3: CROSS SECTORAL WATER TRANSVERSALITY FOR ACCELERATING NET ZERO

SPEAKERS:

Mr. Abhishek Gupta, Head- International Appliances, Rooftop Solar & PE & A, Energy Efficiency Services Limited

Dr. Nidhi Pundhir, Vice President – Global CSR; Director, HCL Foundation

Dr. Debajit Palit, Head- Centre for Climate Change & Energy Transition- Chintan Research Foundation

Chair:

Mr. Pradeep S. Mehta, Secretary General, CUTS International



(L-R): Mr. Pankaj Sharma, Mr. Pradeep S. Mehta, Mr. Abhishek Gupta, Dr. Arvind Kumar, Dr. Debajit Palit, Dr. Nidhi Pundhir, Mr. M.P. Singh, Mr. Sunny Pandya



MR. ABHISHEK GUPTA

Mr. Abhishek Gupta, emphasized a strong implementation-driven approach, underscoring that large-scale, on-ground execution is central to achieving measurable sustainability outcomes. Drawing on the success of the UJALA programme, which deployed over 380 million LED bulbs across India, he highlighted how demand aggregation and market creation can transform entire sectors positioning India as both a leading producer and consumer of energy-efficient technologies. Extending this model, he pointed to the rapid scale-up of rooftop solar under the PM Surya Ghar initiative, with over two million installations already achieved, while stressing the need for innovative business models and state-level integration to accelerate adoption further

He further illustrated how integrated energy and water efficiency interventions are being operationalized, particularly through investment-grade energy audits in MSMEs that not only improve

efficiency but also attract ESCO-based private investments. The introduction of smart meters at scale now reaching tens of millions of installations was cited as a transformative reform, improving utility performance and even enabling financially stressed discoms to achieve profitability. Similarly, large-scale deployment of LED street lighting under ESCO models demonstrated how upfront investments can be sustainably recovered through efficiency gains. In the mobility sector, EESL's role in catalyzing India's electric vehicle ecosystem through early demand creation, public procurement, and charging infrastructure deployment was highlighted as a critical market enabler.

Concluding, Mr. Gupta stressed that the real challenge lies not in technology availability but in effective deployment, stakeholder alignment, and scalable financing mechanisms. He advocated for a holistic view of

energy efficiency integrating electricity, water, and emerging demands such as EV charging and data centers while emphasizing that multiple technological pathways, including EVs, ethanol, hydrogen, and other alternative fuels, must be pursued competitively to achieve broader decarbonization and sustainability objectives.



DR. NIDHI PUNDHIR

Dr. Nidhi Pundhir, emphasized a structured, data-driven, and community-centric approach to water conservation within the corporate social responsibility (CSR) framework, highlighting water as a “common” resource that necessitates collective stewardship. She underscored that effective CSR interventions must be grounded in scientific planning, measurability, and accountability, ensuring that outcomes are clearly demonstrable through baseline assessments and “before-and-after” impact evaluation. Drawing from HCL Foundation's experience, she highlighted the critical importance of mapping water assets particularly common water bodies which historically remained undocumented or misclassified. Through technology-enabled mapping exercises, significant gaps between recorded and actual water structures were identified, enabling authorities to reclaim and protect thousands of such assets from land-use change.

She further elaborated on the concept of “rejuvenation” (Jeevanodhar), focusing on restoring traditional water systems such as ponds, tanks, baolis, and interconnected watershed structures across diverse geographies including Uttar Pradesh, Tamil Nadu, and Karnataka. This systematic approach, combined with community engagement and institutional convergence, has resulted in the conservation of over 107 billion litres of water, positioning the organization as significantly water positive. Dr. Pundhir stressed that such outcomes are achievable only through well-defined frameworks that integrate technology, local knowledge, and long-term planning within CSR mandates.

A key pillar of her intervention was the governance architecture required for managing commons. She advocated for “people-first public-private partnerships” (PPP+P), where government, corporates, and communities collaboratively design and implement interventions, ensuring ownership and sustainability. She emphasized that community participation is indispensable not only for maintenance but also for fostering behavioural change and awareness, particularly among younger generations who may lack historical knowledge of local water systems.

Concluding, she highlighted the strong alignment between water conservation, ESG principles, and economic value creation, noting that investments in water commons directly contribute to local economies, resilience, and sustainability. She positioned HCL Foundation's work as a replicable model that combines scalability, transparency, and measurable impact, demonstrating how CSR can effectively complement broader ESG objectives while addressing critical environmental and societal challenges.

DR. DEBAJIT PALIT

Dr. Debajit Palit, emphasized the intrinsic and often underappreciated interdependence between water and energy systems, underscoring that neither sector can be sustainably managed in isolation. Drawing from nearly three decades of experience in the energy domain, he highlighted that water is indispensable across the entire energy value chain from extraction and processing to power generation while energy, in turn, is critical for water extraction, treatment, and distribution. This interlinkage becomes particularly significant in the Indian context, where water stress is intensifying. With only about 4% of global water resources supporting nearly 18% of the world's population, and per capita water availability projected



to decline further, India faces a structurally precarious water future exacerbated by climate variability, erratic rainfall patterns, and increasing demand.

Dr. Palit stressed that climate change is compounding this crisis by disrupting traditional water management systems, making storage and predictability increasingly difficult. In this context, he positioned India's decarbonization pathway notably its renewable energy expansion targets and net-zero commitments as a strategic opportunity to reduce water stress. The transition from water-intensive thermal power generation to less water-dependent renewable sources such as solar and wind offers significant co-benefits. Technological advancements, including robotic and dry cleaning of solar panels, further reduce water consumption, illustrating how innovation can align climate and water objectives. He also pointed to emerging industry practices, such as “water-positive” approaches in large renewable energy projects, where water replenishment exceeds consumption, thereby contributing to local water security.

Importantly, Dr. Palit brought attention to integrated policy design through the example of the Jyotigram Scheme in Gujarat, which demonstrated how synchronizing water and energy interventions can yield systemic gains. By combining feeder separation in electricity distribution with large-scale development of surface water infrastructure like check dams, the initiative reduced groundwater over-extraction, lowered agricultural energy demand, and improved the financial health of distribution companies. This case exemplifies how nexus-based planning can deliver economic, environmental, and governance benefits simultaneously.

In conclusion, he underscored two critical imperatives for advancing water-energy sustainability. First, the need to systematically replicate successful, context-sensitive models across regions, rather than treating them as isolated successes. Second, and more crucially, the necessity of addressing governance deficits particularly inefficiencies, leakages, and institutional weaknesses that undermine the impact of investments in water and energy systems. Without strengthening governance frameworks and ensuring accountability, even well-designed nexus interventions risk underperformance. His intervention ultimately reinforced that achieving sustainable resource management in India requires not only technological and policy innovation but also robust institutional integrity and cross-sectoral coordination.



MR. PRADEEPS. MEHTA

Mr. Pradeep S. Mehta, underscored a critical gap that often characterizes global sustainability discourse, disconnect between dialogue and on-ground action. While acknowledging the conceptual clarity and importance of the water–energy–health–environment nexus, he emphasized that such frameworks must move beyond conference discussions and translate into tangible, localized interventions. In his view, the real challenge lies not in understanding the interconnectedness of these sectors, but in operationalizing this understanding through sustained, practical efforts that deliver measurable impact.

Drawing from the extensive grassroots engagement of CUTS International, Mr. Mehta highlighted that meaningful change often emerges from small, decentralized actions rather than large, abstract commitments. He stressed that seemingly modest interventions such as rooftop rainwater harvesting, community-driven sanitation initiatives under Swachh Bharat Mission, waste segregation, and recycling systems can collectively generate significant environmental and social outcomes. These efforts, particularly when driven by community participation and volunteerism, demonstrate that local ownership is indispensable for long-term sustainability.

Importantly, Mr. Mehta positioned this dual approach combining policy advocacy at international platforms with hands-on implementation at the community level as essential for bridging the gap between theory and practice. He argued that organizations must maintain “feet on the ground” even while engaging in global policy dialogues, ensuring that insights from local realities inform higher-level decision-making.

In conclusion, his intervention reinforced that the success of integrated nexus approaches depends fundamentally on action-oriented frameworks, community engagement, and the recognition that incremental, localized efforts are vital building blocks for achieving broader sustainability goals.

KEY TAKEAWAYS

- Market-shaping instruments, including demand aggregation and strategic public procurement, are becoming powerful drivers of large-scale sustainability transitions and technology uptake.
- Transversality's effectiveness hinges on integrating resource efficiency across interconnected demand systems such as mobility, industry, and digital infrastructure rather than optimizing sectors in isolation.
- Corporate water stewardship grounded in scientific baselining, asset mapping, and impact metrics can transform fragmented conservation efforts into strategic, outcome-driven resource management models.
- Managing water as a shared commons requires hybrid governance that blends public policy, private investment, and community ownership to ensure sustainability and accountability.
- De-carbonization pathways can generate direct co-benefits for water security by shifting toward less water-intensive energy systems and resource-efficient technologies.
- Replication of successful nexus interventions is constrained by institutional fragmentation and governance inefficiencies, highlighting the need for adaptive policy frameworks and stronger implementation capacity.
- Bridging the gap between strategic discourse and tangible outcomes depends on localized, incremental action models where community-driven initiatives cumulatively deliver systemic transformation.



THEMATIC PANEL DISCUSSION 3: CROSS SECTORAL WATER TRANSVERSALITY FOR ACCELERATING NET ZERO

PANELLISTS:

Mr. M P Singh, Chief Advisor – India Water Foundation; Former Chief of Development Operations, JICA, India

Ms. Neha Gupta, Founder, IFBEC

Prof. Kshemendra K. Upadhyay, Professor and Chairperson, Centre for Sustainability & CSR, BIMTECH

Prof Medha Bisht, Associate Professor, South Asian University

Moderator:

Mr. Pradeep S. Mehta, Secretary General, CUTS International



(L-R): Mr. Pradeep S. Mehta, Prof. Medha Bisht, Dr. Arvind Kumar, Ms Neha Gupta, Mr. M.P. Singh, Prof. Kshemendra K. Upadhyay

MR. M. P. SINGH

Mr. M. P. Singh, presented a deeply experience-driven perspective on development practice, emphasizing that the success of water, environment, and infrastructure initiatives hinges fundamentally on discipline in project design, governance structures, and long-term sustainability planning. Drawing from nearly three decades of engagement with Japanese development systems, he underscored a critical contrast: while projects in India are often rushed at the preparation stage, leading to delays and inefficiencies during execution, Japanese models invest substantial time often years in meticulous project preparation, ensuring that implementation is both timely and efficient. This preparatory phase, he stressed, must comprehensively integrate technical design, environmental impact assessment, regulatory clearances, and the adoption of appropriate technologies.

A central pillar of his intervention was the concept of “zero waste” development an approach that cuts across water, energy, and industrial systems where resource efficiency and environmental safeguards are embedded from the outset. He argued that sustainability must not be treated as a post-project consideration but as a core design principle, ensuring that infrastructure systems remain environmentally benign and operationally viable over their lifecycle. In this regard, he highlighted the importance of structured post-implementation monitoring, citing the practice in externally assisted projects of conducting evaluations even years after completion, thereby reinforcing accountability and long-term performance.



Mr. Singh also stressed the importance of decentralized and mission-oriented decision-making. He argued that efficient execution requires empowered institutions capable of taking timely decisions aligned with a clear developmental objective. However, he pointed out that governance deficits particularly the weak involvement of local bodies continue to undermine project outcomes in India. Using examples such as the Ganga and Yamuna action plans, he noted that insufficient ownership by urban local bodies and over-reliance on centralized funding often result in poor operation and maintenance. To address this, he advocated for structured financing mechanisms such as hybrid annuity models, which link payments to long-term performance and incentivize sustained functionality of assets.

Reflecting on his own transition from civil service to international development, he emphasized the need to align large-scale infrastructure investments with the needs of the most vulnerable populations. He cited the Delhi Metro as a landmark example of successful international collaboration, where a combination of Indian innovation and Japanese discipline enabled not only timely execution but also operational profitability an achievement rare among global metro systems. This, he argued, demonstrates that with the right institutional frameworks, technological integration, and governance discipline, large-scale infrastructure can deliver both efficiency and sustainability.

In conclusion, Mr. Singh's intervention highlighted three critical imperatives: first, the need for rigorous and time-intensive project preparation; second, the importance of decentralized governance and accountable financing structures; and third, the necessity of embedding sustainability and long-term monitoring into the core of development planning. Without addressing these structural dimensions, he cautioned, even well-funded projects risk underperformance and limited impact.



MS. NEHA GUPTA

Ms. Neha Gupta, brought critical attention to the often-overlooked environmental footprint of the textile and fashion industry, positioning it as a major yet under-addressed contributor to water stress, pollution, and waste generation. She highlighted that the sector consumes and pollutes vast quantities of water estimated at tens of cubic meters annually much of which is discharged untreated, thereby exacerbating both water scarcity and contamination. Despite its scale of impact, she noted that textile waste has not received the same regulatory and policy focus as plastic or e-waste, even as it constitutes a rapidly growing share of landfill burden, with approximately 43% in India and nearly 63% globally ending up in landfills.

A key concern raised was the structural inefficiency in managing post-consumer textile waste. While India has traditionally sustained a culture of reuse and informal recycling, this system is increasingly strained due to rising consumption, complex fabric blends (particularly polyester-based materials), and declining quality of recyclable inputs. She pointed out that India, while functioning as a recycling hub in regions such as Tirupur and Panipat, is also effectively a dumping ground for low-value global textile waste, complicating domestic waste management further. With tightening international regulations particularly from European markets restricting cross-border waste flows the pressure on India to develop its own robust recycling ecosystem is intensifying.

Ms. Gupta emphasized that the transition toward circularity in the textile sector is no longer optional but an emerging global mandate. With international brands committing to incorporating 30–50% recycled fibres in products over the next five years, the Indian textile ecosystem especially MSMEs faces a preparedness gap in terms of infrastructure, technology, and supply chains. In response, she highlighted IFBEC's efforts to catalyze systemic change, particularly in western India, by advocating for policy interventions such as the establishment

of at least 12 textile recycling plants in Maharashtra. These initiatives are designed not only to process waste but also to create decentralized circular economies, integrating informal waste pickers, enabling upcycling, and generating livelihoods.

Importantly, she underscored the need for a multi-stakeholder, “phygital” ecosystem bringing together government, industry, and civil society to operationalize circularity. This includes enabling procurement support, strengthening policy frameworks, and ensuring that recycling becomes economically viable for smaller enterprises. She also pointed to the complexity of textile material flows, where fibers like polyester intersect multiple industrial value chains (plastics, petrochemicals), and necessitating integrated regulatory and technological solutions.

In conclusion, Ms. Gupta's intervention highlighted that addressing water and environmental challenges in the fashion industry requires urgent systemic reforms ranging from policy recognition and infrastructure creation to market transformation and behavioural change. Without embedding circular economy principles into the textile value chain, the sector risks becoming a major bottleneck in achieving broader sustainability and water security goals.

PROF. KSHEMENDRA K. UPADHYAY

Prof. Kshemendra K. Upadhyay highlighted a compelling field-based model of participatory water governance through the Apni Yojana project in Rajasthan, underscoring the centrality of stakeholder convergence in sustainable water management. Drawing from his early association with institutions like the Institute of Rural Management Anand and the legacy of Verghese Kurien, he emphasized the adaptation of cooperative, community-driven frameworks akin to the Amul model into the water sector.

The project operationalized a three-tier institutional architecture, comprising village-level development committees (notably women-led), block-level monitoring bodies, and technical execution by government departments, complemented by NGO-led grassroots implementation. This structure ensured both decentralization and accountability. A key insight was that community ownership especially women's leadership significantly enhances project effectiveness in rural water systems.

He further stressed two critical success factors: Stakeholder integration: aligning government, civil society, and communities is indispensable; fragmented approaches fail to deliver outcomes; and economic valuation of water: the government's willingness to introduce user contributions for drinking water marked a paradigm shift, reinforcing accountability and sustainability.

Supported by international financing (notably KfW), the project incorporated robust monitoring and social safeguards, including labour and human rights considerations demonstrating that large-scale water interventions must embed compliance and evaluation frameworks from inception.

In conclusion, Prof. Upadhyay positioned Apni Yojana as a replicable, semi-successful ($\approx 70\%$) but highly instructive model, illustrating that institutional design, participatory governance, and financial discipline are decisive in achieving long-term water security outcomes.



PROF. MEDHA BISHT

Prof. Medha Bisht brought a critical academic and international relations perspective to the discourse, emphasizing the need to bridge local realities with global governance frameworks in water diplomacy. Drawing from her work on civil society and international negotiations, she highlighted that impact in complex domains like water cannot be understood through linear cause-effect frameworks, but rather through interconnected “micro” and “macro” narratives.

A central argument of her intervention was the gap between grassroots experiences (micro narratives) and international policy frameworks (macro narratives). She stressed that effective water governance requires a two-way, iterative communication process, rather than a top-down approach. Local knowledge systems, community practices, and lived realities must inform global norm-setting, just as international frameworks should meaningfully translate into local contexts.

Using an analogy from the Mahabharata, she illustrated how multiple interconnected stories within a larger narrative create coherence, arguing that water governance must similarly integrate diverse, layered perspectives. This led to her articulation of the “3 Cs” Collaboration, Communication, and Connection as essential pillars for addressing complex sustainability challenges.

Prof. Bisht further underscored that sustainability must operate across individual, societal, and systemic levels, beginning with behavioural change at the individual level and scaling up to collective action. From an international standpoint, she raised a critical concern for countries of the Global South: whether they remain mere “norm-takers” or evolve into “norm-shapers”.

She emphasized that India must document, systematize, and upscale its grassroots innovations to emerge as an epistemic leader, particularly in the context of South-South cooperation. In this regard, she cautioned that global engagements such as trade frameworks and regulatory mechanisms often import external governance architectures, making it imperative for India to develop and project its own contextualized models.

Concluding with a systems perspective, she argued that rivers must be understood not merely as water flows (H₂O), but as complex ecological networks encompassing wetlands, biodiversity, and sediments thereby reinforcing the need for holistic, interconnected, and multi-scalar approaches to water governance and diplomacy.



MR. PRADEEPS. MEHTA

As moderator, Mr. Pradeep S. Mehta set a sharp and action-oriented tone for the session, emphasizing that dialogue must translate into measurable outcomes, rather than remaining confined to conferences and policy discourse. He underscored that while numerous localized success stories in water, environment, and sustainability exist across India, the core challenge lies in their inadequate replication and scaling.

A key takeaway highlighted was the urgent need for institutional mechanisms to systematically identify, document, and upscale grassroots innovations, suggesting a stronger facilitative role for national bodies such as NITI Aayog in enabling this transition from pilots to large-scale impact.

Equally significant was his candid focus on “downsides” in governance, including leakages, corruption, and inflated reporting in



public welfare schemes such as the Jal Jeevan Mission. He stressed that ignoring systemic inefficiencies and accountability gaps undermines even the most well-intentioned initiatives, thereby limiting real impact on the ground. Addressing these governance deficits, he argued, is as critical as designing innovative interventions.

He further identified behavioural and societal mind-set as a fundamental barrier, noting that public participation and ownership often remain weak despite direct benefits. This underscores the need for citizen engagement alongside policy and infrastructure interventions.

In conclusion, Mr. Mehta emphasized three critical imperatives: Scale what works through structured replication frameworks; address governance deficits transparently and rigorously; shift from discourse to action, ensuring that conversations on climate and water crises lead to concrete, on-ground impact.

KEY TAKEAWAYS

- The quality of project preparation including rigorous design, environmental integration, and regulatory alignment largely determines execution timeliness and long-term sustainability of development investments.
- Embedding lifecycle accountability through post-implementation monitoring and performance-linked finance is essential for durable, high-quality infrastructure outcomes.
- Sector-specific cases, such as textiles, illustrate the urgency of applying circular economy principles to address water pollution, waste accumulation, and material inefficiency.
- Transitioning to circular systems calls for decentralized industrial ecosystems with localized recycling infrastructure, reconfigured supply chains, and inclusion of informal actors.
- Participatory, multi-tier governance particularly women-led and community-owned structures has proven effective in enhancing accountability and operational sustainability of water systems.
- Two-way knowledge flows are needed so that grassroots innovations inform global governance frameworks, while international norms are adapted to local realities.
- Scaling impact requires systematic replication models and governance transparency to institutionalize successful pilots and address leakages, weak accountability, and limited citizen engagement.



THEMATIC PLENARY 4: GREENING INDUSTRY, FUELLING GROWTH VIA ESG PARTNERSHIPS FOR SUSTAINABILITY

SPEAKERS:

Mr. Levente Kardos, Commercial and Economic Counsellor, Embassy of Hungary, New Delhi

Mr. Pankaj Sharma, Senior Consultant, India Water Foundation and Director – Green Wattage

Prof. Rabi Mohtar, Governor-World Water Council, Director, Water Security, Texas Water Resources Institute, Texas A&M University

Dr Arvind Kumar, President, India Water Foundation

Chair:

Shri Sampath Kumar, CEO, MBDA, Government of Meghalaya



(L-R): Mr. Pankaj Sharma, Mr. Sampath Kumar, Dr. Arvind Kumar, Mr. Levente Kardos



SHRI SAMPATH KUMAR

Shri Sampath Kumar set a strategic and forward-looking context for the session by emphasizing the imperative of systems thinking in sustainability, arguing that water, environment, health, and economic development must be approached as deeply interconnected domains rather than siloed sectors. He highlighted the institutional fragmentation challenge illustrating that multiple departments often operate independently on the same subject thereby underscoring the need for integrated governance frameworks driven by leadership rather than administrative silos.

A central theme of his intervention was the shift from “program-centric” to “purpose-driven” governance, enabled through collaborative platforms, distributed leadership, and community mobilization. He demonstrated this through a compelling grassroots example from Mawsynram, where local leadership independently conserved critical catchment areas subsequently scaled across

villages through peer learning and social mobilization, highlighting the power of community-led replication.

Positioning Meghalaya as a model of natural and social capital-led development, he outlined the state's strategy of leveraging its ecological assets and indigenous institutions. This includes the creation of multi-tier governance structures such as climate councils and village-level natural resource management bodies combined with strong partnerships with global institutions like the World Bank, Japan International Cooperation Agency, Asian Development Bank, and KfW to build a robust green development ecosystem.

A key innovation highlighted was Meghalaya's leadership in community-driven carbon markets, where collaborations with entities such as Microsoft facilitated through institutions like Rabobank enable carbon credit generation with up to 80% of benefits accruing directly to local farmers. Supported by a trained cadre of over 14,000 community facilitators, the model integrates Measurement, Reporting, and Verification (MRV) systems with grassroots participation, ensuring both credibility and inclusivity.

He further outlined complementary initiatives including biochar deployment, agro-carbon finance, natural farming transitions, and REDD+ aligned conservation, particularly leveraging indigenous practices such as sacred groves, which reinforce ecological stewardship through cultural values.

Importantly, he demonstrated how integrated investments in environment, governance, and health yield cross-sectoral outcomes, citing significant improvements in public health indicators including reductions in maternal and infant mortality through a whole-of-government and whole-of-society approach.

In conclusion, Shri Kumar positioned Meghalaya's approach as a replicable paradigm of ESG-driven green growth, anchored in community empowerment, institutional innovation, and convergence of natural, social, and financial capital demonstrating that sustainability transitions are most effective when they are locally owned, systemically designed, and globally connected.

MR. LEVENTE KARDOS

Mr. Levente Kardos underscored that the transition toward green industry must be viewed not as a constraint on economic growth, but as a strategic opportunity to enhance competitiveness, resilience, and global integration. Presenting the Hungarian perspective, he highlighted the deepening economic relationship between India and Hungary, positioning Hungary as a gateway for Indian enterprises into the European market and a partner in sustainable industrial transformation.

He emphasized that ESG frameworks particularly those aligned with evolving European regulatory regimes such as the European Green Deal and Carbon Border Adjustment Mechanism are fundamentally reshaping global value chains. Companies are increasingly required to adopt carbon accounting, sustainability reporting, and responsible sourcing practices, making ESG compliance a prerequisite for international trade, especially for exporters targeting the European Union.

