CHRONICLE - XII

(January 2025 - July 2025)

Center for Sustainable Development Goals | INDIA Water FOUNDATION | Focus Global Reporter

Foreword

Dear Jalmitra,

"It gives me immense pleasure to present India Water Foundation's chronicle with highlights of our last six months; a period marked by remarkable progress and sobering challenges in sustainable development, global cooperation, and environmental stewardship.

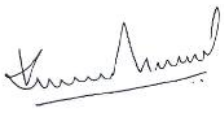
India achieved a historic milestone, reaching 50% of its installed electricity capacity from non-fossil fuel sources five years ahead of its 2030 Paris target. With 119 GW of solar power and a 4,000% growth in solar installations over the past decade, India stands as a clean energy leader for the developing world. Global momentum built toward COP30 in Belém, Brazil, with its call for scaling climate finance from $300 billion to $1.3 trillion annually by 2035. The UN Biodiversity Conference in Rome delivered a breakthrough, committing $200 billion annually for biodiversity protection and creating a permanent financing mechanism for developing nations.

The IMF projected global growth at 3% for 2025, amid protectionist trade moves and geopolitical uncertainty. India's economy remained resilient, with growth at 6.4–6.7% and inflation at a low 2.1%. However, conflicts in Ukraine, escalating Middle East tensions, and the U.S. withdrawal from the Paris Agreement challenged multilateral cooperation.

Climate impacts were severe: 2024 became the hottest year on record, deadly wildfires in California, catastrophic Texas floods, and Europe's worst heat waves underscored the urgent need for adaptation. The 10th Sustainable Development Report revealed only 17% of SDG targets are on track, but India entered the top 100, ranking 99th. The World Sustainable Development Summit reinforced that partnerships are key to bridging the implementation gap.

As 2030 draws nearer, our journey calls for courage, innovation, and unity. The India Water Foundation remains steadfast in building partnerships that shape sustainable, resilient futures turning today's challenges into enduring solutions. I extend my heartfelt thanks to my team, for teamwork is the art of uniting around a shared vision and channelling individual achievements toward collective goals. It is about discovering one's unique blueprint and expressing it with courage, confidence, and purpose".

Thank you



Dr. Arvind Kumar

INDEX

Contents

Spaces, 17th Floor, Max Towers, Sector 16B, DND Flyway Noida-201301, India

Spaces, 17th Floor, Max Towers, Sector 16B, DND Flyway Noida-201301, India

EDITORIAL

Trade Wars, Energy Transitions, and the Climate Crisis: Navigating 2025's Inflection Point

Dr. Arvind Kumar*

As we stand at the precipice of the second half of 2025, the world bears witness to both profound environmental reckonings and transformative shifts in global power dynamics weaving a complex tapestry of challenges and opportunities that are redefining our shared future. The Sustainable Development Goals Report 2025, released in July, delivers a sobering assessment that only 35% of SDG targets remain on track, with nearly half moving too slowly and 18% regressing entirely. This stark reality coincides with the 10th Sustainable Development Report, which positioned India at 99th place globally – its first entry into the top 100 nations, marking both progress and the immense distance yet to traverse. The Emissions Gap Report warns record 2023 emissions of 57.1 gigatons CO_2 equivalent could drive a 2.8°C rise by 2100, while the Global Wetland Outlook2025 reports a 22% loss of wetlands since 1970, threatening $39 trillion in vital ecosystem services. These environmental realities intersect with profound economic and geopolitical disruptions as the United States implemented sweeping trade tariffs in 2025, imposing duties on steel and aluminium alongside broad levies on Chinese imports. These protectionist measures, ostensibly designed to boost domestic manufacturing, have created cascading effects across global supply chains, particularly in sectors critical to sustainability initiatives, thereby undermining the very clean energy transition necessary for planetary survival. The ripple effects extend far beyond immediate trade impacts, as these policies threaten to derail international climate cooperation precisely when the World Meteorological Organization projects an 80% chance that at least one of the next five years will exceed 2024 as the warmest on record, with a 70% probability that average warming for 2025–2029 will surpass 1.5°C above pre-industrial levels. Amid these global headwinds, the wars in Ukraine and Gaza continue to cast long shadows over international stability. Ukraine enters its fourth year of resisting Russian invasion, while Gaza faces unprecedented destruction following the collapse of a ceasefire and Israel's renewed offensive operations. Beyond the immediate humanitarian tragedies, these conflicts exert deep structural impacts on global sustainability. The war in Ukraine, a key grain exporter continues to disrupt global food supply chains, driving volatility in wheat, maize, and sunflower oil markets, exacerbating hunger and inflation across vulnerable economies in Africa, the Middle East, and South Asia. In Gaza, the destruction of infrastructure, loss of arable land, and collapse of essential services deepen food insecurity and erode the region's resilience to climate-related stresses. Together, these conflicts amplify the fragility of the global food system, where climate change, supply chain disruptions, and geopolitical instability create a dangerous feedback loop threatening to reverse decades of progress toward Zero Hunger (SDG 2) and sustainable livelihoods. Against this backdrop, the United Nations system finds itself under unprecedented scrutiny, with its core mandate of preserving peace and security challenged by great power divisions, funding crises, and the growing recognition that traditional multilateral frameworks struggle to address interconnected global challenges. Amid the turbulence, transformative energy transitions are

redefining global power beyond traditional geopolitics. India's National Green Hydrogen Mission targets 5 million tonnes annually by2030, with 862,000 tonnes already allocated and electrolyzer capacity at 3,000MW, marking the rise of renewable technology powers over fossil fuel dominance. Wave energy, alternative fuels, and hybrid solar-wind systems—now 40% of India's awarded renewable capacity in early 2024—further illustrate how innovation is driving energy independence. The biofuels sector also surged, with marine biofuels cutting GHG emissions by 85.93% and global bioenergy investments set to rise 13% to $16 billion. The World Energy Council's 2025Issues Monitor notes these shifts are reshaping the energy trilemma—security, affordability, and sustainability—into a core driver of geopolitical strategy. The geopolitics of climate change in 2025 reveals how environmental imperatives are becoming strategic imperatives, with nations like China potentially announcing30% emissions reductions by 2035 while leveraging competitive advantages in solar and electric vehicle technologies to establish new spheres of influence. This intersection of climate vulnerability and geopolitical power creates unprecedented dynamics where traditional measures of national strength like military capacity, territorial control, fossil fuel reserves give way to new metrics of resilience, technological capability, and adaptive governance. In 2025, climate diplomacy is emerging as a central force in reshaping multilateral institutions and global governance, with the European Union embedding climate clauses in trade agreements, the expansion of BRICS bringing together nations with divergent climate ambitions, and growing recognition of climate change as a threat multiplier influencing conflict and stability. Climate leadership now serves as a form of soft power, while technological cooperation for clean energy fosters new alliances and determines national competitiveness in the evolving global order. However, the Climate Change Performance Index reveals that no major country is on track to meet its 2030 Nationally Determined Contributions, even though science warns that global emissions must peak by 2025 and fall by 60% by2035 to maintain climate stability. This urgency plays out against a backdrop of geopolitical fragmentation where trade wars disrupt clean technology supply chains, armed conflicts undermine food security, nationalist policies erode international cooperation, and the escalating costs of climate inaction are increasingly reflected in both corporate balance sheets and national budgets. As we navigate this transformative moment, the path forward demands recognition that sustainability, economic development, and geopolitical stability, are not competing priorities but interconnected dimensions of a single global challenge. The story emerging in 2025 suggests that nations and communities capable of integrating climate resilience with technological innovation, energy security with peacebuilding, and economic competitiveness with sustainability will define the next chapter of global development. The choices made in the remaining months of this year from climate finance mechanisms to technology transfer agreements, from trade policy reforms to conflict resolution strategies will determine whether humanity can harness the transformative potential of this moment to build more equitable, sustainable, and resilient foundations for the future, or whether the convergence of environmental, geopolitical, and humanitarian pressures will fragment global cooperation precisely when unity becomes most essential for planetary survival.

**Editor, Focus Global Reporter*

INTERVIEW

MRS. JYOTI MATHUR FILIPP

Executive Secretary,
INC on Plastic Pollution and Head of the Secretariat, UNEP

Mrs. Jyoti Mathur-Filipp, Executive Secretary of the INC on Plastic Pollution and Head of the Secretariat. Prior to this assignment, Mrs. Mathur-Filipp served as Director at the Secretariat of the Convention on Biological Diversity. She has also held key roles in inter-governmental processes, leading the work on the new Global Biodiversity Framework. With over 25 years of experience in international environmental diplomacy, she possesses extensive knowledge in environment, climate and sustainable development networks. She began her career with UNDP and managed ground-breaking partnerships. Her diverse roles include consulting for UNFCCC and senior advisory positions at UNDP. Mrs.

Mathur-Filipp holds an MSc and MBA and is an alumnus of esteemed educational institutions

*Excerpts from an interview of **Mrs, Jyoti Mathur- Filipp,** Executive Secretary of the INC on Plastic Pollution and Head Secretariat, UNEP by **Dr. Arvind Kumar**, Editor, Focus Global Reporter*

EDITOR: Plastics have been mass-produced for more than seven decades and are now embedded in nearly every aspect of daily life. But which types of plastics are the most polluting and what are their impacts on the environment and human health?

MRS. FILIPP: Plastic pollution is a growing global crisis, affecting ecosystems, economies, and communities across land, freshwater, and oceans. Among the most problematic are single-use plastics, which are designed to be discarded after one use and are often mismanaged, contributing significantly to environmental leakage.

Plastic packaging is especially prevalent and rapidly increasing in volume, while microplastics—tiny particles formed from degraded plastics or intentionally added to products like cosmetics—are now found in air, food, water, and even human bodies. Though the full health effects are still under study, global concern is rising.

UNEA Resolution 5/14 recognizes the urgency of the issue and explicitly includes single-use plastic products within its scope. Without intervention, plastic leakage into the environment is projected to grow by 50% by 2040.

EDITOR: With all the threats that plastic pollution poses, why has there been no international agreement on the proper use and disposal of plastics before?

MRS. FILIPP: Plastics have long supported global development due to their versatility and affordability, leading to widespread and increasing use across many sectors. As evidence of pollution mounted, an environmental crisis became evident and global action was required.

In response, UN Member States adopted Resolution 5/14 in 2022 at the United Nations Environment Assembly, initiating the Intergovernmental Negotiation Committee (INC) to develop an international legally binding instrument to end plastic pollution, based on a comprehensive approach that addresses the full life cycle of plastic.

EDITOR: The INC process began in 2022 with the aim of concluding negotiations on a legally binding instrument on plastic pollution by the end of 2024. Can you outline the key milestones achieved so far and what remains to be accomplished before the process concludes?

MRS. FILIPP: Since the adoption of Resolution 5/14 in 2022, countries have engaged in a fast-tracked, multilateral process to develop a legally binding instrument to end plastic pollution. In a short time span, five negotiating sessions have been held under the INC, reflecting strong global commitment.

Progress has been made through inclusive dialogue involving governments and stakeholders such as scientists, industry, and civil society. At the first part of the fifth session (INC-5.1) in Busan, the Committee agreed on a "Chairs Text" that will serve as the starting point of negotiations when the session resumes. As the process moves toward its conclusion at the second part of the fifth session (INC-5.2) in Geneva this August, key issues remain under discussion.

EDITOR: Drawing on your extensive experience in environmental diplomacy and multilateral agreements, what lessons from previous international negotiations (such as the Convention on Biological Diversity) have informed your approach to leading the INC Secretariat?

MRS. FILIPP: The INC Secretariat, in its role as a facilitator, has supported Members of the Committee by drawing on lessons from past multilateral environmental processes. These include ensuring transparency, enabling inclusive participation, and grounding discussions in science. While respecting the intergovernmental nature of the negotiations, the Secretariat has worked to create and support a process that is informed by experience, yet open to innovation—supporting delegations as they work toward an agreement.

From my time working on the Convention on Biological Diversity (CBD), it's clear that effective multilateral agreements depend on three things: inclusive processes, holistic approaches, and collaborative implementation. The CBD showed us the value of engaging all voices—from Indigenous Peoples to scientists—and of grounding solutions in the full lifecycle of environmental challenges.

EDITOR: The first part of the fifth session (INC-5.1) in Busan concluded with the adoption of a 'Chair's Text' as the basis for further negotiations. What are the main elements of this text, and how does it reflect the progress made by the Committee?

MRS. FILIPP: The Chair's Text published at INC-5.1 reflects continued progress in the negotiations. The text organizes views submitted by Members into a streamlined format, covering the plastic lifecycle, and provides a starting point for further discussion. It enables delegations to focus on key areas where further agreement is needed ahead of and during the resumed session – INC-5.2.

EDITOR: The negotiations have considered both binding and voluntary approaches. What are the main considerations the Committee is weighing when deciding on the balance between these approaches?

MRS. FILIPP: Binding and voluntary approaches are being considered by Members, who lead the negotiations. Decisions on the structure and legal nature of the instrument remain fully within their mandate.

EDITOR: The Intergovernmental Negotiating Committee (INC) is meeting in Geneva in August 2025 for its second part of the fifth session. What are the key elements to be discussed and how do they address the root causes of plastic pollution?

MRS. FILIPP: The job of this treaty was always to spark big changes – to catalyse systemic change. At INC-5.2, there is an expectation to deliver on the vision of the UNEA Resolution 5/14, and agree on an instrument that spells the end for plastic pollution.

EDITOR: How does the INC Secretariat plan to support countries, especially developing nations, in preparing for the implementation of the future treaty once it is adopted?

MRS. FILIPP: Once the instrument is adopted and eventually enters into force, the next crucial step will be ensuring its timely and effective implementation; but of course, we should all be working now to prepare for implementation.

There will be a need to support countries—particularly developing nations—through efforts such as technical assistance, knowledge sharing, monitoring and evaluation, facilitating access to finance, and coordination mechanisms.

After the treaty is adopted, only then will decisions follow such as the establishment of a Secretariat.

EDITOR: What's the key message behind all this process that pertains to plastic pollution?

MRS. FILIPP: This process is about enabling countries to come together to develop a global solution that properly addresses plastic pollution across its full lifecycle, in a way that is inclusive, science-based, and implementable for all.

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MR. IGNACIO DEREGIBUS

Executive Director,
International Water Resources Association (IWRA)

Mr. Ignacio Deregibus, an expert in environmental policy and project management, is the Executive Director of the International Water Resources Association (IWRA) since November 2016. He previously worked with UNESCO's Intergovernmental Hydrological Programme and as an Environmental Policy Consultant with the OECD in Paris. In Argentina, he served as a Business Specialist at Accenture for over four years. An Argentinian and Italian national, Ignacio holds a bachelor's degree in Political Science (International Relations) from the University of Buenos Aires and a Master in Public Affairs (Sustainability) from Sciences-Po, Paris. His expertise focuses on water and sustainable development.

*Excerpts from an interview of **Mr. Ignacio Deregibus**, Executive Director, International Water Resources Association (IWRA) by **Dr. Arvind Kumar**, Editor, Focus Global Reporter*

EDITOR: What do you see as the most pressing water-related challenges today, and how do you think they can be addressed?

MR. IGNACIO: The current, ongoing global water crisis is a multifaceted challenge intensified by climate change, overexploitation, pollution, and governance deficiencies. Lack of collaboration, insufficient financial investment in water infrastructure, degradation of freshwater

and groundwater, deteriorating water quality, and the vulnerability of island communities, just to name a few, highlight the urgency for integrated solutions. Despite this, I am convinced IWRA is well positioned to address these issues through interdisciplinary collaboration, fostering a science-policy-practice interface that promotes sustainable water management strategies, and tackle these issues in a much more holistic and systematic approach.

EDITOR: How does IWRA's mandate under the theme "Water in a Changing World: Innovation and Adaptation" address the challenges posed by climate change to water resources globally?

MR. IGNACIO: The theme of our upcoming XIX World Water Congress, *"Water in a Changing World: Innovation and Adaptation,"*reflects the urgency and complexity of today's water challenges. Every week, we are confronted with stark reminders of a changing climate: unprecedented floods in regions that have never flooded, prolonged droughts threatening food security, and increasing tensions over limited water resources. These events underscore the need for actionable, inclusive, and forward-looking solutions.

The Congress, co-organised with Morocco's Ministry of Equipment and Water, will take place in 1-5 December 2025 in Marrakech. It aims to catalyse concrete responses by fostering interdisciplinary dialogue and promoting innovation across sectors. Participants, including researchers, policymakers, private sector, and civil society, will explore practical approaches to strengthening water systems through smarter governance, nature-based solutions, and technology-driven resilience.

By emphasising innovation and adaptation, the XIX Congress seeks to develop strategies that support the achievement of Sustainable Development Goals, particularly SDG 6 (Clean Water and Sanitation) and SDG 13 (Climate Action). Initiatives like our World Water Envoys Programme, launched in 2019, will also amplify underrepresented voices, including youth and marginalised communities, to ensure that the dialogues at the Congress reflect diverse lived realities.

Ultimately, the XIX Congress is a direct expression of IWRA's mission: to bridge science, policy, and practice through inclusive, evidence-based dialogue. By convening global expertise and local knowledge, it helps translate research into action–building more resilient, sustainable, and equitable water systems for a changing world.