Drawing on Hungary's experience, he noted that the country has successfully demonstrated a decoupling of economic growth from carbon emissions, achieving significant reductions while maintaining industrial expansion. ESG, he argued, functions as a “growth multiplier” by improving access to green finance, strengthening supply chain resilience, and enhancing export competitiveness.

Mr. Kardos identified key areas of India–Hungary cooperation, including electric mobility, battery manufacturing, water and wastewater treatment technologies, sustainable agriculture, and green pharmaceutical production. He highlighted Hungary's expertise in water purification and recycling technologies as particularly relevant for India's sustainability challenges, alongside opportunities for joint innovation and technology transfer.

He further stressed the importance of regulatory convergence, noting that alignment with EU sustainability standards can provide Indian companies with faster market access, reduced compliance risks, and improved investor confidence. In this context, Hungary can serve both as a production base and a regulatory bridge to Europe.



Concluding, he emphasized that in an evolving geopolitical and economic landscape, trusted international partnerships are critical. By combining European regulatory expertise and technological capabilities with India's scale and innovation capacity, both countries can co-create sustainable, competitive, and future-ready industrial value chains.



MR. PANKAJ SHARMA

Mr. Pankaj Sharma emphasized a critical paradigm shift in the relationship between industry and sustainability, asserting that the traditional dichotomy of “growth versus environment” is no longer valid. Instead, sustainability is increasingly emerging as the foundational architecture of modern industrial growth, shaping competitiveness, efficiency, and long-term resilience.

He highlighted that India's development trajectory reflects strong institutional commitment and measurable progress, noting growing confidence among industry leaders and policymakers. Referencing robust investment flows particularly from Singapore he underscored that India's economic and industrial momentum is aligned with global sustainability transitions and is performing with notable efficiency.

Focusing on ESG-driven transformation, he identified three defining characteristics of successful industrial transitions. First, resource efficiency particularly in energy, materials, and water has become a direct source of competitive advantage, improving both sustainability outcomes and financial performance. Second, innovation accelerates when sustainability challenges are approached as engineering and design problems rather than compliance obligations, catalyzing breakthroughs in areas such as green hydrogen and circular manufacturing systems. Third, industrial ecosystems are evolving into integrated, circular networks where suppliers, manufacturers, and recyclers operate in coordinated value chains, redefining the “factory” as part of a broader sustainability system.

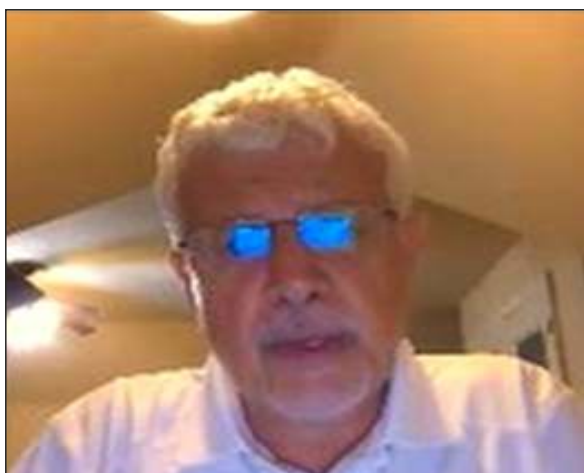
Mr. Sharma stressed that the real inflection point lies in transitioning ESG from a compliance-based framework to a core strategic driver. When embedded into capital allocation, supply chain design, and innovation processes, ESG reshapes industrial competitiveness rather than remaining a peripheral reporting exercise.

He further introduced the concept of “collaborative industrial decarbonization,” noting that large-scale systems such as transport networks, energy infrastructure, and manufacturing clusters cannot decarbonize in isolation. Instead, cross-sector partnerships are essential, enabling shared renewable infrastructure, electrified transport systems, and circular supply chains. These, he argued, represent systemic transformations rather than isolated sustainability initiatives.

Concluding, he underscored the centrality of multi-stakeholder collaboration, positioning the India Water Foundation as a key intermediary linking government, industry, and civil society. He called for deeper international and domestic partnerships including with stakeholders such as Meghalaya to scale impact and accelerate the transition toward sustainable, competitive industrial ecosystems.

PROF. RABI MOHTAR

Prof. Rabi Mohtar articulated the resource nexus approach as a critical framework for addressing the growing interdependencies between water, energy, food, and health systems in an increasingly complex and risk-prone global environment. He emphasized that these sectors are deeply interconnected, with mounting pressures arising from population growth, climate change, geopolitical risks, and unsustainable consumption patterns, all of which exacerbate inequalities, variability in resource distribution, and systemic vulnerabilities.



He noted that the traditional sectoral approach is no longer viable, as the world is entering an era defined by trade-offs, where optimizing one resource often impacts another. In this context, the nexus approach provides a systems-based lens to understand interlinkages, manage trade-offs, and identify synergies across sectors. Importantly, he stressed that the nexus is not merely an analytical tool, but a transformative framework aimed at influencing policy, behaviour, technology, and governance, enabling a shift from competition over resources to cooperation.

Building on the principles of Global Water Partnership and subsequent advancements, he highlighted the evolution of Integrated Water Resources Management (IWRM) into a broader, stakeholder-driven systems approach. This

expanded framework incorporates diverse sectors such as health, energy, agriculture, industry, and ecosystems while emphasizing two-way interactions rather than linear resource flows. He further noted the contribution of a 2023 task force under the World Economic Forum, in which the India Water Foundation participated, to advance this transdisciplinary vision.

Prof. Mohtar illustrated the operationalization of the nexus approach through global case studies. In Texas, system-level analytics enabled infrastructure interventions such as improved irrigation systems, reservoir development, and water conveyance that balanced competing demands between agriculture, energy production (including nuclear cooling), and environmental sustainability. Similar analytical frameworks were applied to address water allocation conflicts and bridge resource gaps without compromising sectoral needs. In Brazil's São Paulo region, the nexus approach is being used to mediate tensions between hydropower development and agricultural water use, demonstrating its applicability in real-world governance challenges.

A key advancement he highlighted is the integration of health as a core pillar of the nexus, shifting the focus from resource availability alone to include quality and its direct implications for human well-being. This reframing elevates the nexus from a resource management tool to a human-centric development framework.

In conclusion, he emphasized that effective implementation of the nexus approach requires multi-stakeholder engagement, spatial and temporal resource planning, and localized yet holistic solutions. However, critical challenges remain, particularly around financing mechanisms and governance structures. Ultimately, integrating health and adopting a systems approach can enable more resilient, equitable, and sustainable resource management pathways.

DR. ARVIND KUMAR

Dr. Arvind Kumar emphasized the imperative of sectoral and stakeholder synergy in addressing complex sustainability challenges, particularly within the water–energy–environment nexus. Drawing on over two decades of experience, he highlighted that fragmented, silo-based approaches are no longer effective, and must be replaced with integrated, cross-sectoral collaboration frameworks.

He reflected on the concept of “transversality”, initiated in collaboration with the World Water Council, which positions water as a central, cross-cutting element linking all Sustainable Development Goals from poverty alleviation to inclusive development. This approach underscores the interconnectedness of water with health, energy, environment, and socio-economic systems, necessitating coordinated action across domains.



Dr. Kumar stressed that achieving meaningful outcomes requires the convergence of multiple enablers, including finance, technology, innovation, and traditional knowledge systems, supported by both top-down and bottom-up governance mechanisms. While robust legal and policy frameworks are essential at national and state levels particularly given water's status as a state subject in India he underscored that sustainable impact ultimately depends on grassroots participation and stakeholder ownership.

Citing Meghalaya as a successful example, he highlighted how decentralized, community-driven approaches can deliver tangible outcomes and serve as replicable models for other regions. He further emphasized the importance of cross-learning and replication, noting that successful interventions must be scaled through institutional collaboration and knowledge exchange. He concluded that platforms fostering connectivity, collaboration, and shared ownership are essential to operationalizing transversality and achieving integrated, system-wide sustainability outcomes.

KEY TAKEAWAYS

- Leadership-driven convergence across departments is replacing institutional fragmentation, demonstrating that coordinated governance is fundamental to achieving sustainability outcomes.
- Community-anchored green growth models show that grassroots stewardship, when institutionalized, can evolve into state-level frameworks for sustainable development.
- Carbon markets and emerging credit mechanisms are validated as inclusive development tools when accompanied by community-based monitoring, reporting, verification, and equitable benefit sharing.
- Recognizing natural capital catchments, forests, traditional practices as economic assets can unlock strategies that jointly deliver environmental and livelihood gains.
- ESG performance is becoming a determinant of trade and market access, especially under evolving external regulations, making sustainability compliance integral to global value chains.
- Evidence that economic growth can be decoupled from emissions reinforces that green industrialization can enhance competitiveness rather than constrain it.
- The nexus approach is evolving into a decision-making framework that integrates spatial and temporal planning, explicitly linking water as a transversal thread across sectors and embedding health and well-being into industrial strategy.



THEMATIC PANEL DISCUSSION 4: GREENING INDUSTRY, FUELLING GROWTH VIA ESG PARTNERSHIPS FOR SUSTAINABILITY

CHAIR:

Mr. M P Singh, Chief Advisor - India Water Foundation; Former Chief of Development Operations, JICA, India

Panellists:

Mr. Ved Prakash Prajapati, Executive Director, AI Engineering Services Limited

Dr. Swati Verma, Assistant Professor, ISID

Dr. Rishi Kumar, Assistant Vice President, IORA Ecological Solutions

Moderator:

Mr. Pankaj Sharma, Senior Consultant, India Water Foundation and Director- Green Wattage



(L-R): Mr. Sunny Pandya, Shri Anil Gupta, Dr. Satya Tripathi, Dr. Arvind Kumar, Mr. Anupam Ghosh, Mr. Vinod Mishra



MR. M. P. SINGH

Mr. M. P. Singh underscored capacity building as a foundational pillar for sustainable development, particularly across infrastructure, water, energy, health, and environmental sectors. He emphasized that long-term success in development projects depends not merely on physical infrastructure, but on the creation of robust institutional systems supported by skilled human resources.

He highlighted that effective capacity building must be system-driven rather than individual-dependent, ensuring continuity beyond specific personnel or expertise. This requires the establishment of strong organizational frameworks within departments and projects, supported by continuous training, exposure to new technologies, innovative financing models, and administrative best practices. He stressed that structured capacity-building programs should be designed with a forward-looking approach, targeting professionals who will contribute over the long term.

Drawing from his experience with national and international development projects, he noted that capacity building is consistently integrated as a core component, often supported through documentation of best practices, training modules, and knowledge-sharing platforms. International collaborations frequently include site visits and cross-country learning exchanges, enabling stakeholders to directly engage with successful models and replicate them in their respective contexts.

He also emphasized the importance of prioritizing the right beneficiaries of capacity-building initiatives, advocating that younger professionals and practitioners rather than those nearing retirement should be the primary recipients to ensure sustained institutional impact.

Linking capacity building to ESG objectives, he stressed the need for systematic documentation, regulatory frameworks, and compliance mechanisms to achieve environmental sustainability and low-emission development pathways. He reiterated that integrating best practices into training and institutional processes is essential for scaling sustainable solutions.

Illustrating the value of precision and discipline in systems, he shared a Japanese railway operational practice where structured, repetitive verification processes ensure near-zero accident rates. This example, he noted, reflects how process-oriented thinking and behavioural discipline can make systems more reliable and resilient.

In conclusion, he emphasized that collaboration and coordination remain critical enablers for successful capacity building, enabling the transfer of knowledge, replication of best practices, and achievement of broader sustainability goals across sectors.

MR. VED PRAKASH PRAJAPATI

Mr. Ved Prakash Prajapati emphasized that ESG must evolve beyond compliance and reporting to become an embedded strategic and operational framework within organizations. Drawing from the aviation sector, he highlighted that effective ESG implementation requires a strong culture of commitment, accountability, and system-driven governance rather than individual-led initiatives. He underscored the transition from reactive to proactive and predictive approaches mirroring aviation safety systems through tools such as root cause analysis and structured methodologies to address systemic inefficiencies.

He stressed that sustainable outcomes depend on institutionalizing processes, ensuring continuity irrespective of personnel changes, and investing in capacity building and awareness at all levels. Collaboration emerged as a central theme, with Mr. Prajapati advocating for shared infrastructure, cross-industry partnerships, and technology transfer to optimize resource use and reduce costs particularly in waste management and recycling ecosystems.

Addressing environmental priorities, he highlighted the dual challenge of air and water sustainability. In aviation, he pointed to advancements such as high-bypass engines and the growing adoption of sustainable aviation fuels as critical pathways toward de-carbonization targets. On water, he emphasized the urgency of proactive management through rainwater harvesting, wastewater treatment, and reuse systems. Concluding, he reinforced that leveraging natural resources like solar energy and rainwater, combined with collective, system-oriented efforts, will be pivotal in achieving long-term sustainability and ESG-driven growth.

DR. SWATI VERMA

Dr. Swati Verma provided an evidence-based perspective on ESG implementation, drawing from a recent study of the top 100 manufacturing firms listed on the BSE. She highlighted that while progress is visible, ESG disclosure practices remain uneven particularly in the reliability of quantitative metrics and the ambiguity surrounding qualitative disclosures such as technology adoption, emissions management, and environmental impact assessments. This inconsistency, she noted, places significant reliance on external assurance and exposes critical gaps in transparency.

A key takeaway from her intervention was that authentic, standardized, and comprehensive data systems are foundational to meaningful ESG transformation. Referring to the Business Responsibility and Sustainability Reporting (BRSR) framework, she emphasized that current challenges lie in limited coverage and insufficient



transparency. Strengthening these dimensions is essential to build credibility and enable informed decision-making across stakeholders.

Dr. Verma argued that ESG must transition from compliance to competitive advantage through robust collaborative ecosystems. Cross-sectoral and value-chain partnerships can address existing disclosure gaps by fostering data sharing, aligning standards, and pooling technological and financial resources. She stressed that such collaborations not only enhance transparency but also drive innovation, improve risk management, and optimize costs.

Importantly, she observed that companies particularly in emerging economies are still in a formative stage of ESG adoption, making this a critical window to institutionalize collaboration frameworks. Trust-building, shared reporting mechanisms, and technology integration were identified as central enablers of effective partnerships. Ultimately, she concluded that data integrity, technological innovation, and collaborative governance models will define the next phase of ESG evolution, enabling industries to move toward more efficient, transparent, and sustainable systems.



DR. RISHI KUMAR



Dr. Rishi Kumar presented a practitioner-oriented perspective on ESG, grounded in his work on nature-based solutions (NbS), carbon markets, and biodiversity management. He highlighted ongoing collaboration with the Meghalaya Basin Development Authority (MBDA) in generating carbon credits, demonstrating how natural capital can be monetized while delivering climate mitigation outcomes. Extending beyond carbon markets, he emphasized emerging domains such as biodiversity assessments and biodiversity credits, positioning them as critical components of the environmental pillar of ESG.

A central argument of his intervention was that ESG must transition from a reporting exercise to a risk-based strategic framework. He underscored that ESG metrics should primarily serve to identify, quantify, and mitigate risks ranging from climate-induced disruptions (e.g., flooding, water stress, and supply chain vulnerabilities) to regulatory risks such as evolving carbon pricing mechanisms and compliance requirements. Industries dependent on natural capital including pharmaceuticals, tourism, and resource-intensive sectors face increasing exposure to biodiversity loss and ecosystem degradation, which directly threaten long-term business viability.

Dr. Kumar further highlighted that ESG is increasingly acting as a driver of innovation and market access. Regulatory instruments such as the Carbon Border Adjustment Mechanism are reshaping global trade dynamics, making sustainability compliance a prerequisite for entry into key markets. At the same time, ESG-aligned companies benefit from improved access to green finance, as financial institutions increasingly prioritize sustainable investments.

He also illustrated the importance of multi-stakeholder partnership models in operationalizing ESG at scale. Successful implementation requires alignment across government policy frameworks, private sector innovation, international financing, and community participation. Citing carbon credit projects, he demonstrated how such integrated ecosystems combining policy support, technical expertise, financing, and grassroots engagement enable effective climate mitigation and sustainable development outcomes.

MR. PANKAJ SHARMA

In his closing remarks, Mr. Pankaj Sharma succinctly synthesized the core deliberations of the session, underscoring two fundamental imperatives for advancing ESG-led sustainability. First, he emphasized that collaboration and coordination across stakeholders are indispensable, noting that without integrated efforts among government, industry, academia, and civil society, ESG risks remaining a declaratory framework rather than a transformative force.

Second, he highlighted the critical need to institutionalize processes over individual-driven approaches. Sustainable impact, he noted, can only be achieved when systems are deeply embedded within organizational and governance structures becoming part of the “muscle memory” of institutions. This shift from personality-driven execution to process-driven continuity ensures consistency, scalability, and long-term effectiveness of ESG initiatives. He concluded by reiterating that the transition of ESG from intent to impact hinges on systemic integration and collective ownership, marking these as the defining principles for achieving meaningful and sustained outcomes.



KEY TAKEAWAYS

- Capacity building is positioned as core infrastructure, with institutional competence and human capital seen as equally critical as physical assets for sustainable development.
- System-driven institutionalization through codified processes, training pathways, and governance frameworks is necessary to ensure continuity beyond individual champions.
- Forward-looking skill development focused on younger professionals and long-term capability creation is essential to sustain ESG implementation over decades.
- Process discipline and behavioural standardization, borrowing from high-precision sectors, are vital for improving reliability and performance in sustainability operations.
- ESG is increasingly used as a predictive risk-management framework, enabling proactive identification and mitigation of systemic environmental and social risks rather than reactive compliance.
- Analytical tools such as root cause analysis and structured diagnostic methods are important for detecting inefficiencies and strengthening operational sustainability.
- Multi-stakeholder implementation ecosystems integrating government policy, private innovation, international finance, and community participation are indispensable to embed ESG in business continuity and resilience planning.

THEMATIC PLENARY 5: GLOBAL COOPERATION FOR PLANETARY HEALTH DIPLOMACY



(L-R): Dr. Arvind Kumar, Mr. Anupam Kumar Ghosh, Dr. Virinder Sharma

CHAIR:

Shri Amit Kumar Ghosh, Additional Chief Secretary, Department of Medical, Health, Family Welfare, and Medical Education, Government of Uttar Pradesh

SPEAKERS:

Dr. Virinder Sharma, Member (Technical), Commission for Air Quality Management, GOI

Ms. Sonja Koeppel, Secretary, Convention on the Protection and use of Transboundary Watercourses and International Lakes, Environment Division, UNECE

Mr. Alain Meyssonnier, President-Mediterranean Water Institute, Governor, World Water Council

Ms. Ulrike Kelm, Deputy Executive Director, IWRA

Mr. Roi Chiti, Regional Coordinator & Representative, Pacific Island states, India, Sri Lanka & Maldives – UN Habitat

DR. VIRINDER SHARMA

Dr. Virinder Sharma emphasized that the escalating environmental health crisis, particularly air pollution, must be addressed through a planetary health diplomacy framework grounded in actionable outcomes rather than conceptual discourse. He identified four core pillars global cooperation, knowledge sharing, actionable diplomacy, and inclusive policy frameworks while strongly advocating for a fifth and critical dimension: transformative, implementable actions with measurable results.

Framing air pollution as a public health emergency, he underscored that it remains among the top global health risks, disproportionately affecting vulnerable and low-income populations exposed to persistently high levels of fine particulate matter (PM_{2.5}). He highlighted that air quality challenges extend beyond visible pollution, requiring deeper awareness of invisible pollutants and their long-term health impacts.



A central proposition in his intervention was the shift from fragmented approaches to a “shared airshed governance model,” particularly across the Indo-Gangetic Plain, where pollution is driven by interconnected sources such as agricultural burning, industrial emissions, vehicular pollution, and dust transport. He stressed that air pollution is fundamentally a governance challenge, necessitating coordinated, multi-level institutional responses involving urban local bodies, regulatory agencies, and cross-state collaboration.

Dr. Sharma further called for the development of integrated knowledge systems, combining satellite data, ground-based monitoring, artificial intelligence, and public health linkages, alongside enhanced citizen awareness and participation. He emphasized the importance of actionable regional diplomacy, especially in transboundary contexts, to address shared pollution sources and ensure collective accountability.

Importantly, he distinguished between long-term climate goals (net-zero targets) and the immediate urgency of air quality management, arguing that short- and medium-term interventions on pollutants like PM_{2.5}, PM₁₀, and NO_x cannot be deferred. He advocated for year-round mitigation strategies, moving beyond seasonal or reactive measures such as graded response plans toward systemic emission reduction and structural transformation.

In conclusion, Dr. Sharma called for a paradigm shift towards cooperative atmospheric governance, rooted in continuous learning, experimentation, and community-centric approaches. He stressed that protecting vulnerable populations and translating data into decisive ground-level action are essential to transforming the air pollution crisis into an opportunity for sustainable and equitable environmental health outcomes.



MR. ALAIN MEYSSONIER

Mr. Alain Meyssonier positioned planetary health diplomacy as a critical and transversal framework for addressing the interconnected challenges of the water–energy–health–environment nexus, firmly anchored in ESG principles. Drawing from the Mediterranean experience, he described the region as a “living laboratory” for global sustainability, where climate variability, demographic pressures, and geopolitical complexities converge, and making integrated solutions both urgent and instructive.

He emphasized that water serves as the central pivot of the nexus, with increasing stress from droughts, floods, and

transboundary pollution threatening not only resource security but also public health and ecosystem integrity. In this context, he underscored the importance of expanded Integrated Water Resources Management (IWRM) as a mechanism to generate synergies across sectors, while advocating for recognition of the environment as a standalone sector with intrinsic rights, particularly to safeguard biodiversity and ecosystem services.

Highlighting the role of ESG, Mr. Meyssonier stressed that transversality across environmental, social, and governance dimensions is essential for effective decision-making. He illustrated how ESG integration enables linkages such as water quality considerations in energy systems (e.g., renewable desalination) and health interventions addressing waterborne diseases. He cautioned that without such coordinated approaches, resource-use conflicts across sectors and transboundary basins intensify, undermining sustainability goals.

A key pillar of his intervention was the advancement of planetary health diplomacy as a tool for global cooperation, transcending national boundaries and linking human, ecological, and animal health. He highlighted the importance of inclusive, multi-stakeholder engagement, incorporating local communities, women, and youth, alongside the deployment of modern tools such as early warning systems and shared monitoring platforms. He further emphasized the role of multilateral partnerships, financial innovation, and transboundary cooperation frameworks in fostering resilience and stability.

Mr. Meyssonier also outlined how ESG can function as an operational framework for sustainable investment and governance, facilitating green financing, social equity, and collaborative institutional mechanisms.

Through practical examples from the Mediterranean, he demonstrated how ESG transversality can be translated into measurable, outcome-oriented interventions across the nexus.

In his recommendations, he called for: strengthening solidarity-based water diplomacy across and within basins, establishing centers of excellence for nexus-based innovation, promoting public-private partnerships, particularly with emerging technologies and startups, and integrating planetary health into global development frameworks through ESG-aligned financing and digital tools.

In conclusion, he underscored that cooperation anchored in ESG and nexus thinking is indispensable for transforming systemic challenges into opportunities. The Mediterranean experience, he noted, offers a scalable model for global application, reinforcing the principle that water can serve as a unifying force for peace, sustainability, and planetary well-being.

MS. ULRIKE KELM

Ms. Ulrike Kelm underscored that planetary health challenges are inherently interconnected, spanning water, energy, health, and environmental systems, yet are often constrained by fragmented and siloed governance structures. She emphasized that this disconnect between the nature of challenges and institutional frameworks remains one of the most critical barriers to effective policy implementation.

Highlighting water scarcity as a multidimensional issue, she noted its deep linkages with climate change, energy production, ecosystem stability, and public health, arguing that isolated sectoral approaches lead to inefficient policies and missed opportunities. She called for a decisive shift toward integrated, cross-sectoral governance models that reflect the true complexity of these interdependencies.



A central theme of her intervention was the importance of science-policy integration. She stressed that rapidly changing political contexts necessitate strong, sustained linkages between scientists, experts, and policymakers, ensuring that decisions are informed by credible, interdisciplinary knowledge. At the same time, she emphasized the need for greater collaboration across governmental departments and sectors.