EDITOR: How does IWRA facilitate the science-policy-practice interface to ensure that research findings on sustainable water management are effectively translated into actionable policies?

MR. IGNACIO: Through its events, publications, projects, Task Forces and Chapters, the Association serves as a bridge between scientific research and policy implementation for positive impact on the ground. IWRA's initiatives aim to translate complex scientific findings into actionable policies, ensuring that water management strategies are grounded in robust evidence and are applicable. For instance, our flagship journal, *Water International*, now celebrating its 50th anniversary, continues to publish peer-reviewed research that influences both science and policy. To ensure accessibility, key findings from some of the journal issues and events are summarised into policy briefs– designed for decision-makers and the broader public.

IWRA's events are also central to this interface. For example, at our inaugural Islands Water Congress which took place last year in the Faroe Islands, we brought together leaders of two island nations, supported their negotiation process, which led to the signing of a Memorandum of Understanding at our Congress. The MoU agreement is their promise to continue collaborating and sharing best practices in water management beyond the event. Additionally, IWRA also supported the drafting of a new water law that will be taken to Parliament in the Faroe Islands. Furthermore, we are also developing an *Islands Water Policy Report* from the Congress findings to offer targeted recommendations for island nations.

In all our work, IWRA is committed to transforming scientific insights into actionable knowledge products that guide sustainable water management policies, thus strengthening the link between research, practice, and governance on a global scale.

EDITOR: What role does IWRA play in promoting integrated water resources management (IWRM) at transboundary levels, particularly in regions facing acute water stress?

MR. IGNACIO: IWRA certainly plays a pivotal role in promoting Integrated Water Resources Management (IWRM) at transboundary levels, especially in regions experiencing acute water stress. By facilitating interdisciplinary collaboration among scientists, policymakers, and practitioners, IWRA promotes the development of equitable and sustainable water management strategies across shared water bodies.

Through global events like the World Water Congress and strategic publications such as the *Global Water Security Issues (GWSI) Series* with UNESCO i-WSSM, IWRA disseminates research and best practices that inform and influence transboundary water governance frameworks. Our participation in international dialogues also contributes to shaping capacity-building efforts and institutional frameworks necessary for effective IWRM implementation.

Importantly, IWRA supports locally grounded action through its regional Chapters. For example, our Latin America and Caribbean Chapter is hosting a regional seminar series that brings together experts to exchange experiences and explore future challenges related to IWRM in their specific contexts. These types of initiatives ensure that IWRM principles are not only promoted at the global level but also adapted to the needs and realities of local and regional actors.By

bridging global expertise with local application, IWRA strengthens the foundations for integrated and cooperative water management across borders.

EDITOR: How does IWRA collaborate with international frameworks like the UN Water Conference or regional organizations to advance global progress on SDGs related to water sustainability?

MR. IGNACIO: We actively collaborate with international and regional organisations to advance Sustainable Development Goals (SDGs) related to water sustainability. Notably, IWRA participated in the UN 2023 Water Conference, organising a side event titled *"Water–Economy–Ecology Nexus in a Changing Environment"*, which focused on balancing human and ecological water needs. This event featured best practices from countries like the Netherlands, Tajikistan, China, and Indonesia, and aimed to support the achievement of the SDGs. We are also actively involved in the preparatory planning meetings for the second edition.

Additionally, IWRA's Task Force on Water & SDGs works to adapt global goals to specific regional and local water management needs, addressing challenges such as data scarcity and the need for appropriate institutional support. IWRA also sits on the UN-Water Task Force, contributing to the selection of annual thematic priorities. These are just a few. Through all our collaborations and initiatives, IWRA plays a crucial role in contributing to actionable policies, ensuring that water management strategies are both evidence-based and applicable.

EDITOR: What measures does IWRA take to ensure that marginalized communities, including women and indigenous populations, are actively involved in policy making processes for sustainable water management?

MR. IGNACIO: Firstly, in all our initiatives, we make a conscious effort to ensure diverse representation so that a variety of voices are heard and included. This principle of inclusivity is a core element of IWRA's engagement approach.

For example, one of our ongoing projects– the upcoming seventh edition of the Global Water Security Issues (GWSI) Series, developed in partnership with UNESCO i-WSSM–focuses on *"Water and Gender."* This publication aims to highlight women's rights and promote equal opportunities in water access and management. It will also contribute to the World Water Assessment Programme's flagship report on the same theme, to be published in 2026.

IWRA also collaborates with organisations such as the Women for Water Partnership and the Women in Water Diplomacy Network to promote women's leadership in transboundary water cooperation, ensuring that their voices are integrated into decision-making processes.

Another example is our inaugural Islands Water Congress, where Indigenous leaders and representatives from remote islands such as Fiji and Hawai'i were invited to share their

traditional knowledge and perspectives on water management. The platform allowed these voices to be heard within a global, multidisciplinary, and multisectoral context.

In addition, our upcoming XIX World Water Congress in Marrakech will feature a sub-theme specifically dedicated to Indigenous knowledge under the broader focus on water innovation. We believe there is significant value in drawing on traditional approaches to water management alongside innovative technologies and innovations. Through these efforts, I believe IWRA contributes meaningfully to more inclusive and effective water governance worldwide.

EDITOR : How does IWRA contribute to achieving other SDGs, such as SDG 13 (Climate Action) and SDG 15 (Life on Land), through its programs and advocacy?

MR. IGNACIO: In my opinion, IWRA contributes to SDG 13 (Climate Action) and SDG 15 (Life on Land) by ensuring these themes are reflected throughout its events, projects, and knowledge products.

For example, the sub-themes developed for previous Congresses and the XIX World Water Congress in Marrakech, specifically include topics related to climate change, ecosystem management, and disaster risk reduction – ensuring that discussions around SDGs 13 and 15 are integrated at the highest level of dialogue.

Further contributing to these goals, IWRA recently published the book *Emerging Pollutants: Protecting Water Quality for the Health of People and the Environment*, in collaboration with UNESCO. The publication, based on the UNESCO-IWRA Online Conference held in January 2023, presents scientific findings on aquatic ecosystem health, groundwater contamination, circular economy approaches, and wastewater reuse. Its policy-relevant conclusions also provide clear recommendations for managing pollutants in support of sustainable water and environmental governance in the context of global change.

These efforts align with global initiatives to combat climate change and preserve biodiversity, reinforcing IWRA's role in advancing sustainable development on top of sustainably managing the world's water resources.

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DR. ESSAM Y. MOHAMMED

Senior Director of Aquatic Food Systems CGIAR &
Director General, World Fish

Dr. Essam Yassin Mohammed, Director General of World Fish, leads global research and innovation in aquatic food systems. With expertise in fisheries science and environmental economics, he integrates economic and conservation strategies to promote sustainable development. Renowned for influential publications and international advocacy, Dr. Mohammed drives World Fish's impact on food security, nutrition, and livelihoods through science, technology, and strategic partnerships. His visionary leadership focuses on long-term resilience for communities and aquatic ecosystems worldwide.

Excerpts from an interview of Dr. Essam Yassin Mohammed, *Senior. Director, Director of Aquatic Food Systems CGIAR & Director General, WorldFish by* ***Dr. Arvind Kumar****, Editor, Focus Global Reporter*

EDITOR: CGIAR is known for its focus on transforming food, land, and water systems. Could you elaborate on how CGIAR integrates environmental health and biodiversity into its research and innovation agenda, especially in the context of aquatic food systems?

DR. ESSAM Y. MOHAMMED: World Fish has actually made environmental sustainability and climate resilience a core pillar of its 2030 research and innovation strategy. This means every program is designed with ecosystem sustainability in mind. In practice, we're pursuing "nature-positive" solutions. For example, our World Fish teams work on preserving aquatic biodiversity by protecting wild fish stocks and their habitats even as we promote aquaculture. We integrate fish genetic conservation into breeding programs and encourage poly-culture (farming multiple species in one system) which mimics natural ecosystems. So when we develop new fish farming techniques or fisheries management plans, they are vetted for environmental co-benefits like maintaining water quality, conserving mangroves and wetlands, and safeguarding endangered species.

We also champion an ecosystem approach to fisheries: working with communities to establish no-fishing zones or sanctuaries so that depleted species can rebound. Overall, environmental stewardship is built into our innovation pipeline. We recognize that without healthy ecosystems and rich biodiversity, aquatic food systems can't be sustainable in the long run. It's about ensuring aquatic foods are produced in ways that restore nature rather than harm it. This philosophy guides everything from breeding resilient fish strains to advising governments on policies that balance production with conservation.

EDITOR: Which countries right now lead in global aquaculture production and what can be done to improve sustainable aquaculture in low-income countries or regions?

DR. ESSAM Y. MOHAMMED: Aquaculture has boomed worldwide, and a few countries dominate. China is by far the largest producer, accounting for over half of all farmed fish and seafood globally. After China, the biggest contributors include India, Indonesia, Vietnam, and Bangladesh, which each have robust aquaculture sectors. In fact, Asia produces nearly 90% of the world's farmed fish. India, for instance, is now among the top aquaculture producers, with carp and shrimp farming contributing greatly to its output. These leading Asian producers drive the trends – their success has made Asia the epicenter of global aquaculture growth.

In contrast, many low-income regions, like parts of Africa, are still developing their aquaculture potential. Improving sustainability in aquaculture, especially in low-income countries, is multi-faceted. One key step is adopting better farming practices – what we call "climate-smart" or sustainable aquaculture. This includes using quality fish seed (fingerlings of robust, fast-growing breeds) and affordable, eco-friendly feeds so farmers get good yields without excessive resource use. For example, feeding fish with locally produced feeds (like rice bran or insect meal) can reduce reliance on wild-caught fish for fishmeal and cut both costs and environmental impact. We also encourage techniques like poly-culture and integrated farming – for instance, combining

fish with rice farming or raising different species together (fish alongside shellfish and seaweed) so that waste from one becomes food for another. Such methods improve efficiency and reduce pollution. Capacity building and training are crucial. Many small-scale farmers in Africa or South Asia could greatly boost productivity by simple changes – say, better pond management, water quality monitoring, or disease prevention. We have projects in Egypt, Zambia and Nigeria where farmers are trained in these best practices, leading to yields doubling while using the same water and feed inputs.

Policy support is another piece: governments can set guidelines on sustainable stocking densities (to prevent over-intensive farming), regulate the use of chemicals, and encourage environmental impact assessments for larger aquaculture operations.

In low-income regions, access to finance is often a barrier to adopting improved technologies. So, innovative financing (micro-loans or grants for small farmers, for example) and establishing farmer cooperatives can help them invest in things like aeration devices or better feed that make farms more sustainable. Finally, learning from each other is huge. Countries like Bangladesh, which has transformed its aquaculture sector sustainably over recent decades, offer lessons. Bangladesh moved from mostly traditional methods to improved semi-intensive ponds and saw a massive jump in fish production (including nutritious small fish) while engaging rural communities and women's groups. By sharing such success stories and research from World Fish, we help other low-income countries avoid "reinventing the wheel" and leapfrog to sustainable aquaculture practices suited to their local context.

EDITOR: What are the projected trends for aquatic animal production and consumption?

DR. ESSAM Y. MOHAMMED: We're seeing a steady "blue revolution." Global demand for aquatic foods – fish, shellfish, and more – is surging as populations grow and people recognize the health benefits of seafood. Over the past few decades, fish consumption per person has more than doubled, and it's still rising. It is projected that global fish production will reach 204 million tonnes by 2030, underscoring the critical role of aquatic foods in feeding the world. Most of this growth will come from aquaculture, since wild fish catches have plateaued – wild fisheries have largely hit their natural limits. In fact, aquaculture is expected to provide nearly 60% of the fish we eat by 2030, up from roughly half today, continuing the trend where farmed fish overtook wild catch as the main source of our seafood a few years ago.

However, the trends aren't uniform across regions. Asia will continue to dominate both production and consumption, China, Southeast Asia, South Asia (India, Bangladesh, etc.) are eating more fish as incomes rise and diets diversify. In many parts of Africa, on the other hand, fish consumption per person is currently low and could even decline if supply doesn't keep up. Africa faces a unique challenge: its population is booming and fish is a crucial food, but local production hasn't caught up yet. For instance, aquaculture output in Africa is projected to grow nearly 50% by 2030, yet that may only partly offset the growing demand.

If trends continue, some African countries might see per capita fish availability stagnate or drop, leading to greater reliance on imports or a nutrition gap. This is a big concern because fish is often the cheapest and sometimes the only animal protein accessible in these countries. It highlights why we need to invest in "blue food" growth in Africa and other under-served regions. On the positive side, more countries are waking up to the potential of aquatic foods. We see strong commitments: India, for example, has a Blue Revolution initiative aiming to double its fish production through sustainable means. In Latin America, nations like Brazil (tilapia farming) or Ecuador (shrimp farming) are expanding aquaculture as well. Consumers globally are also becoming conscious of sustainability. There's rising demand for responsibly sourced seafood, and we anticipate that certified sustainable aquaculture will capture a larger market share. New aquatic products (like seaweed-based foods or plant-based seafood alternatives) might also become part of the consumption mix, though traditional fish will remain dominant. Overall, aquatic food production is one of the fastest-growing parts of the food sector. If done right, this "blue revolution" can meet future nutrition needs while easing pressure on wild fish stocks. Our job is to make sure that growth happens sustainably and benefits those who need nutritious food the most.

EDITOR: What are the biggest barriers to scaling up sustainable aquatic food systems globally, and how can they be overcome?

DR. ESSAM Y. MOHAMMED: There are several significant barriers that keep us from reaching the full potential of sustainable aquatic foods especially in developing regions.

Access to finance is a major one. Many small-scale fishers and farmers know what would boost their productivity—better feed, aerators, improved gear—but they simply can't afford the upfront costs. We need innovative financing like microcredit tailored for aquaculture, public investment, and greater use of tools like blue bonds to unlock climate and impact finance for the sector.

Infrastructure gaps are another hurdle. In many regions, the lack of cold storage, processing facilities, and transport means fish spoils before reaching consumers—hurting both food security and incomes. Investments in basic infrastructure, like ice plants and rural roads, may not sound glamorous, but they're essential for reducing waste and connecting producers to markets.

Knowledge and skills also hold back progress. Many producers haven't been trained in sustainable practices. Strengthening extension services and using digital tools like mobile apps can help close this gap. Peer learning models, like farmer field schools, have proven effective—empowering communities to manage water, prevent disease, and improve yields sustainably.

Policy and regulatory barriers need attention too. Vague water rights or complex licensing deter investment in sustainable practices. Governments can help by securing tenure for fishing communities, simplifying regulations for responsible aquaculture, and ensuring enforcement against harmful activities like illegal fishing or pollution.

Finally, climate change is an accelerating threat. Floods, heat waves, and disease outbreaks are already impacting production. The response must include innovation—resilient breeds, vaccines, and early warning systems—as well as nature-based solutions like mangrove restoration and elevated pond design. But all of this depends on political will and targeted investment.

There's no single fix—but when governments, researchers, businesses, and communities come together, change happens. We've seen it in places like Zambia, where public–private collaboration improved feed access for smallholders. If we systematically address these barriers, we can unlock aquatic food systems that are productive, sustainable, and inclusive.

EDITOR: With COP 30's focus on accelerating implementation, what are the most promising innovations in aquatic food production—such as seaweed farming, that can deliver both climate and food security benefits at scale?

DR. ESSAM Y. MOHAMMED: There are several exciting innovations on the horizon (and already in practice) that make us optimistic about the future of aquatic foods. Let's start with seaweed farming.

Seaweed farming stands out as a climate-smart, low-input super food. It doesn't need fresh water or fertilizer, grows quickly, and absorbs carbon and excess nutrients. Countries like Indonesia and Zanzibar are scaling seaweed farming often led by women, creating nutritious food and new incomes. Emerging technologies are making offshore seaweed farming more efficient, and its use in food, feed, and even methane-reducing livestock additives shows immense promise.

Integrated multi-trophic aquaculture (IMTA) is another game-changer - growing fish, shellfish, and seaweed together so that the waste from one feeds the other. It boosts productivity while reducing pollution and opens up multiple income streams for farmers from a single site.

Genetic improvements are helping farmers grow faster, hardier fish with less feed. GIFT tilapia is a great example, now widely adopted across Asia and Africa. We're also seeing interest in farming local species like African catfish and hilsa, as well as filter feeders like mussels that require no feed and improve water quality.

Aquafeed innovations are breaking the sector's reliance on fishmeal. Feeds made from insects, algae, and agricultural by-products are more sustainable, locally available, and often more affordable -especially important for smallholders.

Finally, digital and precision aquaculture is growing fast. Tools like automatic feeders, smartphone apps, and water quality sensors are helping farmers improve yields and reduce waste. Apps and satellite tracking also support sustainable fishing, providing real-time insights on stock health and supply chains. These tools are becoming increasingly accessible, even for small-scale producers, and are helping bridge the gap between traditional practices and modern, data-driven management.

We need aquatic foods fully recognized in climate finance frameworks. That means including fishers and aquaculture in national adaptation plans, and earmarking climate funds for coastal resilience and blue food innovations. We also need to rethink subsidies—redirect them from harmful practices to sustainable ones. Blue bonds and insurance schemes tailored for small-scale fishers can unlock private investment too. And critically, we need policy reforms that secure community rights, especially for women and indigenous groups, and integrate aquatic food systems into broader food and nutrition security strategies. Finance should flow where it matters most—to the people stewarding our waters every day.