Ms. Kelm also highlighted the role of global platforms and conferences as bridging mechanisms, urging a move beyond “business-as-usual” dialogues within narrow professional circles. She advocated for inclusive, multi-disciplinary engagement, incorporating social sciences, economics, public health, and industry, recognizing that water challenges are not merely technical but also social, political, and cultural in nature.

Addressing water diplomacy, particularly in transboundary contexts, she emphasized that cooperation over shared water resources is shaped by a wide array of factors including cultural, demographic, political, and economic dynamics, beyond traditional income-based classifications. Effective diplomacy, therefore, requires a context-sensitive and holistic understanding of these variables.

She further highlighted the role of the International Water Resources Association as a neutral, non-partisan platform bridging science and policy for over five decades, facilitating global knowledge exchange through initiatives such as the World Water Congress and regional chapters. These platforms enable context-specific solutions and foster direct engagement between researchers and decision-makers.

In conclusion, Ms. Kelm emphasized that planetary health diplomacy depends on building bridges across disciplines, sectors, and geographies. She called for collaborative, knowledge-driven, and diplomatically aligned approaches, asserting that just as water connects systems and societies, solutions must be equally interconnected to effectively address global sustainability challenges.



MR. ROI CHITI

Mr. Roi Chiti underscored that safe water and health are fundamental human rights, forming the foundation of human dignity, development, and the achievement of the Sustainable Development Goals. He highlighted the intensifying global water crisis, noting that nearly half of the world's population experiences water scarcity periodically, compounded by declining per capita water availability and deteriorating water quality due to pollution and inadequate wastewater treatment.

He emphasized the direct linkage between water insecurity and public health, citing that billions still lack access to safely managed drinking water, with severe implications for disease burden, productivity, and human well-being. In urban contexts, he framed water challenges not merely as technical failures but as systemic governance gaps, particularly in rapidly urbanizing regions.

Using India as a critical case study, Mr. Chiti illustrated the sharp decline in per capita water availability and projected rising urban water demand, coupled with significant inefficiencies such as high leakage losses and untreated wastewater discharge. However, he also acknowledged India's progress through large-scale initiatives like the Jal Jeevan Mission, which demonstrate the feasibility of rapid, transformative service delivery at scale.

A key concern highlighted was the exclusion of informal settlements, where lack of land tenure restricts access to basic water services, exacerbating health vulnerabilities. He pointed to emerging solutions such as community-managed systems, micro-utilities, and integration of WASH with primary healthcare, alongside the growing role of nature-based solutions in urban water management.

Mr. Chiti stressed the economic costs of inaction, noting that water-related crises already impose significant GDP losses, disrupt industrial productivity, and increase healthcare burdens. He reframed investment in water systems as a strategic economic and public health investment, essential for climate resilience and sustainable growth.

He further highlighted the gender dimension of water access, where women and girls disproportionately bear the burden of water collection, reinforcing the need for gender-responsive water diplomacy.

To bridge existing gaps, he identified key priorities: strengthening data-driven decision-making and monitoring systems, advancing multi-level, cross-sectoral governance, promoting innovation and inclusive co-creation of solutions, and enhancing international and multilateral cooperation frameworks.

He also emphasized the role of UN-Habitat's strategic initiatives, particularly the Global Water Operators' Partnership Alliance (GWOPA), in building capacity and improving service delivery in urban water utilities globally.

MS. SONJA KOEPPPEL

Ms. Sonja Koepfel emphasized that water-related challenges driven by demographic, economic, social, and climate pressures are inherently interconnected, with cascading impacts across sectors such as health, agriculture, energy, and industry. She highlighted that the Sustainable Development Goals framework recognizes cooperation across sectors and borders as essential to effectively address these complexities.

A key point in her intervention was that over 60% of global freshwater resources are transboundary, making water



cooperation a critical instrument for regional integration, sustainable development, and peace. She stressed the importance of mechanisms such as data sharing, coordinated actions, and joint institutional frameworks, as captured under SDG Indicator 6.5.2, which measures progress in transboundary water cooperation.

Focusing on South Asia, she underscored the region's hydrological interconnectedness, particularly through shared river systems such as the Indus, Ganges, Brahmaputra, and Meghna, as well as the critical role of Himalayan glaciers as “water towers”. These systems, she noted, are under increasing stress, posing risks to food security, energy systems, public health, and migration, thereby necessitating integrated, nexus-based approaches to water management.

Ms. Koeppel highlighted the significance of the 1992 United Nations Water Convention as a global legal and intergovernmental framework that supports countries in the sustainable and peaceful management of shared water resources. She noted that the Convention promotes equitable cooperation between upstream and downstream countries, based on principles such as Integrated Water Resources Management (IWRM) and the source-to-sea approach.

She further outlined the Convention's contributions, including: strengthening national legal and institutional frameworks, facilitating joint monitoring and data exchange, supporting climate change adaptation through capacity building and pilot initiatives, and providing a platform for multilateral dialogue and cooperation.

Highlighting recent progress, she noted Bangladesh's accession to the Convention as a milestone for South Asia, creating new opportunities for regional engagement and collaboration.

SHRI AMIT KUMAR GHOSH

Shri Amit Kumar Ghosh set the tone for the plenary by situating planetary health diplomacy as a critical pillar of contemporary global governance. Drawing from India's experience in large-scale public health interventions particularly polio eradication supported by multilateral cooperation he underscored that health diplomacy is not theoretical but operational, requiring robust international partnerships, institutional networks, and coordinated policy pathways.

He emphasized that the post-pandemic world has reinforced the urgency of building resilient global cooperation frameworks that can effectively address interconnected challenges across water, energy, health, and environment. Such cooperation, he noted, must move beyond dialogue to deliver tangible, scalable outcomes aligned with ESG transversality.

Reflecting on the expert deliberations, he highlighted key thematic takeaways: the centrality of air quality governance, the importance of transboundary water management, and the intrinsic linkage between water quality and public health outcomes. He particularly underscored that environmental challenges especially air pollution have measurable economic consequences, citing evidence of GDP losses and the need for decisive, systemic interventions.

Further, he acknowledged global best practices, noting how countries have successfully transformed environmental crises into opportunities through sustained policy action and institutional coherence. He stressed that India must internalize such lessons to accelerate its own transition toward sustainable and integrated development.



KEY TAKEAWAYS

- Planetary health diplomacy must shift from principle-setting to delivery, prioritizing measurable outcomes over high-level declarations.
- Air pollution governance requires shared air-shed management, particularly in densely populated regions, to address interconnected emission sources through coordinated action.
- Integrated knowledge systems that combine satellite data, ground monitoring, artificial intelligence, and public health analytics are critical for converting environmental observations into policy decisions.
- Water is a strategic entry point for cooperation, linking climate resilience, public health, ecosystem stability, and economic systems.
- Transboundary water governance supported by legal and institutional frameworks remains essential because a majority of global freshwater resources are shared across borders.
- Inclusive service delivery models, such as community-managed systems and micro-utilities, are necessary to extend water and sanitation access to informal and marginalized populations.
- Planetary health action must be multi-scalar and inclusive, connecting local community initiatives with global governance frameworks to ensure both legitimacy and effectiveness.



THEMATIC PANEL DISCUSSION 5: GLOBAL COOPERATION FOR PLANETARY HEALTH DIPLOMACY



(L-R): Mr. Vinod Mishra, Dr. Manoj Nesari,
Dr. T. S. Bisht, Dr. Arvind Kumar,
Ms. Varinder Gambhir

PANELLISTS:

Mr. Vinod Mishra, Country Director - India, UNOPS

Dr. Manoj Nesari, Advisor, Ministry of Ayush, Government of India

Ms. Sara Casillas Ramirez, Forestry Officer, FAO

Ms. Ambika Vishwanath, Co-founder, Kubernein Initiative

Ms. Nidhi Nagabathla, Professor, UN University, Belgium

Moderator:

Ms. Varinder Gambhir, Country Director- India, BBC Media Action

MR. VINOD MISHRA

In his address, Mr. Vinod Mishra articulated a decisive shift required in global governance from “diplomacy of negotiation” to “diplomacy of delivery” emphasizing that the effectiveness of planetary health diplomacy ultimately rests on implementation outcomes rather than policy intent.

He identified governance transformation as the primary enabler of delivery, highlighting India's emergence as a model for the Global South. In particular, he cited large-scale digital public infrastructure and flagship health initiatives such as Ayushman Bharat as demonstrative of how inclusive, technology-driven systems can translate policy into tangible benefits at scale.

Further, he underscored the role of multilateral institutional innovation, referencing India-led global platforms such as Coalition for Disaster Resilient Infrastructure and International Solar Alliance as critical mechanisms linking resilience, energy transition, and public health outcomes. These frameworks, he noted, exemplify how collaborative international architectures can operationalize planetary health goals.

A key pillar of effective delivery, he emphasized, lies in strengthening early warning systems, particularly for climate-induced disasters. Despite progress, he highlighted persistent global gaps and stressed that anticipatory systems are essential to mitigating health risks arising from floods, extreme weather, and other environmental shocks.

He also drew attention to the evolving paradigm of green and resilient infrastructure, noting that development finance must move beyond asset creation to embed sustainability principles. In this context, he emphasized the



role of green procurement, carbon footprint reduction, gender inclusion, and climate-resilient infrastructure systems as integral to long-term planetary health outcomes.

DR. MANOJ NESARI

In his intervention, Dr. Manoj Nesari highlighted a fundamental structural gap in global governance the absence of a binding, integrated framework that cohesively addresses biodiversity, climate change, and health. Despite their acknowledged interdependence, he noted that these domains continue to be governed in silos, limiting the effectiveness of planetary health strategies.

He emphasized the critical yet underutilized role of traditional knowledge systems, particularly their multidimensional relevance across health, agriculture, and ecological sustainability. Drawing on principles of Ayurveda, he articulated a holistic paradigm wherein human health is intrinsically linked to environmental integrity, encapsulated through the balance of natural elements and aligned with the broader One Health approach.

A key shift he advocated was the transition from reactive, crisis-driven responses to preventive and preparedness-based health systems, with a strong focus on health promotion through nutrition.

He underscored the importance of expanding dietary diversity beyond conventional agricultural dependence, advocating for forest-based and biodiversity-rich food systems, which offer enhanced micronutrient value while reducing environmental pressures such as greenhouse gas emissions and land degradation.

He further introduced the concept of biocultural medicine, integrating nutrition, seasonal variability, cultural practices, and ecosystem health into a unified framework for well-being. This approach, he argued, bridges the existing divide between scientific healthcare systems and socio-cultural dimensions of health.

Institutionally, he proposed strengthening healthcare delivery through a “fourth tier” of community-led participation, complementing existing public health infrastructure. This model emphasizes awareness, capacity building, and local resource utilization, thereby reducing systemic burden while enhancing preventive care outcomes.

He also stressed the importance of cross-sectoral and inter-ministerial collaboration, citing ongoing coordination between multiple government bodies and international platforms such as BIMti for knowledge exchange in traditional medicine. These partnerships, he noted, are essential for scaling innovation and integrating diverse knowledge systems into mainstream policy.

Concluding, he reinforced that the future of planetary health lies in systemic integration across disciplines, sectors, and knowledge traditions supported by collaborative frameworks, community engagement, and evidence-based application of traditional and modern practices.



MS. SARA CASILLAS RAMIREZ

In her intervention, Ms. Sara Casillas Ramirez emphasized that the global challenge is not the absence of frameworks, but the lack of alignment across existing sectoral policies. She argued that while robust international mechanisms on biodiversity, climate, and environment already exist, their fragmented implementation limits their effectiveness. The priority, therefore, is to harmonize these frameworks toward a unified objective that balances economic development, environmental sustainability, and public health.

Drawing on empirical evidence, she highlighted the critical interdependence between forests, agriculture, and climate systems. Forest ecosystems, she noted, play a vital role in sustaining rainfall patterns across regions and borders, with significant portions of agricultural productivity globally dependent on forest-driven hydrological cycles. This underscores the inherently transboundary nature of ecosystem services and the need for integrated governance approaches.

She further stressed that deforestation is not merely an environmental concern but a direct public health issue, citing evidence linking forest loss to rising temperatures, reduced agricultural productivity, and increased mortality due to heat stress. Such impacts reveal that ecosystem degradation has cascading effects on food security, water availability, and human well-being.

A key message of her address was the need to embed forest governance within broader health and development frameworks, recognizing that local environmental decisions have far-reaching global consequences. She underscored the importance of linking ecosystem health with human health through the One Health approach, thereby reinforcing the interconnectedness of natural and human systems.

MS. AMBIKA VISHWANATH

In her intervention, Ms. Ambika Vishwanath underscored that while the need to break silos is widely acknowledged, the deeper challenge lies in the lack of cross-cutting knowledge and recognition of existing gaps across governance systems. She highlighted that much of current policy and research remains compartmentalized, with insufficient expertise operating at the intersection of sectors such as environment, health, security, and development.

From a geopolitical and foreign policy perspective, she emphasized that global governance frameworks remain structurally fragmented, with critical domains such as environmental security, human security, and technological governance continuing to evolve in isolation. This disconnect limits the ability to respond effectively to complex, interconnected challenges of the 21st century, including climate change, biodiversity loss, and unsustainable development trajectories.

She further pointed to a knowledge deficit in understanding interlinkages, noting that even emerging global discussions such as those on clean energy transitions or artificial intelligence often fail to adequately integrate dimensions like water, livelihoods, and socio-economic impacts. Bridging this gap requires not only interdisciplinary expertise but also a deliberate effort to embed integration into policy design and global discourse.

Importantly, she observed that existing global institutions are increasingly inadequate in addressing what she described as a “triple crisis” of climate, biodiversity, and development. However, she also identified opportunities in the emergence of mini-lateral and regional governance mechanisms, which offer more flexible, adaptive, and context-specific models of cooperation. These evolving frameworks, she argued, should be leveraged, scaled, and integrated into broader global systems.



MS. NIDHI NAGABATHLA

Ms. Nidhi Nagabathla underscored that while global frameworks, scientific knowledge, and institutional mechanisms already exist, the critical gap lies in the absence of a unified and operationalized common agenda for planetary health. She emphasized the need to move from fragmented alignment efforts toward a clearly articulated framework that defines shared priorities, common metrics, accountability mechanisms, and robust monitoring and evaluation systems.

Referring to existing global frameworks such as the Rio Conventions, she highlighted that integration is less a question of creating new mechanisms and more about strategically aligning and operationalizing existing ones.



In this context, she proposed the development of a Planetary Health Compact or Alliance, embedded within current institutional architectures, as a practical pathway for coordinated global action.

She further pointed to the emerging relevance of the One Health framework as a unifying paradigm, capable of bridging sectors and enabling cross-scale implementation from national to global levels. However, she stressed that operationalization requires standardized data frameworks and aggregation mechanisms, ensuring that existing datasets meaningfully contribute to planetary health objectives.

Drawing on the concept of science-policy interfaces (SPIs), she cited examples such as the Intergovernmental Panel on Climate Change and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, noting the absence of an equivalent, integrated inter-agency mechanism for planetary health. She advocated for such an interface to mobilize financial resources, technical capacity, and policy coherence across sectors.

Importantly, Ms. Nagabathla identified key gaps in current discourse, particularly the limited understanding of planetary health within the medical community, and the underrepresentation of mental health and psychosocial well-being alongside physical health. Addressing these gaps, she emphasized capacity-building initiatives and interdisciplinary training as essential enablers.

MS. VARINDER GAMBHIR

Ms. Varinder Gambhir effectively steered the session toward a more implementation-focused discourse, building on earlier discussions around fragmentation and siloed approaches. She framed the central challenge as not merely designing frameworks, but translating interdependence across water, health, climate, and environment into actionable, real-world outcomes.

Positioning the session within a practical lens, she emphasized that global cooperation must evolve from conceptual alignment to operational delivery, with a sharper focus on “how” collaboration materializes on the ground. In this context, she highlighted the critical role of behaviour change communication and citizen engagement, underscoring that systemic transformation cannot occur without active public participation.

A key insight from her moderation was the articulation of a trust–transparency–communication nexus: effective cooperation depends on trust; trust is built through transparency; and transparency is enabled by robust communication systems. She stressed the importance of strengthening information ecosystems, ensuring that data, science, and evidence are not only generated but also translated into accessible, actionable knowledge for communities and stakeholders.

Ms. Gambhir also drew attention to a persistent gap between data availability and real-time, evidence-based action, advocating for mechanisms that enable faster translation of knowledge into decision-making and implementation. By initiating a rapid, solution-oriented exchange among panellists, she encouraged concise identification of key systemic gaps and priority actions for the next three years.



KEY TAKEAWAYS

- A paradigm shift from a "diplomacy of negotiation" to a "diplomacy of delivery" is needed, where success is judged by implementation performance rather than policy text.
- Digital public infrastructure and large health systems demonstrate how real-time, inclusive service delivery at population scale can be achieved when governance is data-driven.
- Mission-oriented multilateral platforms, such as thematic alliances and coalitions, show that targeted institutional architectures can translate global cooperation into concrete outcomes.
- Early warning systems should evolve into anticipatory governance tools by linking climate risk forecasts with public health readiness and social protection measures.
- Traditional knowledge frameworks, including holistic health systems, offer preventive, ecosystem-aligned solutions that can complement modern medicine in a planetary health paradigm.
- Mini-lateral and regional coalitions provide flexible, context-specific approaches that can overcome the rigidity and slow pace of universal global agreements.
- The core implementation gap lies in translating existing knowledge into timely decision-making, requiring faster evidence-to-action pipelines and strengthened science–policy interfaces.



LEADERSHIP DIALOGUE AND VALEDICTORY SESSION

SPEAKERS:

Dr. Arvind Kumar, President,
India Water Foundation

Shri R. P. Singh,
National Spokesperson,
Bharatiya Janata Party

Shri Rakesh Jain, Akhil Bharatiya
Paryavaran Sah Sanyojak,
Paryavaran Sanrakshan Gatividhi,
Rashtriya Sawayam Sevak Sangh

H.H. Acharya Shri Lokesh Muni,
Founder, Ahimsa Vishwa Bharti

Ms. Shweta Tyagi,
Chief Functionary,
India Water Foundation



*(L-R): Mr. Sunny Pandya, Shri Anil Gupta,
Dr. Satya Tripathi, Dr. Arvind Kumar,
Mr. Anupam Ghosh, Mr. Vinod Mishra*



DR. ARVIND KUMAR

Dr. Arvind Kumar, in his concluding address, encapsulated the key outcomes of the Conclave, emphasizing that the deliberations of the past two days must transition from dialogue to sustained action, collaboration, and long-term commitment. He reiterated that global water challenges demand integrated, multi-stakeholder approaches, bringing together governments, international organizations, academia, industry, and civil society.

Reflecting on the inaugural leadership, he acknowledged the vision articulated by Om Birla, who underscored the importance of global cooperation and sustainable development, and Raj Bhushan Choudhary, who highlighted the need for integrated water governance and convergence across sectors. He further noted the emphasis on ESG-driven approaches by Harsh Malhotra, recognizing transversality as a critical instrument for addressing the interconnected water–energy–health–environment nexus.

A significant highlight of the Conclave, as he noted, was the recognition of global leadership through the Water Transversality Global Awards, including distinguished figures such as Shri Devendra Fadnavis and Shri Conrad Sangma, alongside leading institutions like The Rockefeller Foundation, reinforcing the importance of innovation, sustainability, and environmental stewardship.

Dr. Kumar also underlined the substantive contributions from over 100 speakers and multiple institutional stakeholders, noting emerging policy directions such as strengthening ESG frameworks, enhancing regulatory alignment, and fostering cross-sectoral cooperation. He highlighted the value of high-level dialogues involving

leaders such as Dr Satya Tripathi and Shri Amit Kumar Ghosh, which reinforced the centrality of global partnerships in driving sustainability transitions.

He concluded with a forward-looking vision: advancing a future where water security, ecological balance, and human well-being are pursued in an integrated and mutually reinforcing manner, anchored in collaboration and continuous engagement.

SHRI R. P. SINGH

Shri R. P. Singh delivered a deeply reflective intervention, anchoring the discourse on environmental sustainability in civilizational values and individual responsibility. Drawing from the teachings of Guru Nanak Dev, he invoked the principle “Pavan Guru, Paani Pita, Mata Dharat Mahat” to underscore the intrinsic interconnectedness of air, water, and earth, emphasizing that environmental stewardship is embedded within India's cultural and spiritual ethos.

He highlighted that sustainable development cannot be pursued in isolation, stressing the need for a balanced approach amid rapid urbanization, particularly in addressing challenges such as rising vehicular density and inadequate last-mile connectivity. He pointed out that structural gaps in urban planning contribute to environmental degradation, calling for integrated mobility solutions to reduce dependence on private vehicles.

A central theme of his address was the importance of behavioural change at the household level. Through practical examples, he illustrated how simple lifestyle practices such as controlled water usage, reliance on buckets instead of showers, reuse of materials, and mindful consumption can significantly contribute to water conservation and environmental sustainability. He emphasized that conservation must evolve from a policy objective into a habitual and cultural practice.

Shri Singh also raised concerns regarding water quality and inefficiencies in purification systems, particularly the excessive wastage associated with reverse osmosis (RO) technologies. He advocated for systemic solutions to ensure access to safe drinking water, alongside measures to minimize wastage and improve efficiency in urban water management.

Further, he underscored the importance of rainwater harvesting and groundwater recharge, suggesting localized interventions to address urban flooding and declining water tables. He stressed that sustainable water management must integrate infrastructure planning with ecological sensitivity, ensuring that excess water is conserved rather than lost.

In conclusion, he called for a shift toward sustainable lifestyles rooted in cultural consciousness, emphasizing recycling, resource efficiency, and responsible consumption. His address reinforced that meaningful environmental action requires not only policy and technology, but also individual commitment and societal transformation, guided by enduring cultural principles.



SHRI RAKESH JAIN

Shri Rakesh Jain underscored the urgent need for community-driven environmental stewardship, drawing attention to the increasing frequency of ecological disasters such as the 2013 Kedarnath floods and the 2018 Kerala floods. He highlighted deforestation and ecological imbalance as critical drivers of such catastrophes, emphasizing that indiscriminate tree loss exacerbates soil erosion, disrupts hydrological cycles, and intensifies flood impacts.

He stressed the foundational role of forests in sustaining life systems, noting that trees not only stabilize soil but also serve as the primary source of oxygen. Drawing attention to declining tree density in India particularly in urban regions like Delhi he warned of severe ecological and public health consequences arising from shrinking green cover.

Shri Jain further emphasized the intrinsic link between water conservation and environmental sustainability, invoking traditional wisdom to reinforce the centrality of water in sustaining life and livelihoods. He cautioned against unsustainable consumption patterns, highlighting that growing commercialization of water resources reflects deeper systemic neglect of conservation practices.

A major concern raised was the escalating environmental threat posed by polythene and plastic waste. He outlined its multi-dimensional impact degrading soil fertility, obstructing water flow, harming biodiversity, and posing serious health risks. The accumulation of waste in large landfill sites, particularly in urban peripheries, was cited as a pressing environmental crisis requiring immediate behavioural and systemic interventions.

Highlighting grassroots action, he detailed ongoing nationwide efforts under environmental protection initiatives, focusing on three core pillars: afforestation, water conservation, and elimination of polythene usage. He emphasized the role of community mobilization through educational institutions, religious platforms, and local networks, noting that such initiatives have already expanded across a significant proportion of districts in India.

Citing successful examples from regions such as Gujarat including large-scale plantation drives, community-funded afforestation models, and construction of check dams for water conservation he demonstrated the potential of localized, participatory approaches in achieving tangible environmental outcomes.

In conclusion, Shri Jain stressed that sustainable environmental management must be rooted in mass awareness, behavioural change, and collective responsibility, advocating for scalable community-led models to address the intertwined challenges of deforestation, water scarcity, and waste management.

HIS HOLINESS SHRI ACHARYA LOKESH MUNI

His Holiness Shri Acharya Lokesh Muni articulated a deeply philosophical and ethical perspective on environmental sustainability, grounding contemporary ecological challenges in ancient wisdom, particularly the teachings of Mahavira. He emphasized the principle that while nature can fulfill human needs, it cannot sustain limitless human greed, underscoring the urgency of adopting restraint and mindful consumption as foundational to sustainable living.

Drawing upon the Jain doctrine of interconnected life forms encompassing earth, water, fire, air, vegetation, and all living beings he highlighted the intrinsic unity of ecological systems. This perspective aligns closely with modern notions of holistic sustainability and reinforces the idea that environmental degradation is both an external and internal crisis.