EDITOR: How are digital tools and big data being leveraged to inform policy and improve the management of water, soil, nutrients, and biodiversity in aquatic food systems?

DR. ESSAM Y. MOHAMMED: Digital innovation is transforming aquatic food systems, especially in the Global South.

Take Peskas, for example—a community-driven digital platform developed by World Fish that enables small-scale fishers to log daily catches using simple mobile tools. That data feeds directly into national fisheries databases, helping governments make evidence-based decisions on stock management and fishing seasons.

In aquaculture, farmers are using low-cost sensors and apps to monitor pond conditions, manage feeding, and reduce input waste. In countries like Bangladesh and India, satellite imagery is now used to map fish ponds and align water releases with farm needs.

These tools don't just make production more efficient—they connect real-time, ground-level insights with national planning. That's how we turn scattered actions into system-wide solutions that protect water, biodiversity, and people's livelihoods.

EDITOR: You have emphasized that climate change is as much a justice issue as it is an ecological one. How can climate adaptation and sustainable aquatic food initiatives ensure that marginalized communities benefit equitably?

DR. ESSAM Y. MOHAMMED: The people hit hardest by climate change are the ones who did the least to cause it. Fishers living on the edge of rising seas, women running backyard ponds in drought-prone areas, Indigenous communities whose ancestral waters are being degraded—they're not just vulnerable; they're vital. They feed us, they protect biodiversity, and they hold the knowledge we need to adapt.

Equity means flipping the script. It means putting power, resources, and decision-making in the hands of those communities. That's why we push for secure rights to fish and water, prioritize women and youth in innovation programs, and co-create solutions that respect traditional knowledge. Climate finance must reach the last mile—not through trickle-down promises, but through direct investment in grassroots adaptation.

This is smart strategy. When local people lead, ecosystems recover faster, food systems become more resilient, and the benefits stick. True climate adaptation protects the planet and redistributes power. And that's the kind of transformation we need.

MS. KAREN SACK

Executive Director,
Ocean Risk & Resilience Action Alliance (ORRAA)

Ms. Karen Sack is the Co-founder and Executive Director of the Ocean Risk and Resilience Action Alliance (ORRAA), a global partnership uniting the private sector, governments, and civil society to build resilience in ocean-vulnerable communities through innovative finance and insurance solutions. A lifelong ocean conservationist, she previously served as CEO of Ocean Unite, which she co-founded with Sir Richard Branson and José María Figueres to drive high-impact ocean advocacy.

Karen has held senior roles at The Pew Charitable Trusts, where she launched the Global Ocean Commission, and at Greenpeace International, leading major international campaigns on marine protection, fisheries reform, and high seas governance. She holds postgraduate degrees in international environmental law and international political economy, and is originally from South Africa, now residing in the U.S.

*Excerpts from an interview of Ms. Karen Sack, Co-Founder and Executive Director, Ocean Risk and Resilience Action Alliance (ORRAA) by **Dr. Arvind Kumar**, Editor, Focus Global Reporter*

EDITOR: In your view, what does a resilient, thriving ocean look like in 2050?

MS. KAREN SACK: By 2050, if not well before, we (humans), would have realised that a healthy planet requires a healthy ocean, which means an ocean full of life. We will have closed the high seas – our common international waters - to all extractive or destructive activities, including industrial fishing and any minerals extractions. Shipping across these seas would still be allowed, but ships would run on renewable energy and engine noise would be a thing of the past.

This vast fully protected marine area, covering two-thirds of the Ocean would be like a huge marine nature and climate bank, regenerating and restoring marine life and in so doing, the carbon carrying capacity and biodiversity generating capacity of the ocean.

We also would have ended all harmful fishing subsidies so that large industrial fishing and fishing-support vessels would not be able to go and fish any remaining healthy fish stocks in the waters of distant countries. All countries would have implemented requirements allowing only well-managed artisanal fishing within 12 nautical miles from their coasts and have highly protected 30-50 per cent of their waters. There would be no off-shore oil and gas drilling, but well-positioned off-shore renewables Healthy and vibrant coastal ecosystems would have been restored and flourishing, protecting coastal communities from rising sea levels and extreme storms; and, acting as nurseries, carbon sinks and toxin filters to prevent any remaining run-off from land entering the Ocean.

Single use plastics would have been replaced with sustainable bioplastics and strong waste management systems would be in place to prevent land-based waste from entering the sea. People would be enjoying the thrills and calm of a vibrant ocean which would be supporting livelihoods and recreation.

EDITOR: With the recent adoption of the High Seas Treaty, what opportunities and challenges do you foresee in its implementation, particularly for vulnerable coastal communities?

MS. KAREN SACK: The High Seas Treaty is an essential enabling element for us to achieve a healthy ocean by 2050. It takes elements of the Law of the Sea Convention – which we often call the 'Constitution for the Ocean' and enables countries to work together to focus on how to keep life in the Ocean rather than extracting it. It is one of the most significant international environmental agreements since the 2015 Paris Agreement. The huge opportunities are for the

international community to act together quickly to protect large international areas of the ocean and ensure that among other things, capacity building and marine technology transfer helps developing countries in effectively implementing the treaty. The challenges include ensuring that the vast majority of countries adhere to the terms of the treaty, that it is quickly implemented, adequately financed, and that the benefits are equitably shared. None of these are insurmountable. The biggest opportunity and challenge is political will – which is a renewable resource, so hopefully forthcoming!

EDITOR: What role do financial institutions and the insurance industry play in reducing ocean risk, and how does ORRAA foster collaboration between these sectors and governments?

MS. KAREN SACK: The importance of coastal and ocean ecosystems to the global economy cannot be overstated. Two-thirds of publicly listed companies could be exposed to up to $8.5 trillion worth of value at risk over the next 15 years without immediate action to transition to a regenerative and sustainable blue economy. But transitioning to a sustainable ocean economy could mitigate over $5 trillion in losses while unlocking new growth avenues and reinforcing financial and environmental resilience. ORRAA's Coastal Risk Index (CRI) has found that USD$363 billion worth of coastal assets would be at risk of flooding without the protective benefits of coastal ecosystems and 14.2 million more people would be flooded annually without coral reefs and mangroves providing the first line of defence against coastal flooding and storm surges. This is the value of nature on our doorstep.

The way that the finance and insurance community invests, what they prioritise and deprioritise can mean the difference between trillions of dollars of value being made more resilient or exposed to increased risk and vulnerability. This is why we started ORRAA. It is the only multi-sector collaboration connecting finance and insurance, governments, multilaterals, civil society, and local partners, to pioneer finance and insurance products that incentivize investment into coastal and ocean resilience. The mission, by 2030, is to activate at least USD$500 million of investment to build the resilience of 250 million climate vulnerable coastal people in the Global South. Because the Ocean is living capital. When we invest in its health, we invest in our own.

Healthy ecosystems are productive assets that compound in value. If we consider nature as essential infrastructure, and coastal ecosystems as protective infrastructure, then we recognise that mangroves, reefs, sea grasses and sand dunes provide flood control, carbon capture, and fish stock regeneration. Unlike concrete structures, they don't start to degrade as soon as they are built, but get stronger over time; and they have a high return on investment: nature-based solutions offer 4-10x cost savings over gray infrastructure.

EDITOR: Can you share examples of innovative finance or insurance products that ORRAA has pioneered to address ocean risk and climate adaptation?

MS. KAREN SACK: Absolutely, ORRAA and our over 125 members are at the right place at the right time to deliver solutions. We connect the beachfront to the boardroom: frontline actors to philanthropies, governments, multilaterals, banks, asset managers, insurers and institutional investors as we build a capital market for the ocean that has high integrity and works for our common future.

There are currently over 60 projects in the ORRAA pipeline that include the development of micro- and macro-insurance tools, blue carbon, biodiversity and resilience credits, blue bonds, funds and tech applications that open the way to greater financial security. On the insurance side of things, we have helped support the development of parametric insurance for Coral Reefs so that there can be quick payouts to trained community workers after extreme storms who can earn money helping to rehabilitate the reefs while their tourism jobs are on hold to allow for recovery. We've also worked with partners to develop livelihood insurance for small-scale fishers so that they do not have to go out and fish in dangerous weather or if ill; and it encourages more sustainable fishing. Then we've been supporting financing mechanisms for Marine Protected Areas as well as derisking and encouraging investment into Small Island Developing State Economies through supporting the development of the Nautilus Blue Guarantee Company and Outrigger Impact.