A central theme of his address was the critical role of lifestyle transformation. He stressed that policy frameworks alone are insufficient unless accompanied by behavioural change at the individual level. Using personal anecdotes, he illustrated how traditional practices rooted in resource conservation particularly water usage offer practical and sustainable models for contemporary society.

Acharya Lokesh Muni further introduced the concept of “internal pollution,” arguing that societal challenges such as conflict, negativity, and ethical decline are as detrimental as environmental degradation. He cautioned that unchecked social and psychological imbalances could undermine long-term sustainability, thereby expanding the discourse from ecological preservation to moral and cultural regeneration.

He also highlighted the scientific relevance of ancient insights, noting that traditional knowledge systems increasingly find validation in modern research. By positioning spiritual philosophy as complementary to



scientific inquiry, he advocated for an integrated approach that bridges tradition and modernity.

Concluding, he called for collective introspection and collaborative action, urging society to embrace values of compassion, restraint, and coexistence. He emphasized that sustainable development must be rooted in ethical consciousness and shared responsibility, ensuring harmony between human aspirations and ecological limits.



MS. SHWETA TYAGI

Ms. Shweta Tyagi delivered the formal Vote of Thanks, highlighted the Water Transversality Global Awards and Conclave as a significant platform for advancing dialogue, partnerships, and actionable pathways across the water–energy–health–environment nexus. She emphasized that the conclave, comprising over 25 sessions and 110 speakers, successfully fostered interdisciplinary engagement and collaborative thinking aimed at addressing complex sustainability challenges.

She acknowledged the critical role of institutional collaboration, particularly with United Nations Economic and Social Commission for Asia and the Pacific, alongside multiple ministries of the Government of India and a diverse network of national and international partners. This multi-stakeholder engagement, she noted, reflects the growing recognition that integrated approaches are essential for effective governance and sustainable development.

Ms. Tyagi underscored that the conclave was not merely an event but a catalyst for reflection, knowledge exchange, and alliance-building. She reiterated the importance of operationalizing the interconnected framework of water, energy, health, and environment, which remains central to achieving long-term sustainability goals.

Highlighting the work of the India Water Foundation, she noted its sustained focus on policy development, review, and grassroots engagement over the past 18 years, aligned with the localization and implementation of the Sustainable Development Goals. She emphasized a “people-first” approach, aimed at bridging policy frameworks with on-ground action and community participation. She also marked the institutional milestone of the Foundation's anniversary, commemorated through the release of a special postal cover by India Post, symbolizing recognition of its contributions to water governance and sustainability discourse.

KEY TAKEAWAYS

- The conclave crystallizes a mandate to move from one-off, multi-stakeholder dialogue towards sustained, long-term implementation anchored in continuous cross-sector collaboration.
- Integrated governance for water, energy, health, and environment must be institutionalized as ongoing coordination mechanisms rather than remaining event-driven.
- ESG transversality is recognized as a core operational framework for addressing interconnected sustainability challenges, not merely a conceptual narrative.
- Recognition through global platforms and awards underscores the importance of innovation, scalability, and replicable models in driving systemic sustainability change.
- Urban sustainability challenges mobility, water stress, pollution require integrated planning that aligns infrastructure, environment, and public behaviour under a people-first lens.
- Large conferences and conclaves should evolve into catalysts for alliance-building and action frameworks, with clear pathways for follow-through and accountability.
- Long-term sustainability requires a synthesis of policy, technology, community action, and ethical consciousness that harmonizes development aspirations with ecological limits.

INTEGRATED PATHWAYS: OPERATIONALISING THE WATER–ENERGY–HEALTH– ENVIRONMENT NEXUS FOR RESILIENT FUTURES

SESSION CONVENORS:

S.M. SEHGAL FOUNDATION

Speakers:

Ms. Pooja O. Murada, Principal Lead (Outreach for Development), SM Sehgal Foundation

Mr. Depinder Kapur, Head – Climate Centre for Cities, National Institute of Urban Affairs

Dr. Swayamprabha Das, Associate Vice President & Lead (Policy & Engagement), Development Alternatives

Mr. Prabhjot Sodhi, Senior Programme Director, Centre for Environment Education

Mr. Chetan Aggarwal, Independent Forest and Environmental Services Analyst

Moderator:

Mr. Lalit Mohan Sharma, Advisor and water management expert, SM Sehgal Foundation



(L-R): Ms. Pooja O. Murada, Mr. Lalit Mohan Sharma, Mr. Chetan Aggarwal, Dr. Swayamprabha Das, Mr. Prabhjot Sodhi, Mr. Depinder Kapur



environmental uncertainties.

MS. POOJA O. MURADA

Ms. Pooja O. Murada set the conceptual foundation for the session by emphasizing the inherent interconnectedness of climate change, water stress, energy access, and public health. She argued that these challenges cannot be addressed in silos, as fragmented interventions often lead to unintended consequences across sectors. Instead, she advocated for a systems-based nexus approach that aligns policy, implementation, and community engagement. Her remarks underscored the need for institutional coordination and multi-stakeholder collaboration to ensure that development pathways are both resilient and sustainable, particularly in the face of escalating

MR. DEPINDER KAPUR

Mr. Depinder Kapur stressed that infrastructure-centric approaches alone are insufficient to achieve sustainable and resilient outcomes. Drawing attention to urban systems, he pointed out that long-term success depends significantly on behavioural change and community adoption, particularly in areas such as water use efficiency, sanitation practices, and energy consumption. He highlighted that without embedding behavioural insights into policy design and program implementation, even well-funded infrastructure projects risk underperformance, thereby limiting their impact on public health and environmental sustainability.

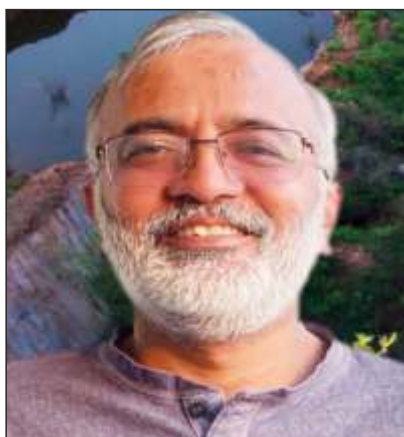


DR. SWAYAMPRABHADAS

Dr. Swayamprabha Das brought a critical social equity perspective to the discussion by underscoring the gendered dimensions of resource scarcity. She noted that women and girls disproportionately bear the burden of inadequate water and energy access, which in turn affects their health, education, and economic opportunities. Advocating for inclusive governance, she emphasized the importance of integrating grassroots voices especially those of women into decision-making processes. Her intervention called for policies that are not only technically sound but also socially just and representative of the most affected communities.

MR. PRABHJOT SODHI

Mr. Prabhjot Sodhi highlighted the importance of resource circularity and lifecycle thinking as essential components of the nexus approach. He argued that sustainability must move beyond linear consumption models toward systems that prioritize reuse, recycling, and efficient resource management. By embedding circular economy principles into water, energy, and waste systems, he suggested that it is possible to reduce environmental pressures while enhancing economic efficiency. His insights reinforced the need for long-term planning frameworks that consider the full lifecycle impacts of resource use.



MR. CHETAN AGGARWAL

Mr. Chetan Aggarwal emphasized the ecological dimension of the nexus by focusing on biodiversity conservation and landscape-level planning. He argued that environmental sustainability cannot be achieved without protecting natural ecosystems, which are integral to water cycles, climate regulation, and overall ecological balance. Highlighting tools such as ecological zoning and integrated land-use planning, he stressed the importance of aligning development activities with environmental thresholds. His intervention underscored that resilience must be rooted in maintaining ecological integrity alongside economic and social objectives.



MR. LALIT MOHAN SHARMA

Mr. Lalit Mohan Sharma, serving as the moderator, steered the discussion toward operationalizing the nexus framework by bridging theory with practice. He highlighted that while the water–energy–health–environment nexus is widely acknowledged in policy discourse, its real challenge lies in implementation at scale. He encouraged panellists to focus on actionable strategies, localized solutions, and governance mechanisms that can translate integrated thinking into measurable outcomes. His moderation emphasized pragmatic approaches, knowledge-sharing, and cross-sectoral alignment as critical enablers for advancing nexus-based interventions.

Collectively, the speakers reinforced that operationalizing the water–energy–health–environment nexus requires a shift from fragmented sectoral approaches to integrated, inclusive, and action-oriented frameworks. The session highlighted that resilience is contingent not only on technological and infrastructural solutions but equally on behavioural change, social inclusion, ecological stewardship, and participatory governance.

KEY TAKEAWAYS

- Nexus thinking must now move from conceptual acceptance to large scale execution through coordinated governance, context specific strategies, and rigorously tracked outcomes.
- Infrastructure for water, energy, and health will underperform unless policy design systematically incorporates behavioural insights that drive real adoption and efficiency.
- Equity and inclusion are core resilience determinants, requiring gender responsive and community driven governance where vulnerable groups actively shape decisions.
- Circular economy models that prioritize reuse, recycling, and lifecycle efficiency can simultaneously ease environmental stress and strengthen local economic performance.
- Long term nexus resilience depends on protecting biodiversity and aligning development with environmental thresholds through landscape scale planning and regulation.
- Community empowerment and shared ownership of interventions increase legitimacy, ensure local relevance, and enhance durability of sustainability outcomes.
- Integrating social, ecological, and economic dimensions into a single decision frame is essential to addressing root causes rather than symptoms of resource crises.



STREAMS OF CHANGE: COLLABORATIVE ACTION AGAINST ECOSYSTEM CONTAMINATION

SESSION CONVENORS:

India Water Partnership and India Water Foundation

Speakers:

Dr. S. K. Sharma, Principal Advisor- India Water Foundation and Former Member CGWB & Advisor Ministry of Water Resource Government of India.

Dr. Devansh Desai, Head, Department of Physics, Silver Oak University, Ahmedabad

Ms. Monika Antil, Prime Minister Fellow, CSIR-CSIO, Chandigarh

Mr. Deepak Jain, Founder, Vijayash Foundation

Moderator:

Dr. Veena Khanduri, Executive Secretary-cum-Country Coordinator, India Water Partnership
Moderator

Dr. T. S. Bisht, Chief Technical Advisor - Economic Development; Retd. IPS, Former



(L-R): Ms. Richika Lal, Dr. T.S. Bisht, Dr. S. K. Sharma, Dr. Veena Khanduri, Ms. Bhanu, Mr. Deepak Jain, Ms. Monika Antil



DR. S. K. SHARMA

Dr. S. K. Sharma emphasized the urgent need to transition towards innovative and integrated water management approaches in light of rising water demand and the rapid depletion of freshwater resources. He underscored that sustainable water governance must be rooted in a combination of advanced techniques and community-driven participation, highlighting mechanisms such as Managed Aquifer Recharge (MAR), Aquifer Storage and Recovery (ASR), and riverbank filtration systems as critical tools for augmenting groundwater and improving water quality. He drew attention to the importance of data-driven frameworks like the Water Resources Information

System (WRIS) and real-time groundwater monitoring for informed decision-making. Stressing the role of Integrated Water Resource Management (IWRM), he noted that water must be treated as an integral component of the ecosystem, requiring coordinated planning across sectors and regions. Dr. Sharma further elaborated on climate-proofing water infrastructure through resilience strategies such as reducing non-revenue water, enhancing storage, and promoting desalination and wastewater reuse. He also highlighted region-specific interventions from spring-shed management in Himalayan areas to saline intrusion control in coastal belts

while advocating for the adoption of urban solutions like radial collector wells and modular rainwater harvesting systems. Concluding his remarks, he called for strengthened hydrogeological modelling, ecosystem restoration, and capacity building to ensure long-term water security and sustainable development.

DR. DEVANSH DESAI

Dr. Devansh Desai presented a technically robust perspective on advancing water management through the integration of remote sensing and energy balance modelling within the Water–Energy–Health–Environment (WEHE) Nexus framework. He emphasized the critical importance of accurately estimating evapotranspiration (ET) as a key variable linking water and energy cycles, particularly for improving agricultural water productivity and irrigation management, which accounts for a substantial share of global freshwater use. Highlighting existing limitations in conventional ground-based measurements and coarse-resolution satellite data, he elaborated on the development of a calibration-free, high-resolution Surface Energy Balance (SEB)-based modelling framework (STIC-TI), which integrates thermal remote sensing data from platforms such as ECOSTRESS and MODIS. Dr. Desai demonstrated how this approach enables precise, field-scale estimation of ET across diverse agro-ecosystems, validated against eddy covariance measurements with high accuracy. He further underscored the significance of high spatial and temporal resolution data in capturing intra-seasonal variability and improving decision-making for farmers, water managers, and policymakers. Addressing broader challenges, he noted the constraints posed by data gaps, sensor limitations, and the need for continuous thermal observations, while advocating for future satellite missions such as TRISHNA to bridge these gaps. Concluding, he highlighted the transformative potential of digital agricultural water foot printing and remote sensing-driven analytics in enabling sustainable, data-driven water resource management and fostering informed transboundary and ecosystem-level governance.



MS. MONIKA ANTIL

Ms. Monika Antil, in her intervention, highlighted a pragmatic and scalable approach to addressing arsenic contamination in water through the development of a simple, reproducible electrochemical sensing technique. Moving beyond complex and cost-intensive nanomaterial-based solutions, she emphasized the need for accessible and reliable detection methods that can be deployed widely, particularly in arsenic-affected regions. She outlined the scientific rationale underpinning her work, focusing on the growing public health risks associated with arsenic in groundwater and the necessity for precise, low-limit detection. Detailing her methodology, she explained the use of (SWV) for determining arsenic concentrations,

including optimization of key parameters, calibration, and validation processes to ensure accuracy and repeatability. Monika further demonstrated the robustness of the proposed system through reproducibility studies and interference analysis, noting that even significantly elevated concentrations of competing anions did not substantially affect detection performance, thereby confirming high selectivity. She also presented comparative insights between the developed hardware setup and standard electrochemical systems, supported by validation through ICP-MS results. Concluding, she underscored the potential of such cost-effective and dependable sensing technologies to strengthen water quality monitoring frameworks and contribute to safer and more sustainable water management practices.

MR. DEEPAK JAIN

Mr. Deepak Jain's intervention centered on the foundational role of consciousness-driven leadership in advancing sustainable development, good governance, and societal well-being. He emphasized that governance frameworks whether ESG, policy systems, or institutional mechanisms are ultimately effective only when rooted in individual awareness and ethical responsibility. Drawing on the example of Gautama Buddha, he underscored that true transformation begins with inner awakening, where a shift in perception enables individuals to act with clarity, responsibility, and compassion. He argued that challenges such as climate change, environmental degradation, and global conflicts are not merely systemic failures but reflections of collective unconsciousness. Therefore, fostering self-awareness, ethical conduct, and mindfulness through practices such as introspection and meditation is essential for leaders to make decisions that are sustainable, inclusive, and aligned with long-term societal interests.



He further highlighted the urgency of integrating sustainability into everyday decision-making at both individual and institutional levels. Referencing India's global leadership, he noted achievements such as inclusive growth and climate commitments, while stressing that real progress depends on behavioural change across society. Deepak called for a transition toward renewable energy, circular economy practices, reduced consumption, and environmentally responsible lifestyles. He also emphasized the need to engage broader sections of society including youth, homemakers, and senior citizens in sustainability discourse and action. Concluding with a call to action, he advocated for conscious leadership that not only adopts ESG principles but actively drives measurable change, urging participants to commit to sustainable practices and contribute collectively toward building a resilient, equitable, and environmentally secure future.

KEY TAKEAWAYS

- Climate resilient water management must combine advanced techniques such as aquifer recharge and filtration with real time data platforms and localized interventions to tackle depletion and contamination.
- High resolution remote sensing and field level modelling are transforming water governance by enabling precise irrigation, better allocation, and evidence based policy across the nexus.
- Scaling low cost, reliable water quality monitoring technologies, including electrochemical sensing for contaminants like arsenic, is critical for public health protection in vulnerable regions.
- System wide approaches that integrate IWRM, wastewater reuse, and ecosystem restoration ensure water management contributes to broader environmental and climate objectives.
- Conscious leadership and ethical decision making are indispensable, because governance frameworks and technologies only deliver impact when backed by behavioural and societal change.
- Localized data platforms that link catchment dynamics with community level decision making strengthen adaptive management under climate and demand variability.
- Embedding these integrated approaches in institutional mandates and finance mechanisms is necessary to move from pilots to durable, scalable water resilience models.

FROM WATER BANKRUPTCY TO WATER RESILIENCE

SESSION CONVENORS:

BBC Media Action- India

Speakers:

Mr. Swapnil Chaturvedi, Director – Programmes, WaterAid India

Ms. Manjusha Manchala, Founder, Urban Forge Labs.

Mr. Debaranjan Pujahari, Partner - Agri Practice Area, Sattva Consulting

Moderator:

Ms. Soma Katiyar, Executive Creative Director, BBC Media Action



(L-R): Ms. Soma Katiyar, Mr. Debaranjan Pujahari, Ms. Manjusha Manchala, Mr. Swapnil Chaturvedi



MS. SOMA KATIYAR

The session, moderated by Ms. Soma Katiyar, reframed the discourse on water crises by moving beyond abstract metrics to the lived reality of “water bankruptcy,” emphasizing that the issue is deeply experiential, shaped by images of scarcity, disrupted livelihoods, and community distress. She highlighted that the global water challenge has transitioned from stress to systemic depletion, where consumption exceeds natural replenishment, and argued that addressing this requires not only infrastructure but also behavioural transformation driven by storytelling, communication, and emotional engagement. Drawing on field experiences and communication campaigns, she underscored that water scarcity disproportionately impacts women and vulnerable communities, and that effective interventions must connect technical issues to everyday realities, making them relatable and actionable for the public.

MR. DEBARANJAN PUJAHARI

Building on this framing, Mr. Debaranjan Pujahari situated agriculture at the centre of the water crisis, noting that it accounts for nearly 70% of global freshwater use and up to 90% in India, with approximately 87% of groundwater extraction directed toward the sector. He identified structural challenges including unsustainable cropping patterns misaligned with agroecological conditions, strong economic incentives that encourage water-intensive cultivation, and governance gaps that allow unchecked groundwater extraction. He



emphasized that farmers' behaviour is largely driven by market assurances rather than awareness, making financial incentives a critical lever for change. At the same time, he pointed to agriculture's potential as a pathway to resilience if supported through place-based strategies, improved advisory systems, and policy reforms that align economic returns with sustainable practices, while also highlighting the role of data visualisation and communication in influencing policy prioritisation.

MR. SWAPNIL CHATURVEDI

From a community perspective, Mr. Swapnil Chaturvedi illustrated how water bankruptcy manifests differently across contexts, from tribal regions experiencing displacement due to drying springs to villages dependent on centralized water systems that fail during disruptions. He stressed that resilience often emerges from within communities themselves, rooted in traditional knowledge and adaptive practices, and argued that water management is fundamentally a behavioural challenge rather than a purely technological one. He highlighted participatory tools such as village water mapping, real-time water quality testing, and community-led groundwater monitoring as effective mechanisms for fostering ownership and sustained engagement, demonstrating that when communities are involved in diagnosing problems and designing solutions, they are more likely to adopt and maintain them.



MS. MANJUSHA MANCHALA

Ms. Manjusha Manchala examined the urban dimension, pointing to a critical perception gap wherein water is treated as an infinite resource unlike metered utilities such as electricity, leading to inefficient consumption patterns. She identified key barriers to innovation, including fragmented data systems, outdated infrastructure, and challenges in scaling pilot solutions, noting that less than 5% of urban local bodies in India have water metering systems and a significant proportion of water remains unaccounted for. She emphasized the importance of integrating data-driven

decision-making, modernising infrastructure, and promoting circular water systems through wastewater recycling and reuse, while also addressing public health risks associated with distribution inefficiencies and household storage practices. She concluded that sustainable urban water management requires coordinated action across government, private sector, and communities, supported by behavioural change and systemic reforms.

Collectively, the session underscored that achieving water resilience requires a holistic approach that integrates behavioural insights, economic incentives, community participation, and technological innovation, recognizing that water challenges are not only technical or environmental issues but deeply social and human in nature.

KEY TAKEAWAYS

- Reframing scarcity as lived “water bankruptcy” shifts discourse from abstract numbers to human impacts, making behavioural and communication led interventions more compelling and actionable.
- Because agriculture dominates water use, re-engineering cropping patterns and incentives to match agro-ecological suitability can convert farming from a stressor into a driver of resilience.
- Community led tools such as local water mapping, groundwater monitoring, and decentralized decision processes show that outcomes are strongest when communities co create and own solutions.
- Urban water losses rooted in perception gaps, lack of metering, and aging systems require integrated management that combines technology, circularity (reuse and recycling), and behavioural correction.
- Long term water security depends on converging multiple levers behavioural change, policy incentives, data driven governance, infrastructure modernization, and traditional knowledge into a single resilience strategy.
- Communication strategies that translate complex risks into clear, localized narratives are key to shifting household and institutional practices at scale.
- Aligning livelihood security with water wise practices builds political and social support for reforms that might otherwise face resistance.



TOWARDS RESILIENT URBAN FUTURES: OPPORTUNITIES FOR FRESHWATER CONSERVATION IN INDIA THROUGH NATURE/ ECOSYSTEM BASED SOLUTIONS

SESSION CONVENORS:

IUCN and NIUA

Speakers:

Ms. Archana Chatterjee, Program Manager, IUCN, India

Mr. Jaidev Joshi, Program Officer, IUCN, India

Dr. Mahreen Matto, Team Lead, National Institute of Urban Affairs

Dr. C.R. Babu, Professor, Emeritus, Centre for Environmental Management of Degraded Ecosystems (CEMDE), Delhi University

Dr. Uday Bhonde, Senior Programme Specialist, NIUA

Ms. Nidhi Batra, Biodiversity Conservation and Blue Economy Portfolio Manager, Agence Française de Développement (AFD), New Delhi

Dr. Pushp Bajaj, Program Lead, Climate Resilience, Council on Energy, Environment and Water (CEEW)

Ms. Yogita Lokhande, Programme Component Manager, GIZ, India



(L-R): Mr. Jaidev Joshi, Dr. Uday Bhonde, Ms. Archana Chatterjee, Dr. C R Babu, Ms. Nidhi Batra, Dr. Pushp Bajaj, Ms. Yogita Lokhande



MS. ARCHANA CHATTERJEE

Ms. Archana Chatterjee set the context for advancing resilient urban futures through the integration of Nature-based Solutions (NbS), emphasizing their critical role in addressing freshwater conservation challenges in rapidly urbanizing landscapes. She highlighted that India's accelerating urbanization from mountainous regions to coastal zones has intensified vulnerabilities such as urban flooding, heat stress, and ecological degradation, necessitating sustainable and adaptive planning approaches.

She underscored the growing global and institutional focus on NbS, referencing IUCN's strategic vision "Unite for Nature" (2030), which prioritizes sustainable cities with a strong emphasis on water security and stewardship. Within this framework, she emphasized the importance of mainstreaming ecosystem-based approaches into urban development to enhance resilience and sustainability outcomes.

Ms. Chatterjee also drew attention to key tools and frameworks developed by IUCN, including the global NbS standards and the Urban Nature Index, which support evidence-based planning, implementation, and monitoring of urban ecological interventions. These tools, she noted, are essential for defining, scaling, and

evaluating NbS in policy and practice.

She highlighted the importance of institutional collaboration, particularly with National Institute of Urban Affairs (NIUA), to integrate ecological principles into urban governance and planning systems. She further emphasized the need to bridge gaps between policy intent and on-ground implementation by engaging urban local bodies, planners, and diverse stakeholders across the urban ecosystem.

Outlining the objectives of the session, she stressed the need to: build a clear understanding of NbS in urban contexts; identify systemic barriers to their adoption; and develop practical pathways for scaling successful interventions. She noted that while NbS is not a new concept, its consolidation as a policy and financing framework offers significant potential to accelerate adoption and impact.

MR. JAIDEV JOSHI

Mr. Jaidev Joshi outlined the evolution of the global urban conservation agenda within IUCN, emphasizing that rapid urbanization positions cities as critical actors in shaping biodiversity and sustainability outcomes. He noted that since the adoption of the urban agenda at the 2016 World Conservation Congress, IUCN has increasingly focused on integrating nature into urban planning through tools, standards, and multi-level governance frameworks.

A key focus of his intervention was clarifying the concept of Nature-based Solutions (NbS). He underscored that NbS are often misunderstood and misapplied, stressing that true NbS must be rooted in functioning ecosystems, simultaneously delivering societal benefits and measurable biodiversity gains. He distinguished NbS from “nature-derived” and “nature-inspired” approaches, cautioning against conceptual dilution in policy and practice.

Mr. Joshi highlighted that NbS represent critical natural infrastructure for addressing urban challenges such as heat stress, flooding, and climate risks. He cited global and national evidence demonstrating their economic and environmental value, including: Wetland ecosystems contributing significantly to global economic value and climate mitigation; Urban green infrastructure reducing heat island effects and delivering high returns on investment; Emerging Indian examples such as heat action plans and wetland restoration initiatives.

He further emphasized that NbS offer multi-sectoral co-benefits, including climate regulation, public health improvements, enhanced mobility, and economic revitalization, thereby making them essential for sustainable urban transitions.

However, he raised concerns regarding current urban development practices in India, noting that large-scale infrastructure projects often prioritize grey infrastructure and aesthetic urbanism over ecological functionality. He stressed the need to systematically integrate NbS into planning frameworks, urban design, and investment decisions.



DR. MAHREEN MATTO

Dr. Mahreen Matto highlighted that India's rapid urban transition is placing cities at the forefront of the climate crisis, with increasing exposure to heat stress, flooding, drought, biodiversity loss, and ecological degradation. She emphasized that while climate variability is a critical driver, anthropogenic factors including unsustainable land-use change, inadequate planning, and disregard for ecological carrying capacity are significantly exacerbating urban vulnerabilities, particularly in fragile regions such as the Himalayan ecosystem.

Positioning NIUA as a key policy and technical institution, she outlined its role in developing integrated urban planning frameworks that embed ecosystem-based approaches into city development. These include the promotion of green infrastructure, nature-based solutions (NbS), and

ecosystem-based adaptation, alongside a strong focus on water, waste management, and social equity, particularly for vulnerable urban populations.

Dr. Matto presented several flagship interventions: Urban River Management Plans (URMPs) under the National Mission for Clean Ganga, adopting a holistic framework integrating ecological, economic, and social dimensions, now being scaled across multiple cities; The EPIC programme) in partnership with IUCN, aimed at mainstreaming NbS within urban local bodies and building technical capacity through data-driven planning tools; The PARVAT initiative, focusing on water and sanitation solutions in the Indian Himalayan Region and neighbouring geographies, emphasizing context-specific, decentralized, and ecosystem-sensitive approaches.

She underscored that effective urban interventions must be community-centric and financially convergent, leveraging multiple national missions (such as AMRUT and Swachh Bharat) while ensuring inclusive participation, especially of low-income groups.

A critical concern raised was the issue of urban carrying capacity, particularly in hill cities. Dr. Matto stressed the urgent need for standardized methodologies to assess ecological and infrastructural thresholds, noting that several Himalayan cities are already exceeding sustainable limits, leading to severe environmental and service delivery risks.

DR. C.R. BABU

Dr. C.r. Babu underscored that the fundamental challenge confronting urban sustainability is the systemic degradation of natural ecosystems due to unplanned urbanization, which has replaced functional forest ecosystems with ornamental parks and gardens that fail to deliver critical ecosystem services. He emphasized that such green spaces, while aesthetically valuable, do not contribute meaningfully to air purification, heat mitigation, groundwater recharge, carbon sequestration, or flood regulation.

He argued that restoring ecological functionality, rather than merely enhancing urban greenery, is essential. This requires a paradigm shift toward ecological restoration as a core nature-based solution (NbS). Biodiversity parks, as developed under his leadership, exemplify this approach by restoring multiple ecosystem types within urban landscapes, thereby delivering both ecological integrity and societal benefits.



Drawing from the Delhi experience, Dr. Babu highlighted the restoration of riverine ecosystems along the Yamuna floodplains, integrating riparian zones, wetlands, grasslands, and upland buffers. He stressed that river rejuvenation cannot be achieved through wastewater treatment alone, but requires restoring the entire ecological network of the river system, including floodplains and associated habitats, which collectively regulate water quality and flow.

He further presented innovations in decentralized wastewater treatment using nature-based systems, including simplified constructed wetlands and in-situ filtration mechanisms. These systems, when properly designed and maintained, can achieve effective water purification within short timeframes. However, he cautioned that many imported NbS models are inadequately adapted to Indian conditions and require context-specific design modifications.

A key concern raised was the challenge of standardizing nature-based solutions, given their inherent ecological variability across regions. Dr. Babu noted that ecological restoration is site-specific and dynamic, influenced by local biodiversity, hydrology, and climatic conditions, making uniform standards difficult to implement.

He concluded by emphasizing that successful NbS must integrate biodiversity conservation with societal benefits, and require sustained operation, maintenance, and technical expertise. The Delhi Biodiversity Parks model demonstrates that large-scale ecological restoration within cities can significantly enhance urban resilience, improve environmental quality, and support long-term sustainability.



DR. UDAY BHONDE

Dr. Uday Bhonde emphasized that nature-based solutions (NbS) are emerging as a critical pathway for achieving resilient and livable urban futures in India, particularly in the context of increasing climate variability. He highlighted that Indian cities are experiencing extreme climatic events, including recurrent urban flooding during monsoons and acute water scarcity during summers, underscoring the urgent need for adaptive and sustainable urban planning approaches.

He noted that while there is growing recognition among urban local bodies (ULBs) regarding the importance of NbS and blue-green infrastructure, these solutions are often misinterpreted as purely aesthetic or recreational interventions, rather than functional systems delivering essential ecosystem services such as climate regulation, water management, and resilience building.

Drawing from NIUA's on-ground experience, Dr. Bhonde outlined key systemic barriers to the large-scale adoption and mainstreaming of NbS: Procurement Challenges: Absence of standardized procurement frameworks and schedules of rates for NbS, unlike conventional grey infrastructure; Capacity Constraints: Limited availability of skilled personnel within ULBs to design, implement, and maintain such systems; Financing Gaps: Lack of dedicated financial instruments and funding mechanisms to support NbS implementation; Institutional Integration: Difficulty in embedding NbS within formal urban planning instruments such as master plans and city development plans.

He stressed that addressing these constraints is essential to transition NbS from pilot-level experimentation to mainstream urban practice. He further highlighted NIUA's role in capacity building, policy support, and demonstration projects, including urban river management planning and ecosystem-based adaptation initiatives, which aim to enable cities to adopt these approaches effectively.

Dr. Bhonde concluded by underscoring the need to integrate biodiversity considerations into urban development, noting that ecological systems must be treated as core urban infrastructure, rather than peripheral elements, in order to achieve sustainable and resilient city futures.

MS. NIDHI BATRA

Ms. Nidhi Batra emphasized that biodiversity should be recognized as a core outcome indicator of functional and resilient ecosystems, rather than being treated merely as a co-benefit of environmental interventions. She noted that the return of species such as apex predators in restored landscapes serves as a powerful signal of ecological recovery and system integrity, particularly in urban contexts.

She highlighted a critical gap in current planning and evaluation frameworks, where focus remains largely on output-based metrics such as water quality indicators (e.g., BOD levels) or number of trees planted while biodiversity indicators are often excluded from both design and impact assessment stages. This results in a narrow, sectoral approach to nature-based solutions (NbS), limiting their long-term effectiveness.

Drawing from recent project assessments, she pointed out that many urban NbS initiatives in India especially those addressing flooding fail to integrate biodiversity considerations, thereby overlooking their role in enhancing ecosystem stability and resilience. She stressed that biodiversity must be embedded from the planning stage, not retrofitted as an afterthought.

On financing, Ms. Batra observed that current funding mechanisms remain skewed toward simplistic metrics, such as tree plantation targets, often driven by corporate social responsibility (CSR) priorities. She highlighted the emerging potential of innovative instruments such as biodiversity credits, which could help mobilize



resources and incentivize more holistic ecosystem restoration approaches.

She concluded by underscoring that mainstreaming biodiversity into NbS frameworks is essential for achieving durable ecological outcomes, and requires a shift toward integrated, outcome-oriented planning and financing models that recognize biodiversity as central to urban resilience.

DR. PUSHPBAJAJ

Dr. Pushp Bajaj highlighted the critical need to strengthen the economic case for nature-based solutions (NbS) by systematically evaluating their costs and benefits in comparison to conventional grey infrastructure. He emphasized that investment decisions whether by governments, private sector actors, or multilateral institutions are fundamentally driven by clear assessments of return on investment (ROI).

In this context, he presented CEEW's development of the “ENSURE” toolkit, designed to enable comprehensive cost-benefit analysis of NbS interventions. The tool facilitates the quantification of not only financial returns, but also social and environmental co-benefits, thereby supporting a more holistic valuation of ecosystem-based approaches. He noted that the toolkit is being operationalized into a user-friendly dashboard for wider adoption by policymakers and practitioners, with pilot applications currently underway in Himachal Pradesh.

Dr. Bajaj underscored that a key barrier to scaling NbS is their perception as public goods without measurable economic returns. By contrast, he argued that robust valuation frameworks can reposition NbS as “bankable investments”, capable of generating multi-dimensional value and attracting diversified financing.

He concluded that advancing NbS adoption requires integrating economic valuation tools into planning and decision-making processes, thereby enabling stakeholders to make evidence-based comparisons between grey and green infrastructure options and unlocking greater financial flows toward sustainable urban resilience interventions.



MS. YOGITA LOKHANDE

Ms. Yogita Lokhande highlighted practical approaches to mainstreaming nature-based solutions (NbS) within urban planning systems, drawing from implementation experience in Tamil Nadu. She emphasized the importance of proactive integration of NbS in Tier-2 cities, prior to the onset of intensive urbanization pressures, through the development of a state-level NbS framework in collaboration with the State Planning Commission.

The framework adopts a comprehensive, end-to-end approach, encompassing vulnerability assessment, planning, and financial structuring. It is being further developed into a digital decision-support toolkit, enabling urban local bodies to input contextual data and identify suitable NbS interventions. A key objective is to move beyond pilot projects toward city-wide scaling of NbS.

She also presented the “sponge park” framework in Chennai, which integrates blue-green-grey infrastructure systems. This approach links neighbourhood parks, wetlands, and storm water drainage networks to simultaneously address urban flooding, water retention, and ecosystem restoration. The initiative demonstrates how hydrological management and biodiversity revival can be co-designed within urban systems.

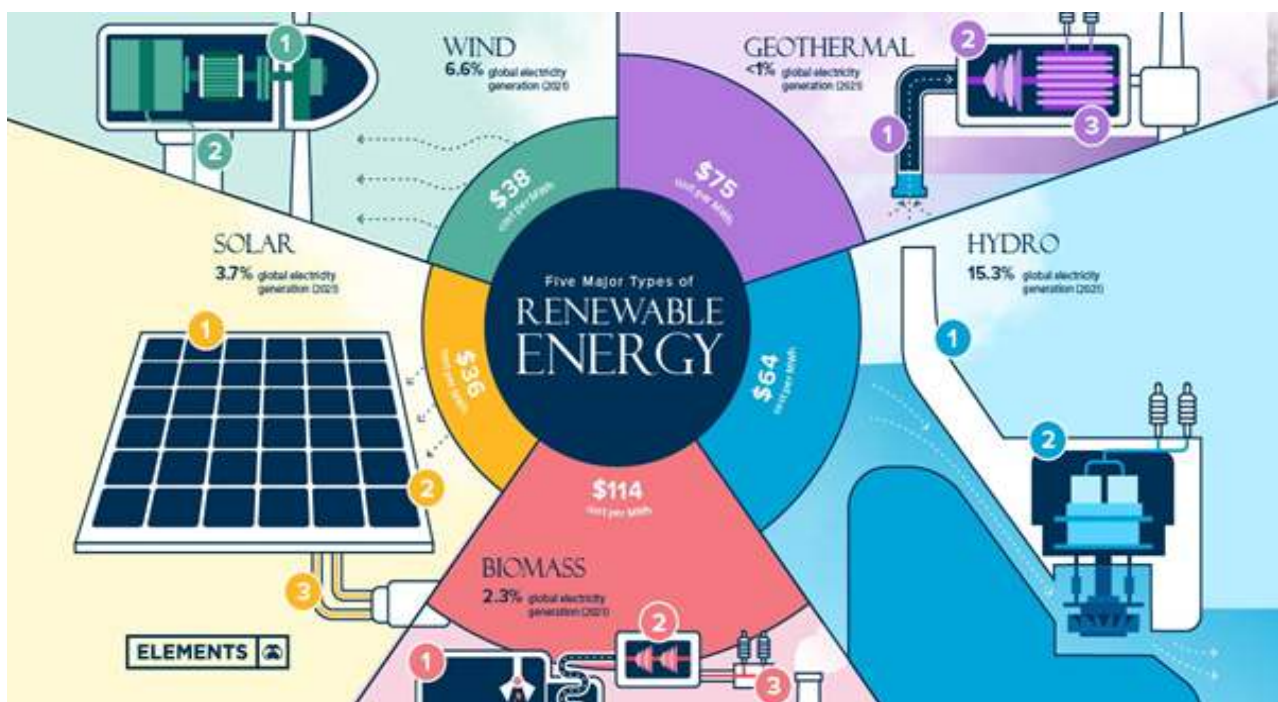
Ms. Lokhande underscored that successful implementation requires institutional leadership and local champions, as well as cross-sectoral coordination within municipal structures. She further noted that knowledge transfer across states including Assam, Telangana, Kerala, and Odisha is generating interest in adapting similar frameworks.

However, she emphasized that NbS are inherently context-specific, and cannot be replicated through a uniform template. Ongoing efforts in cities such as Guwahati and Hyderabad are focused on developing localized roadmaps to integrate NbS into planning frameworks.

She concluded that scaling NbS in India requires structured planning tools, digital platforms, and adaptive frameworks, supported by institutional capacity and contextual customization.

KEY TAKEAWAYS

- Nature based Solutions must be treated as core urban infrastructure that delivers critical services such as flood regulation, groundwater recharge, microclimate moderation, and climate resilience.
- Ecological functionality biodiversity rich, multi layered ecosystems like wetlands, floodplains, and biodiversity parks provides far greater resilience than ornamental greening or cosmetic landscaping.
- Scaling NbS requires systemic enablers: integration into master plans, procurement rules, financing frameworks, and institutional processes rather than isolated, project level pilots.
- Robust economic valuation that captures environmental and social co benefits is necessary to reposition NbS as “bankable” investments instead of discretionary public goods.
- Context specific, data driven, and participatory design ensures that NbS solutions are locally appropriate, socially accepted, and operationally sustainable over the long term.
- Strong engagement of urban local bodies in planning, implementation, and maintenance is essential to mainstream NbS within everyday municipal governance.
- Digital decision support tools that link ecological data with planning choices can institutionalize NbS as a default option in urban development.



TECHNOLOGICAL INNOVATIONS FOR NEXUS OPTIMIZATION

SESSION CONVENORS:

International Commission on Irrigation & Drainage (ICID)

Speakers:

Mr Rishi Srivastava, Consultant, ICID

Dr. Alok K Sikka, Emeritus Scientist, IWMI

Dr. Chandan Kumar Thakur, Senior Vice President of Marketing at Vassar Labs



(L-R): Mr. Rishi Srivastava, Dr. Alok K Sikka, Dr. Chandan Kumar Thakur

MR. RISHI SRIVASTAVA

Mr. Rishi Srivastava introduced the side event on “Technological Innovations for Nexus Optimization,” outlining its structure and thematic focus on advancing integrated solutions across water, energy, and food systems. He concluded by emphasizing the session's objective to showcase innovative approaches for maximizing resource efficiency and output within the water–energy–food nexus, and invited the first speaker to begin the presentation.



DR. ALOK K. SIKKA

Dr. Alok K. Sikka emphasized the need to operationalize the Water–Energy–Food–Environment (WEF) nexus through measurable and quantifiable frameworks, moving beyond conceptual discourse toward actionable decision-making tools. Drawing from ongoing work in the Ganga Basin, he highlighted efforts to transform traditional trade-offs into “nexus gains” through integrated system analysis.

He noted that Indian agriculture is highly water- and energy-intensive, with approximately 20% of national energy consumption linked to agriculture, primarily through groundwater extraction. This creates systemic inefficiencies, where inefficient water use directly translates into energy inefficiency and suboptimal agricultural productivity, underscoring the need for integrated policy and planning.

A key challenge identified was the lack of coherence across sectoral policies, with multiple ministries operating in silos. Dr. Sikka stressed that nexus optimization requires a systems-based approach, where water, energy, and food systems are planned in unison, with water acting as the central integrating element.

To address this, he presented the development of an integrated Decision Support System (DSS) combining hydrological modelling (e.g., SWAT+ and groundwater models) with scenario-based analysis. This system enables policymakers to simulate interventions such as irrigation efficiency improvements, groundwater recharge, and crop diversification and assess their impacts across sectors under current and future climate scenarios.

A significant innovation is the creation of a composite WEF index, built on indicators of availability and productivity across water, energy, and food systems. This index allows for quantitative assessment of nexus performance, enabling comparison between “business-as-usual” and intervention scenarios. Applications demonstrated that targeted interventions such as improving irrigation efficiency in high groundwater-extraction zones can yield measurable gains in overall system sustainability.

Dr. Sikka further highlighted the importance of spatially disaggregated analysis, allowing interventions to be tailored at district, sub-basin, and basin scales, recognizing that impacts vary significantly across regions.

He also presented evidence that crop diversification strategies can simultaneously reduce groundwater and energy footprints while enhancing economic and nutritional productivity, illustrating the potential for win-win outcomes within the nexus framework.

Looking ahead, he emphasized the role of advanced technologies, including AI/ML, IoT-based monitoring, and digital twins, in enabling real-time, adaptive management of resource systems. However, he cautioned that such tools must be complemented by economic valuation (monetization of benefits) to support investment decisions.

He concluded that effective nexus optimization requires: Integrated, transdisciplinary approaches; robust decision-support tools and scenario modelling; policy coherence across sectors; and a shift toward data-driven, system-level planning

Ultimately, he stressed that sustainable water management cannot be achieved in isolation, but must be embedded within broader resource interdependencies.

DR. CHANDAN KUMAR THAKUR

Dr. Chandan Kumar Thakur presented a comprehensive overview of AI-driven digital public infrastructure (DPI) for integrated water, agriculture, and climate management, emphasizing the transition from siloed systems to end-to-end, data-driven decision ecosystems.

At the core of his intervention was the AquaWise platform, which integrates multi-source data satellite imagery (e.g., Sentinel, Landsat), IoT sensors, GIS, and edge computing into real-time decision support systems (DSS). These systems enable governments and stakeholders to move from reactive to predictive and proactive governance, improving efficiency, reducing losses, and safeguarding livelihoods.

A key conceptual contribution was the “source-to-consumption” continuum, wherein water systems are digitally mapped and managed across the entire cycle:

- Water resource level (rainfall, reservoirs, groundwater)
- Urban systems (distribution networks, leak detection, demand forecasting)
- Agricultural systems (irrigation optimization, crop management)
- Climate risk systems (flood and drought forecasting)

This integrated approach reflects a true operationalization of the water–energy–food–climate nexus, enabled through AI and digital twins.

Dr. Thakur highlighted several flagship applications:

- **Water Resource Information Systems (WRIMS):** Large-scale platforms providing real-time monitoring, predictive analytics, and water budgeting, including flood forecasting and groundwater tracking.



Implementations across Indian states (e.g., Andhra Pradesh, Telangana, Tamil Nadu, Kerala) demonstrate enhanced decision precision and disaster preparedness.

- **Urban Water Management (Aqua City):** AI-enabled systems for leak detection, non-revenue water reduction, and demand forecasting, integrating SCADA and field data to enable proactive infrastructure management and citizen engagement.
- **Irrigation Intelligence (Aqua Irrigation):** Digital twins of canal networks combined with AI-based crop-water demand estimation, enabling optimized water release, reduced wastage, and improved agricultural productivity across large command areas.
- **Farm-Level DPI (FieldWise):** A comprehensive agricultural data stack linking farm boundaries, crop cycles, and farmer profiles, supporting: crop planning and advisory; pest forewarning (predictive, not reactive); yield estimation and market linkages; enhanced farmer incomes and climate resilience

He emphasized that such systems are scalable, interoperable, and cloud-agnostic, enabling integration with public systems and third-party innovations through low-code/no-code architectures.

A critical insight was the role of digital twins and AI in managing extremes both water excess (floods) and water scarcity (droughts) through early warning systems and scenario-based planning. This is particularly relevant in the context of increasing climate variability and urban vulnerability.

Dr. Thakur concluded by stressing that true nexus optimization requires integrated digital ecosystems, where data interoperability, real-time analytics, and stakeholder accessibility are central. Moving beyond fragmented interventions, such platforms enable holistic governance across water, agriculture, and climate systems, ensuring sustainability, efficiency, and resilience at scale.

KEY TAKEAWAYS

- Effective Water–Energy–Food–Environment integration requires shifting from conceptual rhetoric to quantified optimization using measurable indices, scenario models, and decision support systems.
- The deep interdependence between groundwater use, energy consumption, and agriculture makes integrated interventions such as irrigation efficiency and crop diversification critical levers for simultaneous resource and productivity gains.
- AI enabled digital public infrastructure that combines satellite data, IoT sensors, GIS, and digital twins can manage resources across the full “source to consumption” cycle.
- Predictive and adaptive management tools, including early warning systems and machine learning models, enable proactive responses to floods, droughts, and demand fluctuations under climate stress.
- Spatially targeted, basin and sub basin level interventions supported by interoperable data systems ensure that nexus strategies are both context specific and economically viable.
- Quantifying “nexus gains” allows policymakers and investors to compare trade-offs and co benefits transparently, improving the quality of planning and finance decisions.
- Embedding these analytical tools in institutional workflows can turn WEF nexus approaches into routine practice rather than episodic projects.

WETLANDS AS NEXUS INFRASTRUCTURE: INTEGRATING WATER, ENERGY, HEALTH, AND ENVIRONMENT FOR RESILIENT FUTURES

SESSION CONVENORS:

Wetlands International – South Asia

Speakers:

Mr. Ravi Prakash, Wetland specialist, Wetlands International South Asia

Ms. Archana Chatterjee, Programme Manager, IUCN-India

Mr. Suresh Babu Director, River, Wetland and Water Policy, WWF

Dr. Gopal Kumar, Interim Country Representative, IWMI-India



(L-R): Mr. Ravi Prakash, Ms. Archana Chatterjee, Mr. Suresh Babu, Dr. Alok K Sikka, Dr. Veena Khanduri, Ms. Kavita Prasad, Dr. Gopal Kumar



MR. RAVI PRAKASH

Mr. Ravi Prakash, representing Wetlands International South Asia, set a strong conceptual and policy-oriented foundation for positioning wetlands as a central pillar within the water–energy–health–environment nexus. He underscored that contemporary global challenges ranging from climate change to food and water insecurity are deeply interconnected, yet policy responses remain fragmented and sectoral. This disconnect, he argued, necessitates a paradigm shift toward integrated, nexus-based planning.

Framing wetlands as “nature-based solutions,” he articulated their multifunctional role across sectors. Wetlands contribute significantly to water security through flood buffering, groundwater recharge, and natural purification processes. In the energy dimension, he highlighted the efficiency of constructed wetlands as low-energy alternatives to conventional wastewater treatment systems, achieving up to 80–90% energy savings. From a health perspective, wetlands sustain livelihoods and nutrition illustrated through wetland-based food systems such as fox nuts, fisheries, and rice cultivation while also improving WASH outcomes. Ecologically, wetlands function as biodiversity hotspots, supporting a substantial proportion of flora and fauna.

He further emphasized that despite these systemic benefits, wetlands remain undervalued in mainstream planning, often treated as residual land rather than strategic ecological infrastructure. Governance challenges including fragmented institutional mandates, weak enforcement, and lack of recognition in land records continue to impede effective conservation and integration.