EDITOR: ORRAA's mission includes driving $500 million in investment into nature-based solutions by 2030. What progress has been made, and what are the main barriers to scaling up blue finance for ocean resilience?

MS. KAREN SACK: As we mark our five-year anniversary, we are seeing the early results of our work. We have activated nearly USD$120 million in investment into the development and deployment of ocean finance and insurance products that are gender, nature and climate positive in the Global South of which ORRAA has directly invested $20million – a leverage ratio of 5:1. Through this, we have supported over 340,000 climate vulnerable coastal people and are on track to deliver at least 10 new finance products to market by the end of 2025.

But we recognise that this is just a drop in the Ocean. Two key barriers come to mind. First, the lack of knowledge and understanding about the value of the Ocean and coastal nature. Once we have explained that a healthy ocean is essential to life on Earth as the world's largest carbon sink, reservoir of biological diversity and our planet's environmental and economic engine, the listening begins. And that, of course, leads to the opportunity. Because despite having an estimated value of USD$24 trillion, the Ocean receives less than 1% of global capital flows, and UN Sustainable Development Goal 14: Life Below Water (SDG 14) receives the least amount of investment of all the SDGs.

The second barrier is the perceived lack of an investable project pipeline. This is the single most cited issue deterring potential investors from engaging. They often struggle to see viable, sizeable financing opportunities in coastal and ocean Nature-based Solutions (NbS), even though

these solutions effectively build resilience and reduce risk exposure for vulnerable coastal communities. That's why we focus on building the pipeline from the bottom-up and from the top-down. ORRAA's Innovation and Product Pipeline incubates, innovates, and accelerates the development of finance and insurance products that invest in coastal and ocean natural capital. We make grants of up to USD$500k to help turn early-stage locally led ideas from the Global South into structured, "investment-ready" projects that are nature, climate and gender positive. This ensures that the innovative solutions already emerging on the ground can be replicated and scaled into bankable propositions. Then, our Sea Change Impact Financing Facility (SCIFF) is developing financial instruments and platforms to accelerate the build-out of a robust capital market for the ocean, offering multiple potential avenues through which private sector investors can engage and invest, from impact funds and guarantees to match-making and accelerator platforms, offering opportunities across the capital stack.

EDITOR: Beyond gender equity, how can we ensure that ocean finance is truly inclusive — empowering local fishers, Indigenous groups, and small-scale entrepreneurs?

MS. KAREN SACK: Coastal communities are on the front line of climate change and are significantly impacted by it. And gender equity sits at the core of that – if we don't focus on that, then we will perpetuate the unworkable status quo. Women are disproportionately vulnerable to growing ocean related risks and often lack access to opportunities to build resilience. Advancing gender equality benefits to women and girls extends those benefits beyond the individual, to women's households and communities, and helps countries realise their full development potential, especially within the context of a regenerative and sustainable blue economy. So gender responsive or transformative approaches are key to building resilience.

In addition to this it is absolutely critical that we sit at the same table, listen, hear and learn – and this is part of why we speak about working from beachfront to boardroom. We also need to connect communities working in different regions. This same approach applies when working with entrepreneurs or Indigenous Peoples. For example, we have been working with partners who focus on building the financial resilience of small-scale fishers in Southern Africa, Mexico and the Philippines. By introducing them to one another and enabling them to learn from one another, they can better tackle common challenges and teach us what the threads are that require action. Given the rising importance of ESG in global finance, how can financial institutions and investors be incentivized to prioritize ocean-positive ESG criteria, particularly in sectors like shipping, tourism, and fisheries, to accelerate the transition to a sustainable blue economy?

The major incentive is in reducing their potential risk exposure. There are several ways to do this. First, the finance sector needs to stop (or not start) investing in destructive extractive activities like offshore oil and gas, subsidised industrial fishing and seabed mining. They do not make economic or environmental sense.

Second, achieving understanding that financial returns alone are not the end goal - or sufficient in and of themselves. Integrating social returns, biodiversity positive outcomes, and climate resilience as fundamental elements of success ensures that short-term profit does not overshadow long-term community health and Earth system vitality. This also means recognising the value of nature on the balance sheet and accounting for it.

Finally, we need greater collaboration between governments, multilaterals, and private finance (including philanthropies and family offices) to create risk-sharing mechanisms like blended finance tools, guarantees and insurance that lower barriers to entry for private investors. We also need to recognise that smaller investments with fewer strings that move quickly are in the current moment, critical to deploy, rather than waiting for the billions and trillions.

EDITOR: IWF and ORRAA share a commitment to community-driven conservation. What lessons have you learned about making these efforts successful across philanthropy, the private sector, and governments?

MS. KAREN SACK: We need partners at the table from the very inception of the work as equals, working together, understanding the challenges on the ground, accommodating for those, and supporting action with skills and knowledge exchange. If we cannot listen and hear, understand and comprehend and also share in the day to day experiences of our partners, then we cannot sort through the challenges. And that, at its heart, is what ORRAA is about: joining the dots, engaging in 'radical collaboration'.

EDITOR: What message would you like to share with policymakers, investors, and the public about the importance of urgent, science-based action for ocean resilience?

MS. KAREN SACK: The Ocean is living capital, when we invest in its health, we invest in our own. And the most incredible thing about the Ocean is its amazing ability to regenerate, if we let it. But it is in peril. The window is still open, but it's closing, fast. We can put our heads in our hands, or we can put our heads and our hands to work.

With the science and evidence clear about the short timelines we have to address the biodiversity and climate crises, it is more important than ever that we are able to shape a common agenda across different sectors, break down siloes and shift paradigms.

ORRAA and our members are in the right place at the right time to deliver solutions and we invite others to join in this effort. None of us can do this alone. We need to work together, to be patient with capital and impatient with action. We need to move further and faster. Together, we are unlocking a trillion-dollar investment opportunity that reduces risk and drives environmental, economic, social and cultural security. We need to stop this trajectory of degradation and realise the economic, social and environmental opportunity that our ocean harbours.

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RISHI SHARMA, Ph.D.

Senior Fishery Officer,
FAO Regional Office for Asia and the Pacific

Dr. Rishi Sharma is a Senior Fisheries Officer at FAO Asia Pacific and Executive Secretary of APFIC, overseeing 15 regional projects and providing strategic guidance on fisheries and aquaculture. With over 25 years' experience, He has held key roles at FAO, NOAA, IOTC, and CRITFC, specializing in stock assessment, sustainable fisheries, and ecosystem-based management. He authors 50+ peer-reviewed publications and contributed to 100+ reports, focusing on population dynamics, IUU fishing, and sustainable marine resource management.

*Excerpts from an interview of **Dr. Rishi Sharma**, Senior Fishery Officer, FAO Regional Office for Asia and the Pacific by **Dr. Arvind Kumar**, Editor, Focus Global Reporter.*

EDITOR: What are the major global trends in fish stock status that fisheries managers should be aware of?

DR. SHARMA: At global level the proportion of marine stocks fished within biologically sustainable levels was estimated to be 64.5 percent for the base year (2021), with 35.5 percent of stocks classified as overfished. The overfishing trends vary by region but on average the decline is on average 1% per year in recent times. While some areas such as the North East Pacific and the South West Pacific have higher sustainability rates, with 92.7% and 85.5% of assessed stocks classified as biologically sustainable respectively, the semi-enclosed Mediterranean and the Black Seas, the Western Central Pacific and the South East Atlantic still face sustainability challenges, with only about 35.1 percent, 46.4 percent and 58 percent of fish stocks in the respective areas considered to be sustainably exploited, despite significant progress being observed in recent years.

The percentage of assessed stocks classified as biologically sustainable in the Indian Ocean is around the global average (63.0% and 72.7 % for the Western and Eastern Indian Ocean respectively).

EDITOR: What are the main challenges in conducting stock assessments in data-poor regions, and how are new assessment methods and technologies helping to address these gaps?

DR. SHARMA: The limited capacity and resources to develop data collection, monitoring and assessment programmes in these regions hinders the knowledge of the status of the resources and the management measures required to ensure their sustainability. FAO has therefore started exploring the use of alternative, more flexible tools, including tools for data-poor fisheries, in order to improve scientific advice and management recommendations in these areas, however data collection and monitoring programmes are still needed to ensure the effectiveness of management measures.

EDITOR: What are the main sources of uncertainty in fisheries stock assessment models?

DR. SHARMA: Uncertainty in fish stock assessment models arises from various sources, including data limitations, model assumptions, and the inherent complexity of fish populations and their environment. In management, in addition to the uncertainty deriving from stock assessment, we have other sources of uncertainty, including the level of implementation or the efficiency of the measures agreed. Understanding and quantifying the overall uncertainty is crucial for making informed management decisions and implementing a precautionary approach to fisheries management.

EDITOR: Could you elaborate on the importance of biological reference points (BRPs) such as biomass-based and fishing mortality-based BRPs in fisheries management?

DR. SHARMA: This is analogous to driving to destination without a map (in the past) or with GPS (google maps) in our current era. So, if we don't have reference points and indicators we don't know where we are, and we don't know where to go. Hence, we need appropriate indicators and reference points for all areas, stocks and regions examined. In order to set these up, and evaluate where the stock is with respect to the reference points, we need reasonably good data and assessments

EDITOR: Overfishing remains a global concern. In your recent presentations, you discussed strategies to achieve sustainable fisheries targets by 2030. What are the most promising approaches or interventions you see for the Asia-Pacific region?

DR. SHARMA: The region is adopting the right initiatives to improve management and consequently the sustainability of fishery stocks. This includes evidence-based approaches (improving the stock data and information used in management); input controls (effort limits and vessel buy backs) and capacity building on assessment and management. In addition, monitoring, control and surveillance (MCS) measures are being improved and enforced substantially. It is important to maintain and strengthen these efforts to obtain significant results.

EDITOR: What role do multi-species and ecosystem models play in understanding and managing mixed-stock fisheries in the region?

DR. SHARMA: FAO is taking significant steps to understand how to assess, manage and monitor muti-species fisheries, however objectives for these fisheries are country- or regional-bounded for the area in question. Under some Global Environmental Facility (GEF) projects, such as the Bay of Bengal Large Marine Ecosystem (BOBLME) project to implement comprehensive measures to conserve and sustainably manage the Bay of Bengal's diverse marine ecosystem and the GoTFish project) to promote the blue economy and strengthening fisheries governance of the Gulf of Thailand through the Ecosystem Approach to Fisheries , FAO is developing tools to prioritize objectives and understand the trade-offs between these objectives, and eventual stock status of the complex.

EDITOR: With the rapid development of data collection tools (e.g., remote sensing, electronic vessel monitoring), how is the FAO leveraging these technologies to improve fisheries management and decision-making?

DR. SHARMA: These technologies and tools, including artificial intelligence, are already being used in the region. FAO Tier 2 assessment relies on approaches to estimate effort based on tools such as you describe. Monitoring, control and surveillance (MCS) will also help minimize illegal, unreported and unregulated (IUU) fishing activities and other challenges in the region.

EDITOR: How does the FAO facilitate capacity building for fisheries management in countries with limited resources, and what have been the most effective strategies?

DR. SHARMA: FAO prioritize support to countries in Asia, Africa and South America where limited capacity constrains effective resource management. Initiatives such as the EAF-Nansen program, which provide high-quality data and information, particularly in parts of Africa, enable evidence-based approaches to strengthen fisheries management. The most effective path forward combines grassroots training to build local expertise with political engagements, reinforced by the availability of funds, tied to measurable improvements.

EDITOR: In countries like India, where water resources are under stress, how can aquatic foods be better integrated into national food security and nutrition strategies to promote both sustainability and health?

DR. SHARMA: This is under FAO's vision of Blue Transformation, which intends to maximize the production of aquatic foods with a sustainable and effective use of the resources. A sustainable approach will require to combine political leverage to integrate aquatic foods in dietary policies with grassroots action, supported by targeted interventions in school feeding programmes and women's health initiatives to promote greater dietary use of aquatic foods. For example, aquatic foods currently absent from the diets of large parts of India, can be incorporated through processed forms such as nutrient-rich powders or supplements. These products can be sourced from highly resilient species, such as small pelagics or other aquaculture farmed species. By shifting demand toward these species, we can reduce the strain on more vulnerable stocks, contributing to long-term fisheries sustainability while improving nutritional outcomes.

EDITOR: How has the redesign of the FAO State of World's Marine Fisheries reporting improved the monitoring of fish stock status?

DR. SHARMA: This has been a very comprehensive and participatory process, involving over 650 experts from 92 countries and 200 intuitions, and included the assessment of nearly 2600 stocks. The primary goal of this review was to map each stock unit to its corresponding management framework. This allows to evaluate where management is effective and where it is not, enabling targeted actions to improve governance at the appropriate scale, whether at the national or transboundary level.

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MS. SARA MANUELLI

Programme officer
Mountain Partnership Secretariat
Food and Agriculture Organization of the United Nations (FAO)

Ms. Sara Manuelli is a Communications and Advocacy Officer with a background in social anthropology and journalism. She is the author of several books and articles published in technical journals and the media, focusing on sustainable mountain development. Since 2008, she has worked at the Mountain Partnership Secretariat at the Food and Agriculture Organization of the United Nations (FAO) in Rome, Italy, where she develops and implements strategies to raise awareness about mountain regions and their communities.

*Excerpts from an interview of **Ms. Sara Mannuelli**, Programme Officer, Mountain Partnership Secretariat, Food and Agriculture Organisation of the United Nations (FAO) by **Dr. Arvind Kumar**, Editor, Focus Global Reporter*

EDITOR: How does Mountain Partnership align its initiatives with the United Nations Sustainable Development Goals, particularly SDG 6 (Clean Water and Sanitation) and SDG 15 (Life on Land)?

MS SARA MANUELLI: The Mountain Partnership (MP) is the only United Nations voluntary alliance dedicated to improving the lives of mountain communities and protecting mountain ecosystems worldwide. Since its inception in 2002, the Secretariat of the Mountain Partnership (MPS) and MP members have been working together to achieve sustainable mountain development. A crucial part of this mission is promoting the sustainable use and management of water.

Mountains are the “water towers” of the world, supplying half of the world’s population with freshwater for drinking, daily needs, irrigation, industry and hydropower. In support of this, the MPS has made an official water commitment under the Water Action Agenda of the UN 2023 Water Conference. This commitment acts as a concrete expression of the MP's strategy to tackle the unique water challenges faced by mountain communities.

The MP builds upon the expertise and knowledge of its global multi-stakeholder network, including 68 governments and around 550 major group organizations, to advocate as one voice for mountains in several global agendas such as the UN Rio Conventions, the Five Years of Action for the Development of Mountain Regions 2023-2027 and the International Year of Glaciers’ Preservation 2025 (IYGP 2025).

The MPS is currently leading Task Force 1 of the Global Campaign for IYGP 2025, tasked with raising awareness of the critical role glaciers play as water sources in mountain regions and of the urgent need to safeguard them in the face of climate change. The Task Force comprises about 120 experts and advocates who are working to develop and implement the Year’s global communication strategy, which includes crafting key messages, engaging youth and driving social media outreach. The MPS collaborates closely with the World Meteorological Organization, UNESCO and supporting countries to amplify efforts to preserve glaciers and highlight their importance for ecosystems and communities worldwide.

It is crucial to recognize that mountain regions also host many of the world’s most prominent glaciers. These ecosystems sustain biodiversity, provide water security, mitigate climate impacts and support livelihoods. Preserving these fragile environments contributes directly to achieving SDG 6 and 15. Additionally, SDG 15.4 is directly concerned with the conservation of mountain ecosystems, including their biodiversity and the vital services they provide.

EDITOR: What strategies does Mountain Partnership employ to address the unique water challenges faced by mountain communities, especially in the context of climate change?

MS SARA MANUELLI: Given the importance of mountain water resources worldwide, careful management of mountain water resources is a priority of the MP and as a result, MP activities directly or indirectly advocate for mountain freshwater systems.

The MP also works within the framework of the Five Years of Action for the Development of Mountain Regions 2023-2027– which is an opportunity to scale up coordinated efforts, mobilize resources and ensure collaboration among stakeholders to build the resilience of mountain communities, not only in light of water-related climate threats, but on a broader scale as well. The MPS has developed a Global Framework for Action that includes pathways for action, one of which specifically targets scaling up ecosystem-based solutions for water management in mountain regions, considering upstream-downstream linkages.

The MP is also implementing several on-the-ground projects to enhance the livelihoods of mountain communities and simultaneously protect their environments. Through a combination of grants, technical assistance and capacity development, these projects enhance mountain economies while preserving agro biodiversity, mountain ecosystems, livelihoods and cultural heritage.

Projects like the Business Incubator and Accelerator for Mountains and Islands support local entrepreneurship, while the Coalition of Fragile Ecosystems advocates for sustainable management of vulnerable landscapes. Fashion for Fragile Ecosystems connects artisans with ethical fashion markets.

Through the Mountain Partnership Products (MPP) Initiative strengthens the resilience of mountain producers, their economies and their ecosystems, while natural resources are safeguarded through the efforts of the project, Sustainable management of natural resources in mountain areas.

EDITOR: Can you elaborate on any specific projects or initiatives that Mountain Partnership is currently undertaking to promote sustainable water management in mountain regions?