Importantly, he identified actionable entry points for mainstreaming wetlands within the nexus framework. These include integrating wetlands into river basin and watershed management, embedding them in urban water and wastewater planning (notably within schemes such as AMRUT and Swachh Bharat), and leveraging them in climate adaptation and WASH strategies. He also stressed the need for cross-sectoral collaboration and institutional convergence to unlock their full potential.

In moderating the session, he steered the discourse toward critical policy questions: how wetlands can be scaled as low-energy infrastructure solutions, how to strengthen institutional mechanisms for their governance, and how to develop sustainable economic models particularly linking wetland-dependent communities to markets. The discussion also surfaced structural constraints such as limited empowerment of state authorities, challenges in addressing encroachment, and the need for behavioural change alongside regulatory frameworks.

MS. ARCHANA CHATTERJEE

Ms. Archana Chatterjee provided a critical policy and governance perspective on mainstreaming wetlands within the water–energy–health–environment nexus, emphasizing structural gaps in planning frameworks and institutional recognition. She underscored that while river basins are well integrated into national planning systems, wetlands continue to be treated as isolated ecosystems, rather than intrinsic components of hydrological and ecological systems. This conceptual disconnect, she noted, significantly limits their integration into basin-level planning and resource management strategies.



A key governance challenge highlighted was the classification of wetlands as “wastelands” in revenue records, which undermines their ecological and economic value. She stressed that this misclassification not only weakens protection mechanisms but also restricts allocation of financial and managerial resources. Addressing this requires targeted policy reform to reclassify wetlands as productive ecological assets within land-use systems.

She acknowledged the growing momentum in wetland conservation through national initiatives such as expansion of Ramsar site designations and programmes like Amrit Sarovar, but pointed out critical implementation gaps. Notably, wetlands located outside protected areas face higher ecological degradation due to lack of formal protection, dedicated management frameworks, and funding support. Even within protected areas, wetlands are often subsumed under terrestrial-focused management plans, limiting ecosystem-specific interventions.

A significant opportunity identified was the application of Other Effective Area-Based Conservation Measures (OECMs) as a scalable pathway for wetland conservation. She explained that wetlands particularly those outside protected areas, including satellite wetlands, floodplains, coastal systems, and even agro-ecosystems such as rice paddy can be recognized as OECMs. This would enable dual benefits of biodiversity conservation and livelihood support, especially for communities dependent on wetland ecosystems.

Drawing from ongoing work across coastal, Himalayan, and floodplain regions, she emphasized the potential of wetlands to contribute to ecosystem-based fisheries management, biodiversity conservation, and climate resilience, provided appropriate policy guidelines are formalized. However, she noted that operationalization is contingent upon the timely release of national OECM guidelines.



MR. SURESH BABU

Mr. Suresh Babu underscored that while wetlands are increasingly recognized within river basin strategies particularly under initiatives like National Mission for Clean Ganga their integration remains largely site-specific rather than system-oriented. He emphasized that wetlands are critical to sustaining both Aviral Dhara (continuous flow) and Nirmal Dhara (clean water), contributing to aquifer recharge, ecological flows, and water quality improvement.

A central concern highlighted was the absence of institutional mechanisms for basin-scale governance. River basins span multiple administrative boundaries, yet governance structures remain

fragmented across states and districts. This results in wetlands being managed in isolation, ignoring their hydrological and ecological connectivity with rivers. Mr. Babu stressed the need to adopt a three-dimensional connectivity framework longitudinal (river flow), lateral (floodplains and wetlands), and vertical (groundwater interactions) with wetlands positioned as a critical nexus component.

Drawing from field experience, he presented the case of the Aril River in Uttar Pradesh, where restoration efforts focused on reconnecting wetlands with their catchments and river systems. Through coordinated action with district administrations in Moradabad and Bareilly, and over a five-year period, the intervention successfully revived groundwater recharge and base flows, demonstrating the transformative potential of wetland-river reconnection.

Mr. Babu further highlighted challenges in urban and peri-urban contexts, where wetlands are frequently misclassified as wastelands and disconnected from planning frameworks. He cited the case of peri-urban Bengaluru, where rapid urban expansion disrupted traditional tank cascade systems, leading to increased flood vulnerability. Restoration efforts demonstrated that re-establishing hydrological linkages within wetland networks can significantly enhance urban resilience.

He emphasized the need to build multi-sectoral capacity among planners, engineers, and agricultural stakeholders, advocating for a shift from purely grey infrastructure to hybrid approaches integrating nature-based solutions. Importantly, he clarified that wetlands should not be seen as standalone solutions but as integral components within broader water and land management systems.

DR. GOPAL KUMAR

Dr. Gopal Kumar emphasized that the prevailing linear water management paradigm extract, use, and discharge is fundamentally unsustainable, particularly in the face of rapidly escalating demand. He highlighted that India's water demand is projected to rise from approximately 700 BCM to nearly 1,000–1,100 BCM by 2050, potentially approaching the limits of available resources. In this context, he identified wastewater estimated to reach nearly 100 BCM as a critical, underutilized asset, underscoring the urgent need to transition toward a circular water economy.



Central to this transition is the role of wetlands as natural infrastructure for water treatment, reuse, and system buffering.

Drawing on examples such as the East Kolkata Wetlands, he illustrated how wetlands can enable high levels of circularity by integrating wastewater treatment with productive reuse, particularly in peri-urban agriculture. While acknowledging the need to refine such models, he stressed their value as replicable frameworks, especially through the deployment of constructed wetlands in areas lacking natural systems.

A key intervention highlighted was the strategic importance of small and decentralized wetlands, which have largely been neglected in policy and planning discourse. Dr. Kumar noted that while global and national attention has focused on large or Ramsar Convention on Wetlands-designated sites, India hosts an extensive network of smaller wetlands that are critical for local hydrological balance, wastewater management, and climate resilience.

He brought particular attention to rural water dynamics, emphasizing that decentralized wastewater generation in rural areas often exceeds urban volumes. Changing water use patterns driven by increased groundwater extraction and unregulated pumping have led to persistent waterlogging and drainage challenges. In this context, small wetlands, historically functioning as natural drainage and buffer systems, can be revitalized to:

Dr. Kumar advocated for hybrid approaches, combining natural wetland systems with minimal engineered interventions, as a pragmatic and scalable alternative to conventional, energy-intensive treatment infrastructure.

On governance and policy, he argued against the creation of new standalone frameworks, instead recommending mainstreaming wetlands within existing development programs. He cited instruments such as

watershed development initiatives and decentralized rural employment schemes as viable platforms for integrating wetland management into planning and implementation. He further stressed the importance of embedding wetlands into multi-tiered planning systems, particularly at the Gram Panchayat, block, and district levels, to ensure both institutional ownership and financial allocation.

In conclusion, Dr. Kumar underscored that the pathway to scaling wetland-based solutions lies not in policy proliferation but in operationalizing existing frameworks through capacity building, institutional empowerment, and localized planning integration. He identified wetlands especially small and decentralized systems as indispensable components of future water security strategies, enabling circularity, resilience, and sustainable resource management across rural and peri-urban landscapes.

KEY TAKEAWAYS

- Wetlands must be recognized as high value nexus infrastructure that simultaneously delivers water security, low energy treatment, livelihood support, and biodiversity conservation.
- Effective outcomes require embedding wetlands within basin scale and hydrological connectivity frameworks, linking rivers, floodplains, and groundwater instead of managing sites in isolation.
- Misclassification of wetlands as “wastelands” and their exclusion from formal land use systems undermines conservation, calling for targeted regulatory and institutional reforms.
- Natural and constructed wetlands can underpin a circular water economy by treating wastewater as a resource, reducing treatment costs and dependence on energy intensive grey infrastructure.
- Decentralized, context specific wetland models especially in small and peri urban settings are critical pathways for scalable adoption and resilience.
- Integrating wetlands into local governance and development schemes from village to district level ensures long term management, funding, and ownership.
- Positioning wetlands within climate and disaster risk strategies strengthens both adaptation outcomes and community livelihoods.



WATER TRANSVERSALITY IN ACTION – FOR ENERGY, ENVIRONMENT AND HEALTH NEXUS

SESSION CONVENORS:

India Water Partnership and India Water Foundation

Speakers:

Ms. Kavita Prasad, Consultant, India Water Foundation

Mr. Anoop Dongre, Research Scholar, Department of Civil and Environmental Engineering, IIT Delhi

Mr. Gopal Prasad Patel, Research Scholar, Department of Civil and Environmental Engineering, IIT Delhi

Ms. Hiranya Tallam, Business Development lead, Real Tech GPS Systems

Mr. Parth Bhatt, Chairperson, Board of Directors, ECB Sustainable Youth Foundation

Ms Shreya Pathak, Media Trainee, All India Radio

Moderator:

Dr. Veena Khanduri, Executive Secretary-cum-Country Coordinator, India Water Partnership



(L-R): Mr. Neeraj, Mr. Gopal Prasad Patel, Mr. Ashish Sharma, Dr. Veena Khanduri, Ms. Shreya Pathak, Ms. Richika Lal, Mr. Anoop Dongre, Ms. Hiranya Tallam, Mr. Parth Bhatt



DR. VEENA KHANDURI

Dr. Veena Khanduri framed the session as a continuation of an ongoing knowledge dialogue, emphasizing its role as a follow-up to prior deliberations and as part of a sustained effort to deepen discourse on water and nexus-related challenges. She underscored that the value of such platforms lies not in scale but in the quality and focus of engagement, noting that even globally, highly specialized discussions often involve small yet deeply committed groups of experts.

A central theme of her intervention was the importance of focused, knowledge-driven exchanges in advancing complex, interdisciplinary agendas such as the water–energy–environment nexus. She highlighted that concentrated discussions among aligned stakeholders enable more meaningful outcomes, particularly when addressing systemic challenges that require technical depth and collaborative thinking.

Dr. Khanduri placed strong emphasis on the role of emerging professionals young researchers, practitioners, and early-career policy thinkers as critical drivers of future transformation. She noted that such platforms serve as incubation spaces for next-generation leadership, offering visibility, validation, and opportunities for knowledge-sharing at scale. By encouraging young voices to present their work, she underscored the importance of democratizing expertise and fostering innovation from the ground up.

She further articulated that these engagements contribute to bridging the gap between research, policy, and practice, enabling participants to not only showcase their work but also situate it within broader national and global development frameworks. This, she suggested, is essential for building coherent, actionable pathways in water governance and sustainability.

MS. KAVITA PRASAD

Ms. Kavita Prasad presented a compelling case for AI-driven integrated urban management, emphasizing that climate shocks have evolved into systemic, cascading risks impacting water, energy, health, and environmental systems simultaneously. Using the example of Delhi, she illustrated how extreme events such as monsoons can trigger multi-sectoral failures, including urban flooding, infrastructure breakdowns, power disruptions, and public health crises.



She identified the core structural challenge as fragmentation, where institutions and ministries operate in silos with limited coordination and delayed data exchange. This results in reactive governance frameworks, where decisions are taken post-crisis rather than through anticipatory planning. Additionally, she highlighted the presence of “invisible vulnerabilities”, particularly within the health sector and informal settlements, which remain inadequately integrated into decision-making systems.

To address these gaps, Ms. Prasad introduced “HydroNet Delhi”, an AI-enabled decision-support system designed to operationalize the water–energy–health–environment nexus through predictive analytics and integrated data systems. The platform is conceptualized to deliver:

- Short-term probabilistic forecasting (6–8 hours) of flood events, energy disruptions, and associated risks
- Prioritized action frameworks (“action bundles”), identifying high-risk zones based on flood depth, infrastructure stress, and exposure levels
- Equity-focused mapping, aligning vulnerable populations with available infrastructure and response capacity
- Explainable AI-based recommendations, enabling transparent and informed decision-making

The system architecture is structured across three layers:

- Data Inputs: Integration of IMD radar data, satellite imagery, hydrological sensors, drainage and pump data, and public health indicators
- AI Core Stack: A hybrid framework combining data fusion, machine learning, and physical modeling to simulate hydrological and infrastructural dynamics
- Outputs & Interfaces: Decision dashboards and user interfaces (including ICCC systems) for real-time monitoring and response

Her technical methodology is built on five pillars: hybrid physics-based AI modeling, high-probability forecasting, policy-integrated generative analytics, equity-centered assessment, and explainability. This approach ensures that AI outputs are not only predictive but also policy-aligned and operationally actionable.

Ms. Prasad further emphasized that the system aligns with key Sustainable Development Goals (SDGs), particularly SDG 6 (water), SDG 7 (energy), SDG 3 (health), SDG 13 (climate action), and SDG 17 (partnerships). She also highlighted the importance of ethical AI governance, referencing emerging national frameworks that stress responsible, sovereign, and transparent AI deployment.

A pilot implementation was proposed for the Yamuna–Najafgarh corridor in Delhi, with an estimated timeline of 18 months and a cost-effective budget framework. She stressed that successful deployment would require institutional coordination, stakeholder engagement, and clearly defined governance protocols, including standard operating procedures and feedback mechanisms.



MR. ANOOP DONGRE,

Mr. Anoop Dongre, presented a data-driven study on integrating soil moisture-based irrigation advisory into groundwater–energy governance within the Water–Energy–Environment nexus for sustainable agriculture, using Punjab as a case study.

He highlighted the critical interdependence between groundwater extraction and energy consumption, noting that intensive rice–wheat cultivation in Punjab has led to severe groundwater depletion, with water table declines of 0.5–1 meter annually and over-extraction levels consistently exceeding recharge. Agriculture alone accounts

for 30–35% of electricity consumption, underscoring the tight coupling between irrigation demand and energy use.

The study, focused on Sangrur district, employed multi-source datasets, including satellite-derived soil moisture proxies (Sentinel-1 SAR), groundwater records, and energy consumption data, to map irrigation stress and resource use patterns. Findings reveal that groundwater irrigation dominates (often exceeding 80–100%), directly driving increased pumping intensity and accelerating aquifer depletion.

A key innovation presented was the use of remote sensing-based soil moisture analytics to identify irrigation stress hotspots. These insights enable the development of precision irrigation advisories, which can optimize irrigation timing and reduce unnecessary water extraction.

From a policy and governance perspective, the study demonstrates that:

Soil moisture-based irrigation advisories can significantly reduce groundwater abstraction and associated energy demand

Lower pumping requirements translate into reduced electricity subsidies and fiscal burden on the state

Optimized irrigation contributes to lower carbon emissions, linking agricultural water management with climate mitigation

Integrated datasets (water–energy–agriculture) enable evidence-based groundwater governance

Mr. Dongre emphasized that mainstreaming such advisory systems into state-level planning frameworks can operationalize nexus-based governance. The approach offers a scalable model for transitioning from resource-intensive irrigation practices to data-driven, sustainable agriculture systems, aligning water security, energy efficiency, and environmental sustainability objectives.

MR. GOPAL PRASAD PATEL

Mr. Gopal Prasad Patel highlighted the critical need for scientific groundwater resource mapping and sustainable extraction planning, noting that only 0.32% of global water is accessible groundwater, making its management central to water security across sectors.

He emphasized that rising pressure on groundwater systems, driven by over-extraction of surface water and increasing demand from agriculture, industry, and urbanization, necessitates a data-driven and spatially explicit approach to groundwater governance.

Presenting a remote sensing and GIS-based framework, he demonstrated how groundwater potential zones can be accurately identified using multi-layered spatial analysis. This includes integration of parameters such as: Lithology and soil characteristics; Slope and drainage density; Land use and land cover; Lineament density and geological structures

Using a case study from Banaskantha, he illustrated how overlay analysis of these variables enables



classification of zones into very poor to very good groundwater potential, thereby supporting targeted and sustainable abstraction strategies.

He further underlined the importance of understanding the hydrological cycle, particularly recharge mechanisms such as runoff, seepage, and storage, in enhancing groundwater replenishment.

A key contribution of his work lies in demonstrating that remote sensing technologies significantly reduce the cost, time, and logistical constraints associated with conventional groundwater exploration, enabling large-scale, real-time resource assessment without extensive field surveys.

Mr. Patel concluded that integrating remote sensing and GIS tools into national and state-level water management systems can:

Strengthen groundwater exploration and planning

Enable evidence-based policy decisions

Support sustainable development across agriculture, urban, and industrial sectors

He advocated for wider institutional adoption of these technologies, positioning them as indispensable tools for future water resource management and governance frameworks.



MS. HIRANYA TALLAM

Ms. Hiranya Tallam highlighted a critical gap in India's water sector the shift from infrastructure creation to intelligent infrastructure management. While flagship initiatives such as the Jal Jeevan Mission have significantly expanded household tap connectivity (from ~16% in 2019 to nearly universal coverage), she emphasized that operational inefficiencies continue to undermine system performance.

She underscored that India's intermittent water supply model, heavily reliant on elevated service reservoirs, creates systemic challenges manual operations, lack of real-time monitoring, and poor accountability. This

results in substantial losses across the water–energy nexus, including:

- ~50 billion cubic meters of water lost annually
- Significant revenue leakage (~₹50,000 crore)
- High embedded energy losses due to inefficient pumping and overflows

At the local governance level, she identified institutional and operational blind spots, where utilities and Gram Panchayats lack visibility on: Water distribution efficiency; Supply reliability and equity; Infrastructure performance

To address these challenges, she presented an IoT-enabled, solar-powered smart water management system (iTank), designed to:

- Enable real-time monitoring of tank levels, flows, and quality
- Automate valve and pump operations across interconnected systems
- Ensure data-driven, autonomous decision-making at decentralized levels
- Integrate low-energy, indigenous technologies tailored to Indian conditions

A key innovation lies in ultra-low-energy controllers and in-situ electrochlorination, enabling cost-effective and sustainable water treatment (as low as ₹2 per 10,000 litres), while ensuring water quality compliance.

Through a case study from Tamil Nadu, she demonstrated tangible impacts:

- Elimination of overflow losses (~50,000 litres/day saved)
- 100% infrastructure utilization (revival of non-functional tanks)
- Energy savings of ~51% and cost reduction of ~30%
- Transition from unsafe groundwater dependence to reliable, treated water supply

- Improved public health outcomes and enhanced service equity

Importantly, she positioned such interventions within the water–energy–health nexus, illustrating how digital infrastructure, when aligned with decentralized governance, can deliver multi-sectoral benefits, including reduced energy demand, improved water security, and enhanced community well-being.

She concluded by emphasizing that the next frontier of water governance in India lies not in building more assets, but in optimizing existing systems through data-driven, scalable, and locally adaptable technologies.

MR. PARTH BHATT

Mr. Parth Bhatt advanced the concept of planetary health diplomacy as a transformative framework to address the interconnected and systemic nature of global environmental challenges. He emphasized that contemporary risks ranging from climate change and biodiversity loss to water scarcity and public health vulnerabilities are deeply interdependent, generating cascading and cross-sectoral impacts that transcend national boundaries.

He identified a fundamental governance mismatch, wherein fragmented institutional and policy responses operate in silos, despite the inherently interconnected nature of planetary risks. This fragmentation persists even within major global frameworks. While effective within their domains, these mechanisms lack integrated coordination across sectors and scales.

Mr. Bhatt underscored the importance of systems thinking, noting that interventions in one domain can generate unintended consequences in others. He illustrated this through real-world feedback loops, where environmental, economic, and social systems interact dynamically necessitating holistic, rather than linear, policy design.

To address these challenges, he proposed a shift towards anticipatory governance, leveraging: Strategic foresight and scenario planning; Systems risk mapping and horizon scanning; Early warning mechanisms for emerging transboundary risks.

He highlighted international best practices such as the Mekong River Basin cooperation framework (Mekong River Commission), which demonstrates how data sharing and coordinated governance can simultaneously advance environmental protection, food security, and regional stability.

At the policy level, he outlined three priority pathways: Nexus-based policy frameworks integrating climate, water, energy, biodiversity, and health systems; Strengthened multilateral cooperation to address transboundary and systemic risks; Inclusive planetary governance, ensuring participation of local communities and stakeholders in decision-making

He concluded that planetary health diplomacy represents an evolution beyond traditional environmental governance, integrating ecological sustainability, human well-being, and economic resilience. Such an approach is essential for building coherent, forward-looking, and globally coordinated responses to the complex challenges of the Anthropocene.



MS. SHREYA PATHAK

Ms. Shreya Pathak foregrounded the human, behavioural, and policy-consciousness dimensions of the Water–Energy–Health–Environment nexus, emphasizing that sustainability challenges are not merely technical, but deeply rooted in collective awareness, institutional coordination, and individual responsibility.

She underscored that the nexus represents an interdependent system, where water, energy, health, and environmental outcomes are

intrinsically linked. Actions in one domain such as energy production or water use generate cascading impacts across climate, public health, and resource systems, thereby necessitating holistic and integrated policy frameworks rather than sectoral approaches

A central concern highlighted was the persistence of institutional silos, with ministries and governance structures operating independently despite addressing interconnected challenges. She argued that fragmented funding and sector-specific policymaking significantly limit implementation effectiveness. Emphasizing that “policy is 1% design and 99% implementation,” she called for convergent governance models, including joint, cross-ministerial programmes to enable coordinated action.

Moving beyond institutional frameworks, Ms. Pathak introduced a community-centric policy approach, proposing the creation of district-level “eco-teams” comprising journalists, researchers, and youth volunteers. These teams would facilitate grassroots behavioural change, public awareness, and localized sustainability interventions, thereby bridging the gap between policy intent and societal adoption.

- She further articulated a three-dimensional scaling strategy:
- Scale Up: Strengthening laws and policy frameworks
- Scale Deep: Embedding sustainability within cultural values and societal behaviour
- Scale Out: Expanding outreach and replication across communities

A key intervention area identified was the revitalization of environmental journalism. Referencing the Bhopal Gas Tragedy, she highlighted the critical role of journalism in early risk communication and public awareness. She noted that contemporary media discourse often sidelines sustainability issues, and called for renewed emphasis on climate, water, and environmental reporting, including the use of community radio and grassroots communication platforms.

KEY TAKEAWAYS

- The next frontier in water governance is shifting from continual infrastructure expansion to intelligent optimization of existing assets through real time monitoring, automation, and low energy digital solutions.
- Integrated AI driven digital ecosystems that combine remote sensing, IoT, and predictive analytics can turn fragmented sectoral systems into proactive nexus decision architectures.
- Precision tools such as soil moisture based irrigation advisories and detailed groundwater mapping simultaneously reduce water extraction, energy use, and environmental stress.
- Breaking institutional silos through shared datasets, interoperable platforms, and coordinated policy frameworks is essential for operationalizing nexus thinking.
- Sustainable outcomes are ultimately determined by human behaviour, governance models, and ethical leadership, not technology alone.
- Community engagement and inclusive governance mechanisms are needed to translate digital insights into trusted, on ground decisions and practice change.
- Aligning digital innovation with clear mandates, capacity building, and financing can scale these solutions from pilots to national level systems.

OUTCOMES AND POLICY RECOMMENDATIONS

1. Institutionalize the Transversality as a core planning and investment lens

Governments and regulators should formally adopt the transversality as an organizing principle for national development plans, sector strategies and sub-national master plans, ensuring that water, energy, health and environment objectives are pursued together rather than in silos. Inter-ministerial coordination mechanisms, with clear mandates and joint accountability, should be created or strengthened to align policies, budgets and projects with this integrated lens.

2. Elevate water as a strategic economic and social asset

Public authorities and financial institutions should reframe water from a residual utility to a central productive asset that underpins food systems, energy security, health outcomes and industrial growth. This requires systematically mainstreaming water security and quality considerations into agriculture, energy, urban development and industrial policies, as well as into macro-fiscal and investment decision-making.

3. Move from narrative ESG to operational, outcome-based ESG

Regulators, exchanges and standard-setters should progressively shift from disclosure-only ESG regimes toward frameworks that link ESG claims to verifiable system-level outcomes, particularly around decarbonization, water stewardship, biodiversity and social inclusion. Enterprises should embed ESG into core functions like capital expenditure, engineering, supply chains and operations rather than treating it as a reporting add-on.

4. Build robust, interoperable ESG and nexus data ecosystems

Governments, statistical systems and market regulators should invest in interoperable data platforms that integrate financial, environmental, social and governance metrics, enabling consistent measurement of nexus-related risks and opportunities. Priority actions include clarifying data ownership, strengthening MSME reporting capacity, expanding water and climate monitoring networks, and using digital public infrastructure to link ground-level observations with decision-making.

5. Harmonize and contextualize ESG standards to local and sectoral realities

National authorities should align with emerging global ESG norms while tailoring taxonomies, materiality definitions and reporting requirements to domestic contexts and sectoral specificities, especially in water-intensive and hard-to-abate industries. International organisations and standard-setters should support interoperability between regimes so that firms face coherent expectations across jurisdictions.

6. Integrate nature-based solutions and ecosystems as core infrastructure

Urban and rural planning authorities should recognize wetlands, floodplains, recharge zones, forests and biodiversity parks as essential infrastructure for flood management, groundwater recharge, microclimate regulation and public health. This entails embedding nature-based solutions into master plans, building codes and procurement rules, supported by economic valuation methodologies that capture their multiple co-benefits.

7. Quantify nexus gains and embed analytical tools into policy cycles

Planning and line ministries should adopt integrated models, composite indices and decision-support systems such as WEF nexus tools, digital twins and basin-level scenario models to quantify trade-offs and co-benefits across water, energy, land use and food. These tools should be institutionalized in routine project appraisal, environmental impact assessment and investment planning processes.

8. Strengthen multi-level governance and basin-scale cooperation

Countries should promote basin and landscape-scale governance arrangements that bring together national agencies, sub-national governments, basin organizations, private sector actors and communities to jointly manage shared water and related resources. Regional cooperation platforms should be leveraged to build confidence, share data and develop high-impact cross-border investments anchored in the nexus approach.

9. Embed just transition, gender equality and community stewardship in all nexus actions

Policy makers and companies should apply a just transition lens to all major sustainability policies and investments, ensuring that labour rights, social protection, MSME participation and the needs of marginalized groups, including women and youth, are explicitly addressed. Community-owned and women-led governance models should be scaled and recognized within ESG assessments as evidence of social and governance performance.

10. Treat capacity building and institutionalization as core infrastructure

Governments, training institutions and development partners should invest in sustained capacity building on ESG and nexus governance for public officials, regulators, utilities, financial institutions and community leaders. This includes codified processes, competency frameworks, leadership programmes and long-term learning pathways that ensure continuity beyond individual champions.

11. Use ESG as a predictive risk-management and financial-stability tool

Financial regulators and central banks should integrate water and climate-related risks into prudential regulation, scenario analysis and stress testing, recognizing that unmanaged nexus risks can threaten financial stability and development gains. Firms should deploy ESG risk management systems that anticipate environmental and social shocks, moving from reactive compliance to proactive resilience building.

12. Align communication, behaviour change and cultural narratives with nexus objectives

Governments, media, educators and civil society should design communication strategies that translate complex nexus risks into clear, localized narratives such as water bankruptcy or heat-health risks to motivate behaviour change. Embedding sustainability and stewardship in cultural values, education systems and everyday practices can amplify the impact of policies, technologies and finance.

13. Prioritize project preparation, lifecycle accountability and local co-creation

Development partners and governments should allocate dedicated resources for high-quality project preparation that integrates environmental and social safeguards, circular economy principles and climate resilience from the outset. Lifecycle accountability mechanisms such as post-implementation monitoring, performance-linked finance and community-based monitoring should be mainstreamed to ensure durable outcomes.

14 Consolidate and deepen India's ESG disclosure architecture beyond compliance

India should use the SEBI BRSR and BRSR Core framework as a springboard to build a genuinely decision-grade ESG information system that serves regulators, investors, and communities, rather than treating disclosures as a narrow listing compliance exercise. Extending BRSR-style reporting and assurance expectations progressively down value chains (including key MSME suppliers), prioritizing high-quality climate and social metrics, harmonizing SEBI, MCA and MoEFCC data requirements with evolving global standards (GRI, TCFD, IFRS S1/S2), and investing in centralized, digital ESG data utilities that reduce reporting friction while improving comparability and auditability.

15. Mainstream ESG and climate risk into India's financial system and real-economy transition

Building on RBI's emerging disclosure framework for climate-related financial risks, green deposits guidelines and the planned RB-CRIS data repository, India should move toward a cohesive sustainable-finance architecture that integrates ESG and climate risk into both micro-prudential and macro-prudential policy. This means aligning bank and NBFC governance, risk management and capital planning with India's Long-Term Low-Carbon Development Strategy and state-level climate action plans, explicitly pricing water and climate risks, and using taxonomies, stress tests and blended-finance instruments to steer capital toward renewables, water-secure infrastructure, ecosystem restoration and resilient urban services while safeguarding financial stability.

ESG POLICY AND REPORTING GUIDELINES

India has rapidly built one of the most comprehensive ESG disclosure regimes in the Global South through the National Guidelines on Responsible Business Conduct (NGRBC), SEBI's Business Responsibility and Sustainability Reporting (BRSR and BRSR Core), and emerging climate-risk disclosure norms for financial institutions. At the same time, global standards such as GRI, ISSB's IFRS S1/S2, TCFD, TNFD, UN Guiding Principles on Business and Human Rights (UNGPs), OECD Guidelines for Multinational Enterprises, and the EU's CSRD/ESRS have converged into a de facto global baseline for ESG reporting and due diligence.

This report proposes comprehensive ESG guidelines that :

- i. integrate and upgrade existing domestic frameworks,
- ii. converge with global baselines for interoperability, and
- iii. are tailored to India's development priorities, climate vulnerability, and high share of MSMEs and informal employment.

The recommendations are structured around governance, environmental, social, and broader system-level dimensions and are intended for use by central ministries, regulators (MCA, SEBI, RBI, IRDAI, PFRDA), line ministries, and state governments.

1. Context and Global ESG Convergence

Global ESG standards have shifted from voluntary narratives to mandatory, decision useful, and assured disclosures.

- GRI Standards are the world's most widely used sustainability reporting framework, built around universal, sector, and topic standards focused on impact materiality and broad stakeholder needs.
- ISSB's IFRS S1 and IFRS S2 (effective for periods beginning on or after 1 January 2024) establish a global baseline of sustainability- and climate related financial disclosures for capital markets, designed to be interoperable with GRI and regional standards.
- TCFD recommendations underpin most climate disclosure regimes, with 11 recommended disclosures under four pillars: Governance, Strategy, Risk Management, and Metrics & Targets.
- TNFD recommendations extend the TCFD architecture to nature related risks, impacts, and opportunities, adding nature specific disclosures and a LEAP (Locate, Evaluate, Assess, Prepare) assessment approach.
- UNGPs on Business and Human Rights set the global standard for business and human rights via three pillars—State duty to protect, corporate responsibility to respect, and access to remedy which have shaped national action plans and corporate due diligence norms.
- OECD Guidelines and Due Diligence Guidance provide detailed expectations for responsible business conduct across human rights, labour, environment, bribery, consumer interests, disclosure, competition, and taxation, backed by implementation guidance on due diligence.
- EU CSRD and ESRS create a mandatory, audited, double materiality sustainability reporting regime for large companies and listed entities from the 2024 financial year, with detailed ESRS standards covering environmental, social, and governance topics.

India's regulatory evolution; NGRBC, BRSR, BRSR Core, SEBI's framework for ESG rating providers, and RBI's draft climate risk disclosure framework already substantially aligns with these global developments, but gaps remain on double materiality, sector specific metrics, climate and nature related risk, and coverage beyond the top listed entities.

2.Design Principles for an Indian ESG Architecture

GoI ESG guidelines should be anchored in the following design principles:

I. Convergence with global baselines, preserving Indian context

- Formally recognize ISSB's IFRS S1/S2 as the financial materiality baseline for climate and broader sustainability risks and opportunities, while using GRI and NGRBC to capture impact materiality relevant to Indian stakeholders.
- Ensure interoperability mappings between BRSR/BRSR Core disclosures and ISSB, GRI, TCFD, TNFD, UNGPs, and OECD Guidance to minimize reporting burden and support Indian companies in accessing global capital.

ii. Double materiality and risk based prioritization

- Adopt a double materiality lens financial and impact similar to EU ESRS, while calibrating expectations to India's development stage and sectoral risk profile.
- Prioritize sectors with high emissions, resource use, pollution, labour intensity, or human rights risk (e.g., power, extractives, construction, textiles, agriculture, financial sector) for deeper, sector specific metrics and assurance.
- Proportionality and phased implementation
- Maintain stringent, ISSB and GRI aligned requirements for large listed entities, financial institutions, and high impact sectors, while providing simplified templates and capacity building for MSMEs and smaller unlisted companies.

iii. Integrated climate, nature, and social lens

- Mandate climate and nature related risk integration in line with TCFD and TNFD, and embed human rights due diligence in line with UNGPs and OECD Guidance, rather than treating environmental, social, and governance pillars in isolation.

iv. Data quality, assurance, and ESG ratings integrity

- Build on BRSR Core's assurance concept and SEBI's regulation of ESG rating providers to ensure decision useful, comparable, and independently assessed ESG data.

3. Institutional Architecture and Roles

- India's ESG ecosystem already involves multiple regulators whose roles should be clarified and better coordinated.
- Ministry of Corporate Affairs (MCA): Custodian of NGRBC and company law, responsible for overarching responsible business principles, NAP on Business and Human Rights, and integration of ESG into corporate governance norms.
- SEBI: Lead for ESG disclosures by listed entities (BRSR/BRSR Core), ESG rating providers, and sustainability linked securities, ensuring alignment with global investor expectations and preventing greenwashing.
- RBI and other financial regulators (IRDAI, PFRDA): Custodians of climate related financial risk disclosure frameworks and prudential guidance, progressively integrating climate and nature risks into micro and macro prudential supervision.
- MoEFCC and other line ministries: Provide sector specific environmental and nature related guidance (e.g., emissions caps, water use standards, biodiversity safeguards, waste regulations) that are referenced in ESG metrics and scenarios.

Recommended governance enhancement

GoI may consider constituting a National ESG and Sustainable Finance Council (Inter ministerial) to harmonize ESG standards, resolve overlaps, coordinate sector specific guidance, oversee taxonomy development, and represent India in global standard setting fora.

This body can draw on experience from convergence between ISSB, GRI, CSRD/ESRS, and TNFD frameworks.

4. Core Cross Cutting ESG Requirements for Entities

The following baseline expectations should apply to all large companies, financial institutions, and SOEs, with simplified versions for MSMEs:

I. Board level responsibility

- Assign explicit ESG and climate/nature related risk oversight to the Board or a dedicated Board committee, with clear linkage to enterprise risk management (ERM) and strategy.

ii. ESG policy and due diligence framework

- Require documented ESG policies covering environmental stewardship, human rights, labour, anti corruption, data ethics, and stakeholder engagement, aligned with NGRBC principles, UNGPs, and OECD due diligence guidance.
- Mandate ongoing risk based due diligence across own operations and value chains, including identification, prevention, mitigation, and remediation of adverse impacts.

iii. Stakeholder engagement and grievance mechanisms

- Require structured engagement with affected stakeholders (workers, communities, indigenous peoples where applicable, value chain actors) and accessible, legitimate grievance mechanisms consistent with UNGP criteria for effectiveness.

iv. Data systems and internal controls

- Mandate ESG data governance, internal controls, and documentation sufficient to support external assurance and regulatory review, mirroring financial reporting controls.

5. Environmental Pillar: Policy and Metrics

Environmental guidance for India should integrate climate, nature, and local environmental health priorities.

i. Climate and Energy

- Emissions accounting: Require GHG inventories for Scope 1 and 2 for all large entities; phase in material Scope 3 emissions for high impact sectors and listed entities, referencing GHG Protocol and ISSB S2 expectations.
- Targets and transition plans: Mandate time bound, science aligned emissions reduction targets and transition plans for high emitting sectors, with scenario analysis and resilience assessment based on TCFD/ISSB guidance.
- Energy metrics: Require granular disclosures on energy mix (renewable vs non renewable), efficiency improvements, and alignment with national renewable energy and energy efficiency schemes, building on BRSR Core energy footprint attributes.

ii. Nature, Land, and Biodiversity

- Integrate TNFD aligned nature related disclosures for sectors with significant dependencies/impacts on land, water, forests, and biodiversity (e.g., agriculture, mining, infrastructure, tourism), using the four pillars and LEAP approach.

- Require location specific mapping of assets and activities in or near biodiversity rich, water stressed, or ecologically sensitive zones, and disclosure of mitigation/offset measures and engagement with local/indigenous communities.

iii. Water, Pollution, and Circularity

- Water: Mandate disclosure of water withdrawals, consumption, discharge quality, recycling, and basin level stress, with stricter metrics for water intensive sectors and regions facing acute water stress.
- Pollution and air quality: Expand BRSR indicators to cover key pollutants (PM, NO_x, SO_x, noise, hazardous chemicals) in line with emerging critiques that current templates under capture local environmental health risks.
- Waste and circular economy: Require metrics on waste generation, segregation, recycling, and circular business models, aligned with BRSR Core's attributes on circularity and waste management.

6. Social Pillar: Policy and Metrics

Social guidelines should foreground India's labour market realities, informal workforce, and human rights risks, while aligning with NGRBC and UNGPs.

I. Labour, Equality, and Worker Well being

- Mandate disclosures on wages, working conditions, occupational health and safety, social security coverage, training, and grievance mechanisms for both direct and significant value chain workers, in line with NGRBC principles.
- Require disaggregated workforce diversity data (gender, caste where legally feasible, disability, age) and board/senior management diversity metrics, building on BRSR's gender diversity indicators.
- Encourage just transition planning in sectors affected by de-carbonization (e.g., coal, thermal power, auto) to avoid job and income shocks.

ii. Product Responsibility and Customer Welfare

- Require disclosures on product safety, responsible marketing, data privacy, and AI ethics where applicable, aligning with OECD Guidelines' coverage of consumer interests, digital technologies, and emerging risks.

7. Governance Pillar: Policy and Metrics

Governance expectations should align with global good practices while reinforcing Indian legal requirements.

- Anti-corruption and integrity: Mandate robust anti bribery policies, controls, training, and incident disclosure consistent with OECD Guidelines and Indian anti-corruption law.
- Board competence and independence: Require disclosure of ESG, climate, and human rights expertise on boards and key committees, and how these competencies inform strategy and risk oversight, mirroring TCFD/ISSB expectations on governance.
- Executive remuneration: Encourage linkage between executive pay and ESG/climate/nature performance indicators for high impact sectors, in line with emerging global practice under ISSB/TCFD frameworks.
- ESG data governance: Require policies on data quality, cybersecurity, and privacy for ESG related data, given growing use of digital tools and AI in sustainability analytics.

8. Disclosure and Reporting Architecture

I. Scope and Applicability

A tiered regime is recommended:

Tier 1 – Large listed entities and systemically important financial institutions: Mandatory BRSR (including BRSR Core) aligned with ISSB S1/S2, GRI, TCFD, and TNFD; reasonable assurance for core KPIs and climate/nature metrics over time.

Tier 2 – Large unlisted and high impact sector entities (including major SOEs): Simplified but mandatory ESG disclosures based on a truncated BRSR+ template, with phased assurance for priority indicators and emphasis on climate, nature, and social risk.

Tier 3 – MSMEs and value chain actors: Voluntary light touch templates tied to supply chain requirements, green credit schemes, and concessional finance, focusing on a small set of critical E, S, and G indicators.

ii. Alignment and Interoperability

- Maintain BRSR as India's central ESG template, but publish formal mapping tables indicating how each BRSR indicator maps to ISSB, GRI, TCFD, TNFD, and ESRS requirements, reducing duplication for companies accessing global markets.
- Periodically update BRSR question sets to incorporate emerging global expectations on climate risk (scenario analysis, location specific physical risk), nature related disclosures, plastic and waste footprints, indoor/occupational air quality, and adaptation metrics, as highlighted by recent Indian analyses.

iii. Format, Location, and Digital Reporting

- Require ESG disclosures to be part of annual reports and also filed in machine readable digital formats, consistent with global moves toward digital sustainability reporting under CSRD/ESRS and GRI.
- Encourage use of XBRL like taxonomies for ESG to improve comparability and regulatory analytics.

9. Assurance, ESG Ratings, and Market Infrastructure

I. Assurance of ESG Disclosures

- Build on BRSR Core's assurance concept by gradually extending external assurance to climate critical and high risk ESG indicators (GHG emissions, energy, water, waste, accidents, critical human rights incidents), beginning with the largest and most systemically important entities.
- Develop Indian assurance standards aligned with international assurance frameworks for sustainability information, ensuring consistency with ISSB and CSRD expectations.

ii. Regulation of ESG Rating Providers

- Operationalize SEBI's framework for ESG Rating Providers (ERPs) with strong governance, transparency of methodologies, conflict of interest safeguards, and disclosure of rating rationales.
- Require ERPs to use BRSR/BRSR Core as the primary data backbone and to disclose how they integrate international frameworks (ISSB, GRI, TCFD, TNFD, OECD, UNGPs) in their assessments.

iii. Sustainable Finance Ecosystem

- Align RBI's climate risk disclosure framework for banks and NBFCs with TCFD/ISSB and India's corporate ESG reporting rules, ensuring that lenders can rely on consistent borrower data and undertake meaningful portfolio level climate scenario analysis and stress testing.
- Encourage development of labelled sustainable instruments (green, social, sustainability linked bonds and loans) with clear use of proceeds and KPI linked structures grounded in BRSR and ISSB aligned metrics.

10. Sector Specific ESG Guidance (Indicative Directions)

Given India's diverse sectoral profile, GoI should mandate or encourage sector specific ESG guidance drawing on ISSB, GRI Sector Standards, TNFD, and OECD due diligence expectations.

11. Power, Energy, and Extractives

- Require asset level climate and nature risk mapping, including exposure to heat stress, floods, cyclones, sea level rise, and biodiversity sensitive areas, in line with TCFD/Tsharing mechanisms | TNFD, GRI Agriculture, OECD Guidelines

12. Implementation Roadmap and Capacity Building

- Create an inter regulatory ESG Council (MCA, SEBI, RBI, IRDAI, PFRDA, MoEFCC, and NITI Aayog) to coordinate standards, timelines, and guidance, building on existing cooperation noted in analyses of India's ESG regulatory evolution.
- Launch national capacity building programmes for companies, auditors, ESG rating providers, and regulators on ISSB, GRI, TCFD, TNFD, and NGRBC implementation, leveraging partnerships with professional institutes and international bodies.
- Provide phased incentives, preferential access to green finance, faster regulatory approvals, or recognition schemes for entities that adopt enhanced ESG practices and disclose beyond minimum requirements.

• Conclusion

- Global ESG frameworks are converging around common disclosure pillars and robust due diligence expectations, while India has already established a strong foundation through NGRBC, BRSR, and emerging financial sector guidance. By formalising a harmonised, interoperable ESG framework that is adapted to Indian realities water stress, informality, just transition needs, and MSME dominance; Government of India can ensure that ESG regulation strengthens both financial stability and inclusive, sustainable development.

AWARDS

WATER TRANSVERSALITY GLOBAL AWARDS 2026

The Water Transversality Global Awards & Conclave 2026, organised by India Water Foundation, was held on 6th March 2026 at India International Centre, New Delhi, with Shri Om Birla, Hon'ble Speaker of the Lok Sabha, gracing the inaugural session and awards ceremony as Chief Guest.

The event centred on “ESG transversality” and the interconnected water–energy–health–environment nexus, bringing together policymakers, experts, industry leaders, academia, and civil society for dialogue on integrated sustainability governance.

Shri Om Birla underlined the importance of sustainable development and global cooperation, and noted the significance of examining water, energy, and environmental issues through an integrated perspective rather than in isolation. Dr. Arvind Kumar, President, India Water Foundation, emphasised that the transversality approach calls for policy design beyond silos, linking water security, energy systems, environmental sustainability, and public health in one holistic framework.

A major highlight of the conclave was the conferment of the Water Transversality Global Awards, which recognised 49 awardees from diverse sectors for contributions to sustainability, innovation, and environmental stewardship in collaboration with UN ESCAP and supported by around 45 national and international partner organisations, reflecting a broad multi-stakeholder platform for advancing water-linked sustainability action.

The Individuals honoured in the individual category included Dr. Atun Roy Choudhury and Mr. Arpit Kumar for Innovation in Water Technology, and Mr. Rishi Sharma for Rainwater Harvesting and Ground Water Management. Awarded organisations included District Administration, Ganderbal for Rejuvenation of Water Bodies; United Way of Bengaluru, Mahavir Senior Model School, Farmland Rainwater Harvesting Systems, Hindustan Unilever Limited (Sumerpur Factory), and Swami Rama Himalayan University for Rainwater Harvesting and Ground Water Management; Delhi Public School, Dwarka and Koneru Lakshmaiah Education Foundation for wastewater treatment and management models; and Cluix Private Limited, Pump Academy Private Limited, and IOTA WATER for Innovation in Water Technology.

Other recognised organisations included Vishvaraj Environment Ltd. and Lamu County Government for Best Community Impact Project; Bharat NatureSol Private Limited for Rejuvenation of Water Bodies; The Mann School for Green Office Building; North Eastern Railway, Izzatnagar for Sustainable Industrial Facility; BBC Media Action, India for Driving the Circular Economy; and AI Engineering Services Limited for Decarbonization Co-Benefits.

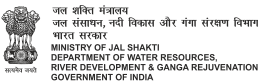
Under the leaders category, honours were listed for Dr. R. K. Gupta, Secretary General, ICID; Shri Yugal Kishore Joshi, Programme Director, Water & Land Resources, Drinking Water & Sanitation, IT & Telecom, Culture & Tourism, NITI Aayog; Mr. Ignacio Deregibus, Executive Director, IWRA; Rockefeller Foundation, and Dr. Vikas Kumar, MD, DMRC alongside Good Governance awards for HCM Conrad K. Sangma, HCM Devendra Fadnavis Hon'ble Chief Minister of Meghalaya and Maharashtra respectively and Sh. Amit Kumar Ghosh, Additional Chief Secretary, government of Uttar Pradesh.

The same segment also included Mr. Alain Meyssonier, President of the Mediterranean Water Institute, Governor at the World Water Council; Prof. Rabi Mohtar, Governor- World Water Council, Director- Water security, Texas Water Resources Institute, Texas A&M University; and Dr. Eric Tardieu, Director General - International Office for Water, Secretary General-International Network of Basin Organizations, Vice President- World Water Council while the Lifetime Achievement Awardees included Dr. Ajit Tyagi, Hon'ble “Koteswaram Professor” at Ministry of Earth Sciences GOI, and Former Director General (DG) of the India Meteorological Department (IMD); Dr. Satya Tripathi, Secretary General, Global Alliance for Sustainable Planet; and Padmashree Sh. B. L. Bhat.

The 2026 edition reinforced the idea that water security can no longer be addressed in isolation from energy, health, climate, and environmental systems.

By combining a policy conclave with public recognition of innovators, institutions, and senior leaders, the platform positioned the awards as both a celebration of achievement and a call for integrated, cross-sectoral action on sustainability.



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 United Nations ESCAP Economic and Social Commission for Asia and the Pacific  SANS Sustainable Asia Network and the SDGs  विद्युत मंत्रालय MINISTRY OF POWER  जल शक्ति मंत्रालय जल संसाधन, नदी विकास और गंगा संरक्षण विभाग जल संश्लेष MINISTRY OF JAL SHAKTI DEPARTMENT OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION GOVERNMENT OF INDIA  भारी उद्योग मंत्रालय MINISTRY OF HEAVY INDUSTRIES  मंत्रालय पर्यावरण, वन और जलवायु परिवर्तन  NITI Aayog  Department of Social Justice and Empowerment Ministry of Social Justice and Empowerment Government of India		 INDIA Water FOUNDATION
Water Transversality Global Awards and Conclave 2026		
International Conference		
on		
ESG Transversality for Sustainable Water, Energy, Health & Environment Nexus		
6 th -7 th March 2026		
India International Centre, 40-Max Mueller Marg, New Delhi – 110003		
AGENDA DAY I		
6 th March 2026		
08:30 – 09:30	Registration	
Opening Plenary		
Multi-Purpose Hall		
09:30 - 10:30am	Sh. Raj Bhushan Chaudhary Hon'ble Minister of state Ministry of Jal Shakti, Govt. of India	
	H H Shri Sadhguru Jaggi Vasudeva Spiritual Head Isha Foundation	
	Sh. Yugal Kishore Joshi Programme Director Drinking Water & Sanitation, IT & Telecom, Tourism & Culture, Water & Land Resources Lead-Communication and NER-NITI Aayog	
	Mr. Loic Fauchon President World Water Council	
	Ms. Ulrike Kelm Deputy Executive Director International Water Resources Association	
	Dr. Arvind Kumar President India Water Foundation	
10:30-11:00	TEA	

ESG-Aligned Finance & Governance to Combat Greenwashing

11:00 –12:00

Plenary-I

Dr. Satya Tripathi (Chair)

Secretary General
Global Alliance for a Sustainable Planet

Dr. Nagesh Kumar

Director
Institute for Studies in Industrial Development

Ms. Bharti Birla

Enterprise Development Specialist
International Labour Organisation (ILO)

Mr. Saumitra Srivastava

Member
Board of Directors-Indian Oil

Mr. Pankaj Sharma

Senior Consultant-India Water Foundation
Director-Green Wattage

Dr. Priyadarshi Dash

Associate Professor
RIS

Session -1

12:00-12:45

Mr. Ranjeet Pande

Chairman
ESG & Sustainability Board-ICSI

Ms. Surabhi Gupta

Chief General Manager
SEBI

Mr. Sanmit Ahuja

Director
Climate and Energy Transition finance Initiative (CETFI)

Ms. Sarika Gosain

Partner & Leader- ESG & Sustainability
Pierag Consulting

Mr. Rajan Ratna

Chief Advisor-India Water Foundation
Former Deputy Head-SSWA Office UN ESCAP

Dr. Nagesh Kumar (Moderator)

Director
Institute for Studies in Industrial Development

CEOs Leadership Dialogue

12:45-13:45

Ms. Deepali Khanna

Vice President-Asia Regional Office
The Rockefeller Foundation

Mr. Amit Kumar

Chairman
A I Engineering Services Ltd.

Ms. Anjali Makhija

CEO & Trustee
S M Sehgal Foundation

Mr. S. A. Verma

Executive Director/Environment
DMRC

Anand Shekhar

CEO
Water Aid India

Mr. Rajan Ratna (Moderator)

Chief Advisor-India Water Foundation
Former Deputy Head-SSWA Office UN ESCAP

13:45-14:45

LUNCH

Navigating Interdependencies of the Water-Energy-Health-Environment Nexus

14:45-15:45

Plenary II

Mr. James Dalton

Director-Global Water & Wetlands Team
IUCN

Mr. Ravi Singh

Secretary General & CEO
WWF India

Mr. CASPER MAYLAND

Counsellor, Environment / Political and Economic Section
Royal Danish Embassy, New Delhi

Ms. Ulrike Kelm

Deputy Executive Director
International Water Resources Association

		Dr Aakash Shrivastava Additional Director Centre for Environmental & Occupational Health, Climate Change & Health National Centre for Disease Control Ministry of Health & Family Welfare Government of India Dr. Paras Pujari Chief Scientist and Head-Water Resources Group CSIR-NEERI
Session II		
15.45-16:30		Dr Ritesh Kumar Director Wetlands International South Asia Dr. Alok K Sikka Country Representative- India & Bangladesh International Water Management Institute (IWMI) Mr Anshul Jain Senior Expert - Water and SWM European Business and Technology Centre (EBTC) Dr. Sutirtha Sahariah Senior Vice President Head of Communications Sulabh International Dr. Hitesh Vaidya (Moderator) Chief Technical Advisor India Water Foundation
16:30-17:00		TEA
17:00-18:00		Global Leaders Dialogue
Dr. Satya Tripathi (Moderator) Secretary General Global Alliance for Sustainable Planet Sh. Anil Gupta General Secretary Rashtriya Swayam Sewak Sangh (RSS) Delhi Mr. Raj Kumar Beniwal IAS Managing Director Gujarat Narmada Fertilizers & Chemicals Ltd. Secretary Urban Housing Dr Eric Tardieu		

Director General-International Office of Water
Secretary General- International Network of Basin Organisations
Vice President- World Water Council

Mr. Alex Simalabwi
Executive Secretary & CEO
Global Water Partnership

Ms. Ulrike Kelm
Deputy Executive Director
International Water Resources Association

Mr. Ash Pachauri
Co-Founder & Director
POP Movement

**18:30
Onwards**

**Inauguration Ceremony
followed by Awards &
Reception Dinner (Rose Garden)**

Sh. Om Birla
Hon'ble Speaker
Lok Sabha

Dr Arvind Kumar
President
India Water Foundation

Col. Akhilesh Kumar Pandey
Chief Post Master General
Delhi Circle
India Post, Government of India

AGENDA DAY 2

7th March 2026

Cross-Sectoral Water Transversality for Accelerating Net Zero

Plenary III

09:30-10:30

Mr. Pradeep S Mehta (Chair)
Secretary General
CUTS International

Mr. Abhishek Gupta
Head-International Appliances, Rooftop Solar & PE & A

	Energy Efficiency Services Ltd. Dr. Sanjay Vashistha Director Climate Action Network South Asia Dr. Debajit Palit Centre Head- Centre for Climate Change & Energy Transition Chintan Research Foundation Ms. Nidhi Pundir Vice President-Global CSR Director- HCL Foundation	
10:30-11:00	TEA	
Session III		
11:00-11:45	Prof. Medha Bisht Associate Professor South Asian University Prof. Kshemendra K Upadhyay Professor & Chairperson Centre for Sustainability & CSR BIMTEC Ms. Kalyani Raj Patron All India Women’s Conference Ms. Neha Gupta Founder IFBEC Mr. Pradeep S Mehta (Moderator) Secretary General CUTS International	
Greening Industry, Fuelling Growth via ESG Partnerships for Sustainability		
11:45 -12:45	Plenary IV	Mr. Sampath Kumar (Chair) CEO Meghalaya Basin Development Authority Government of Meghalaya Dr. Nagesh Kumar Director

Institute for Studies in Industrial Development

Mr. Ratnesh Jha
Executive Director
UN Global Compact India

Prof. Rabi Mohtar
Governor- World Water Council
Director, Water Security,
Texas Water Resources Institute
Texas A&M University

Mr. Levente Kardos
Economic and Commercial Counsellor
Embassy of Hungary, New Delhi

Session IV

12:45:13:30

Ms Veena Sinha
Divisional Railway Manager
Izzat Nagar Division
North Eastern Railways, Ministry of Railways
Government of India

Mr. Pankaj Sharma
Senior Consultant
India Water Foundation

Ms. Bhawana Kirpal Mittal
CHRO & Lead-IT Admin & CSR
Hero Future Energies

Mr. Ved Prakash Prajapati
Executive Director
A I Engineering Services Ltd.

Dr. Swati Verma
Assistant professor
ISID

Dr. Nagesh Kumar (Moderator)
Director
Institute for Industrial Development (ISID)

Lunch
13:30-14:30

Global Cooperation for Planetary Health Diplomacy

Plenary V

14:30 -15:30

Mr. Amit Ghosh (Chair)
Additional Chief Secretary
Government of Uttar Pradesh

Dr. Virinder Sharma
Member Technical
Commission for Air Quality Management
Government of India

Ms Sonja Koeppel
Secretary, Convention on the Protection and Use of Transboundary
Watercourses and International Lakes
Environment Division
United Nations Economic Commission for Europe

Mr. Alain Meyssonier
President-Mediterranean Water Institute
Governor- World Water Council

Ms. Ulrike Kelm
Deputy Executive Director
International Water Resources Association

Mr. Roy Chiti
Regional Coordinator & Representative
Pacific Island states, India, Sri Lanka & Maldives
UN Habitat

Session V

15:30-16:15

Mr. Vinod Mishra
Country Director
UNOPS

Dr. Manoj Nesari
Advisor
Ministry of Ayush, Government of India

Ms. Sara Casillas Ramirez
Forestry Officer
FAO

	Ms Ambika Vishwanath Co-Founder Kubernein Initiative Ms. Nidhi Nagabathla Professor UN University, Belgium Ms. Varinder Gambhir (Moderator) Country Director BBC Media Action
Leadership Dialogue II	
16:15-17:00	Sh. Rakesh Jain Akhil Bhartiya Paryavaran Sah Sanyojak Paryavaran Sanrakshan Gatividhi Rashtriya Swayam Sevak Sangh (RSS) His Holiness Acharya Shri Lokesh Muni Founder Ahimsa Vishwa Bharti Sh. Sharwan Goel Vice President Sewa Bharti (AI India) Founder- Ganga Sewa Sansthan
Valedictory	
17:00-18:00	Sh. R P Singh National Spokesperson BJP His Holiness Acharya Shri Lokesh Muni Founder Ahimsa Vishwa Bharti Ms. Mikiko Tanaka Director & Head SSWA Office- UN ESCAP Dr. Arvind Kumar President India Water Foundation
18:00 onwards	Hi Tea

AGENDA SIDE EVENT

**Day I- 6th March 2026,
Seminar Hall, First floor, Kamla devi block, India International Centre**

11:00-12:00	SM Sehgal Foundation	Integrated Pathways: Operationalizing the Water–Energy–Health–Environment Nexus for Resilient Futures
12:00-13:30	India Water Foundation	Streams of Change: Collaborative Action Against Ecosystem Contamination
13:45-14:45	LUNCH	
15:00-16:00	BBC Media Action	From Water Bankruptcy to Water Resilience
16:00-17:30	IUCN	Towards Resilient Urban Futures: Opportunities for Freshwater Conservation in India through Nature/Ecosystem-based Solutions
18:00 onwards	Inauguration followed by Awards and Cocktail Dinner	

**Day II-7th March 2026
Seminar Hall, First floor, Kamla devi block, India International Centre**

12:00-13:00	ICID	Technological Innovations for Nexus Optimization
13:00-14:00	LUNCH	
14:00-15:00	Wetlands International-South Asia	Wetlands as Nexus Infrastructure: Integrating Water, Energy, Health, and Environment for Resilient Futures
15:00-17:00	India Water Foundation and India Water Partnership	Water Transversality in Action-For Energy, Environment and Health Nexus



Lok Sabha Secretariat

DEVELOPMENT AND ENVIRONMENT MUST NOT BE SEEN AS OPPOSING FORCES, BUT AS COMPLEMENTARY: LOK SABHA SPEAKER

REAL CHANGE WILL BE POSSIBLE ONLY WHEN CITIZENS BECOME AWARE AND RESPONSIBLE TOWARD WATER CONSERVATION, ENERGY EFFICIENCY, AND ENVIRONMENTAL PROTECTION: LOK SABHA SPEAKER

FOR INCLUSIVE DEVELOPMENT, "TRANSVERSALITY" BETWEEN DEPARTMENTS AND POLICIES IS ESSENTIAL: LOK SABHA SPEAKER

LOK SABHA SPEAKER ADDRESSES WATER TRANSVERSALITY GLOBAL AWARDS & CONCLAVE

Posted On: 06 MAR 2026 9:33PM by PIB Delhi

Lok Sabha Speaker Shri Om Birla today said that development and environment must not be seen as opposing forces, but as complementary. He added that water conservation is essential for securing the future of humanity and all stakeholders, including public representatives, should work collaboratively towards this aim.

Shri Birla made these comments while addressing the Water Transversality Global Awards & Conclave 2026. Shri Birla emphasized the importance of sustainable development and global cooperation and noted that the initiatives like International Water Forum (IWF) are playing a significant role at the global level in addressing water-related challenges.

Observing that real change is possible only when citizens become aware and responsible towards water conservation, energy efficiency, and environmental protection, Shri Birla highlighted that water, energy, health, and environment are deeply interconnected. He stated that these complex challenges can only be addressed through a coordinated and integrated approach. He also underlined that for inclusive development, "transversality" between departments and policies is essential to achieve better harmony in our efforts.

Shri Birla stressed the importance of adopting the mantra of "Reduce, Reuse, Recharge, and Recycle" for water conservation. Referring to initiatives such as "Catch the Rain" and the "Jal Jeevan Mission," he underlined the critical role of public participation in ensuring the success of such campaigns.

He further stated that renewable energy and green initiatives are strengthening India's climate commitments. Shri Birla observed that India's progress in solar energy, wind

जल-ऊर्जा-स्वास्थ्य पर अंतरराष्ट्रीय सम्मेलन कार्यक्रम में पहुंचे लोकसभा स्पीकर ओम बिरला



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STORYS

Shri Om Birla Inaugurates Water Transversality Global Awards & Conclave 2026

PTI PTI 6th March 2026 7:54 AM read

L. R. Dr. Arvind Kumar, President India Water Foundation, Sh. Om Birla, Hon'ble Speaker Lok Sabha Water Transversality Global Awards & Conclave 2026 held at India International Centre, Bringing Global Focus on the Water-Energy-Health-Environment Nexus. Organized by India Water Foundation in collaboration with the United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP) and supported by around 45 national and international partner organisations, commenced today at the India International Centre. Now

LETTER NEWS Working Draft

Home > Updated > Lok Sabha Speaker Shri Birla addresses the Water Transversality Global Awards and Conclave

New Delhi 6th March 2026 9:33 AM

Lok Sabha speaker Om Birla addresses The Water Transversality Global Awards And Conclave 2026 In New Delhi

LOK SABHA SPEAKER OM BIRLA HAS SAID THAT DEVELOPMENT AND ENVIRONMENT MUST NOT BE SEEN AS OPPOSING FORCES BUT AS COMPLEMENTARY.

HE ADDED THAT WATER CONSERVATION IS ESSENTIAL FOR SECURING THE FUTURE OF HUMANITY AND ALL STAKEHOLDERS, INCLUDING PUBLIC REPRESENTATIVES, SHOULD WORK COLLABORATIVELY TOWARDS THIS AIM.

HE FURTHER STATED THAT RENEWABLE ENERGY AND GREEN INITIATIVES ARE STRENGTHENING INDIA'S CLIMATE COMMITMENTS. SHRI BIRLA OBSERVED THAT INDIA'S PROGRESS IN SOLAR ENERGY, WIND

THROWING A CURVE Fresh onslaught to higher reaches of J&K, rain in places, temp drops

Global Water Leaders Honoured at Water Transversality Global Awards & Conclave 2026

By Jyoti Saxena | March 12, 2026



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Sapno Ko Skip Nahi, SIP KARO!

AI Engineering Services Limited Wins Decarbonization Co-Benefits Award at Water Transversality Global Awards 2026

Created On: 12 Mar 2026 10:00 AM

By Jyoti Saxena

Share: Facebook, Twitter, WhatsApp, Telegram, Email, Print



AI Engineering Services Limited receives the Decarbonization Co-Benefits Award at the Water Transversality Global Awards & Conclave 2026 for its contribution to sustainable water management and climate-focused engineering solutions.

AI Engineering Services Limited (AESL), the nation's green water infrastructure team and overseas (AESL) organization has been conferred the Decarbonization Co-Benefits Award at the Water Transversality Global Awards & Conclave 2026.

Lamu's solar desalination project wins global Water Award in India

Lamu was honoured for the Kings Desalination Plant

By Jyoti Saxena

Listen to the article now

Lamu County has earned global recognition after its solar-powered desalination project in Kenya won the Best Community Impact Project Award at the Water Transversality Global Awards 2026 in New Delhi, India.

The awards are organized by the India Water Foundation, a global think tank on water governance and climate resilience with Special Consultative Status at the United Nations ECOSOC, working with partners including UN-ESCAP, UNOPS and the Government of India.

Lamu was honored for the Kings Desalination Plant, an innovative initiative that treats saline groundwater drawn from wells and converts it into safe drinking water for communities in the coastal border area.

For years, Lamu has struggled with drought and seawater intrusion, leaving residents with limited access to clean water.

The solar-powered facility now provides safe drinking water to households, schools and public institutions, while reducing dependence on fuel-powered water systems and strengthening climate resilience.

The county was represented at the ceremony by Kenya's Deputy Head of Mission in India, Ambassador Mary Mbatia, who received the award on behalf of the county government and the people of Lamu. County officials say the project has not only addressed water scarcity but also become a platform for the county to showcase its commitment to sustainable development.

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"CM TRANSFORMATIONAL And SUSTAINABLE GOVERNANCE AWARD" CONFERRED ON CM MAHARASHTRA DEVENDRA FADNAVIS AT WATER TRANSVERSALITY GLOBAL AWARDS And CONCLAVE 2026

Updated On: 11 March 2026 04:10 PM IST | Mumbai

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DMRC MANAGING DIRECTOR DR. VIKAS KUMAR HONOURED WITH 'LEADERS AWARD' FOR EXCEPTIONAL LEADERSHIP AT WATER TRANSVERSALITY GLOBAL AWARDS & CONCLAVE 2026

DMRC MD Dr. Vikas Kumar won the Leaders Award at the Water Transversality Global Awards & Conclave 2026, spotlighting Delhi Metro's green roofing, innovation, and Global South collaboration.

By Jyoti Saxena



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30th March 30th March

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Amit Kumar Ghosh Honored: UP's Healthcare Visionary Receives Good Governance Award

Shri Amit Kumar Ghosh, UP's Additional Chief Secretary, was awarded the Good Governance Award for his exceptional leadership in transforming public health and medical education. His initiatives have strengthened healthcare infrastructure, expanded services, and integrated technology, significantly improving service quality for millions in Uttar Pradesh, setting a benchmark for sustainable development.

By Staff | Updated: March 12, 2026, 11:27 AM



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Gold Rate Today (11 March 2026):

24K (999.9) New Gold Prices, Tarnetar, Mumbai, Jaipur, Ahmedabad,...

DelhiTimes

Conclave honours leadership in water and sustainability



Dr Arvind Kumar, President of the foundation, Dr Shiba, Speaker of the Lok Sabha, Dr Satya Tripathi, Secretary General-Global Alliance for a Sustainable Planet, and Naveej Kumar Bha, Postmaster General, Delhi Postal Circle.

Aims for integrated solutions achieved through the halls of the India International Centre as the Water Transversality Global Awards & Conference 2006 brought together global leaders and policy-makers for an international conference on the ESG transversality of the water, energy, health and environment sectors. Organized by the India Water Foundation with the support of the UN ESCAP-BSWA Office, NITI Aayog and other ministries, the conference emerged as a platform for reimagining governance through the lens of sustainability.

The organizers said, "The high-

The organizers said, "The high-

The presence of chief guest Om Birla, Speaker of the Lok Sabha, who presented the laureate. A special dinner was followed by India Post to commemorate the event. Among other attendees were Raj Bhargava, Chairman, MoS, Jai Shakti, and Harish Malliar, MoS, Corporate Affairs, MoS Transport & Highways.

"The conferees concluded in the presence of Lokesh Mehta, Rajesh Jain and RP Singh. Party vice Walter Transworld Global Awards were conferred upon distinguished leaders for good governance, including Desendra Fadnis, Central K Sangma and Harish Sanghvi, as well

KL Deemed to be University Honored with WF Award for Pioneering Wastewater Treatment and Water Conservation



SOCIAL NEWS XYZ

New Delhi: Om Birla at Water Transversality Global Awards and Conclave #Gallery



Om Birla Addresses Water Transversality Global Awards & Conclave



5 Dariya News • 1 week ago

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Shri Om Birla Inaugurates Water Transversality Global Awards & Conclave 2026

Monday, May 06, 2024 11:52 AM / 100% CPU



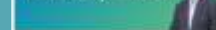
L-8 Dr. Arvind Kumar, President, India Water Foundation, Dr. OM Bera, Member, Council-Lok Sabha

Water Transversely Global Awards & Contest 2026 held at India International Centre, Bringing Global Focus on the Water-Energy-Health-Environment Nexus. Organized by India Water Foundation in collaboration with the United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP) and supported by around 45 national and international partner organizations, commenced today at the India International Centre, New Delhi.

The inaugural Session and Awards Ceremony was opened by Don Rife, Honorary Governor of the Los Angeles, as the Chief Guest. In



from the Secretary-General's Desk



Step 1: $\frac{1}{2}$

The first round of 2022 input projections is very timely, given that it is the first time that projections have been made for the 2022-23 financial year. The projections are based on the latest available data and are subject to change as more information becomes available. The projections are based on the latest available data and are subject to change as more information becomes available.

The second level is a self-organizing hierarchical system to design, optimize, manage, and control the system. The designers and operators of these systems must be able to interactively and iteratively develop a more global picture of the system, make a few changes, and then reoptimize the system. Following this, it is important that the system be able to adaptively change its parameters and structure in response to changing conditions and to new design and control goals.

For many, this is a milestone. The many young people continue to contribute to the growth of the country, and the government is working to ensure that they have the skills and resources to do so. The government is also working to improve the quality of education and training, and to create more opportunities for young people to start their own businesses.

David Taylor

Key highlights

Keywords: *children's literature; reading; literacy; literacy education; literacy assessment*



The University Library provides the location of the Department of Health and Safety.

Die folgende Tabelle zeigt die Summe der Abweichungen zwischen den tatsächlichen und den erwarteten Werten für die Jahre 2001 bis 2004. Eine negative Abweichung zeigt eine höhere als erwartete Abweichung an, eine positive Abweichung eine geringere als erwartete Abweichung an. Die Abweichungen sind in der Tabelle in der Spalte "Abweichung" angegeben. Die Summe der Abweichungen ist in der Spalte "Summe der Abweichungen" angegeben. Die Summe der Abweichungen ist in der Spalte "Summe der Abweichungen" angegeben.

Students explained strategies to answer 2D questions only and correctly followed the complete strategy through these methods are indicated consistently and are consistently used consistently 2D follow through is a key feature to improve their 2D answer accuracy and on their 2D strategy follow through 2D strategy consistency is consistent in consistently using a consistent strategy.

Supplemental Online Material: <http://www.jco.org>



Lifetime Achievement Awards for IWRA at Water Transversality Conclave

In March, IWRA attended the [Water Transversality Global Awards & Conclave 2026](#) in New Delhi, India, an international conference on "ESG Transversality for the Sustainable Water, Energy, Health & Environment Nexus."

IWRA Deputy Executive Director Ulrike Klein spoke at several key moments of the programme, and emphasised that addressing the water-energy-health-environment nexus requires stronger international co-operation, transparent governance, and genuine accountability.

Congratulations to three IWRA leaders, who received Lifetime Achievement Awards for their remarkable contributions to global water cooperation, river basin governance, and sustainable resource management:

- Rabi Mohtar, IWRA Vice-President
- Eric Tardieu, Chair of the IWRA Awards Committee and IWRA Honorary Member
- Ignacio Deregibus, IWRA Executive Director



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- Eric Tardieu, Chair of the IWRA Awards Committee and IWRA Honorary Member
- Ignacio Deregibus, IWRA Executive Director



Issue 1 - 2026

Welcome to IWRA's quarterly newsletter!

This digital issue reflects on the first months of 2026, from events and publications to new projects, and looks ahead to the activities and initiatives still to come this year across our global network of members and partners.

IN THIS ISSUE

HOME / CITIES / MAHARASHTRA CM DEVENDRA FADNAVIS RECEIVES GLOBAL AWARD FOR SUSTAINABLE GOVERNANCE AND INFRASTRUCTURE PUSH



- Live Now
- Video
- Reels
- Web Stories
- Photo Gallery
- Podcast
- Movie Review
- Opinion

Useful

- IFSC Code Finder
- Pin Code Finder
- Home Loan EMI Calculator
- Personal Loan EMI Calculator
- Car Loan EMI Calculator
- Education

Maharashtra CM Devendra Fadnavis Receives Global Award For Sustainable Governance And Infrastructure Push

The award recognizes the state's focus on sustainable development, climate action, and infrastructure expansion through water security, renewable energy, and technology-driven governance,

By :ABP Live News | Updated at : 12 Mar 2026 08:16 AM (IST)



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Maharashtra, under Devendra Fadnavis, received the "CM Transformational & Sustainable Governance Award" at the Water Transversality Global Awards & Conclave 2026.

Gujarat Urban Development Mission (GUDM) bags the best Community Impact Project award

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Gandhinagar (Gujarat) [India], March 2 (ANI): The Gujarat Chief Minister Bhupendra Patel-led government in Gujarat is accelerating planned urban development initiatives to equip cities with modern facilities.

According to the release, the Gujarat Urban Development Mission (GUDM) is strengthening municipal areas across Gujarat with improved infrastructure and civic amenities to improve citizens' well-being.

Recognising this focused approach, India Water Foundation (IWF) has announced the 'Best Community Impact Project Award' for the Integrated Command and Control Centre that monitors sewer network cleaning operations in 156 municipalities of Gujarat.







DR. ARVIND KUMAR'S

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