MS SARA MANUELLI: Launched in 2021, the "Enhancing community resilience to climate change in mountain watersheds" initiative is an example of a project that promotes sustainable water management. Funded by the Ministry of Agriculture, Forestry and Fisheries of Japan, activities for this project are being implemented in Peru and the Philippines, and a series of publications were launched during this initiative. This initiative improves water management and better equips communities to address watershed risks while promoting sustainable agricultural value chains to improve local livelihoods.

One of our core pillars is knowledge sharing, and our publications are important for sharing solutions and presenting research on mountain issues. In 2023, the MPS published a sourcebook, *Building resilience into watersheds*, which looks at risk reduction and management practices of watersheds. Many MP members work on sustainable water management, and in our International Mountain Day 2024 publication *Promoting innovation and tradition: solutions for climate change adaptation in mountains*, we highlight water management as adaptation methods. In this publication, members presented solutions to water management issues, such as Zing and Kul systems in the Himalayas, the construction of dams to ensure irrigation in Morocco and artificial glaciers which improved water access in Kyrgyzstan.

EDITOR: How does Mountain Partnership engage with local mountain communities to ensure their participation in decision-making processes related to natural resource management?

MS SARA MANUELLI: The MP emphasizes participatory approaches that place communities at the centre of decision-making. It supports initiatives that build local ownership and respect traditional knowledge systems, as this is more effective and long-lasting.

For example, in the project Sustainable management of mountain natural resources, the MP promotes inclusive processes where community members are actively involved in planning and managing natural resources in that area. By engaging local stakeholders directly, the MP helps to ensure that natural resource management strategies are both effective and culturally appropriate, while strengthening the resilience and rights of mountain communities.

EDITOR: What role does gender equity play in Mountain Partnership's approach to sustainable mountain development?

MS SARA MANUELLI: Recognizing that women play a critical role in managing natural resources, especially as men frequently out-migrate from mountain areas, the MP actively works to strengthen women's participation in decision-making processes and resource governance. However, women's adaptive capacities are often constrained by institutional barriers and cultural norms, increasing their vulnerability to natural hazards and climate-induced disasters. For these reasons, the MP seeks to empower women in its activities, ensuring that women are included to make tangible change.

Our ongoing project, Fashion for Fragile Ecosystems brings together artists and artisans from some of the most remote mountain regions with international fashion brands to create meaningful and lasting change through the equal exchange of skills, traditional knowledge and cultural heritage. Each collaboration pairs an international fashion designer with a group of local artists and artisans to co-design a contemporary collection rooted in local traditions and cultural identity.

In the latest collaboration, the initiative focused on Guatemalan cultural heritage, with a collaboration between Italian fashion designer, Vivia Ferragamo and Wakami, a social enterprise dedicated to uplifting rural communities in Guatemala, and they worked hand-in-hand in 2024 to co-design a contemporary collection inspired by their local traditions, knowledge and culture. See the video and story about this collaboration.

The initiative provides technical training, financial support and market access to local women, thereby contributing to gender empowerment and economic inclusion. The results are showcased through dedicated events and communication campaigns, with each collection brought to life by the partnering fashion brand and launched on the international stage.

EDITOR: What measures does Mountain Partnership take to protect and preserve mountain ecosystems while ensuring sustainability for communities?

MS SARA MANUELLI: The MP promotes ecosystem-based solutions, such as sustainable land use, agro-ecology and community-led management, which safeguard biodiversity and ecosystem services. It also supports livelihood diversification, helping mountain communities build resilience without overexploiting natural resources. Each project and initiative are carefully planned to ensure that the ecosystems are protected and used sustainably.

For example, the Business Incubator and Accelerator for Mountains and Islands and Mountain Partnership Products Initiative projects both empower communities through supporting local economies and livelihoods while preserving biodiversity and traditional knowledge.

EDITOR: Can you share any success stories or best practices from Mountain Partnership's work that have significantly improved mountain regions?

MS SARA MANUELLI: The MP's BIA programme, which supports entrepreneurship in mountain regions by combining grants, technical assistance and capacity development, has supported over 37 000 farmers and producers in the incubation phase and more than 20 000 in the acceleration phase, 50 percent of whom were women, strengthening gender equity across mountain communities.

The BIA has helped 107 producer organizations improve their practices and market access, with 47 percent establishing new market connections and 27 percent implementing new marketing strategies. 83 percent of participating organizations have also introduced measures to increase women's participation in decision-making, and participants have reported an average production increase of 36 percent.

Now active in ten countries, the BIA programme reflects our mission to drive lasting change in mountain areas by promoting sustainable land management, strengthening economic resilience and ensuring inclusive development for all, especially those often left behind.

EDITOR: How does Mountain Partnership advocate for the inclusion of mountain-specific issues in international policy discussions and negotiations related to climate change?

MS SARA MANUELLI: The MP advocates for mainstreaming mountains in global policy processes and high-level advocacy campaigns. This includes participation in key for a such as the UNFCCC Conferences of the Parties (COPs), the Subsidiary Body for Scientific and Technological Advice (SBSTA) and the recent Expert Dialogue on Mountains and Climate Change on 5 June 2024. Through these platforms, the MP works to raise awareness about the critical role of mountain ecosystems and communities in climate resilience and water security.

The MP also leverages global initiatives like the Five Years of Action for the Development of Mountain Regions (2023–2027) to mobilize political will and promote coordinated action for sustainable mountain development. Knowledge based products such as technical publications

and policy briefs further inform the advocacy work of the MP, fostering the science-policy nexus.

EDITOR: What opportunities do you see for enhancing cooperation between Mountain Partnership and organizations in India to address sustainable mountain development challenges in the Himalayan region?

MS SARA MANUELLI: The MP has a strong presence of over 30 India-based members, including the Government of India and a close collaboration with ICIMOD. Many of these organizations are actively working on projects and initiatives that advance sustainable mountain development in the region. The MP is keen to strengthen its relationship with these members, to scale up initiatives and advance the global mountain agenda.

EDITOR: Please share some specific examples of projects working on to promote sustainable mountain development in India.

MS SARA MANUELLI: As part of International Mountain Day 2024, the MPS launched the Mountain Future Award (MFA) to spotlight projects for sustainable mountain development, within the categories of innovation, adaptation and youth. The winner for the category of adaptation was Acres of Ice, a startup based in the Ladakh region, which, through the creation of artificial glaciers and a remote monitoring system, has improved water security in the local area. With the Mountain Future Award 2024 seed funding, Acres of Ice has launched a fellowship program that will bring an engineer onto the team to support the implementation of their project.

The MPP Initiative is a global labelling and certification scheme designed to strengthen the resilience of mountain communities, economies, and ecosystems by promoting sustainable, high-quality value chains. While the initiative operates across several countries, including India, Kyrgyzstan, Mongolia, Nepal, Panama, Peru, the Philippines and the Plurinational State of Bolivia, its core idea is to support small-scale producers in remote mountain areas by helping them build trusted, locally appropriate quality assurance systems for their traditional and organic products.

India is one of the most active participants, with 10 products currently bearing the Mountain Partnership Products label, ranging from spices to grains and honey—each rooted in traditional knowledge and sustainable practices.

In 2023, Last Forest, a social enterprise based in India, joined the MP's Mountain Facility programme. The company, which works closely with Indigenous communities in the Nilgiris, has made major strides in market development, especially in expanding sales of its sustainably harvested honey. Thanks to targeted investments, they've seen a remarkable 32.5 percent return on investment, which kick started a new phase of growth. Together with Aadhimalai Producer Company, they also led quality assurance training sessions focused on product innovation, sustainability and quality control, which were all tailored to the unique context of the Nilgiri

mountains. One of the achievements has been the implementation of a Participatory Guarantee System (PGS Wild) to certify the sustainable collection of wild non-timber forest products. This initiative not only supports the Irula communities living in the Pillur forest ranges, but it's also an applicable model that could have nationwide significance for certifying sustainable forest practices.

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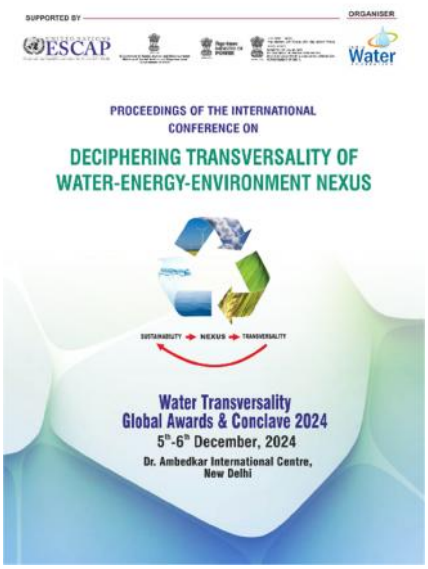
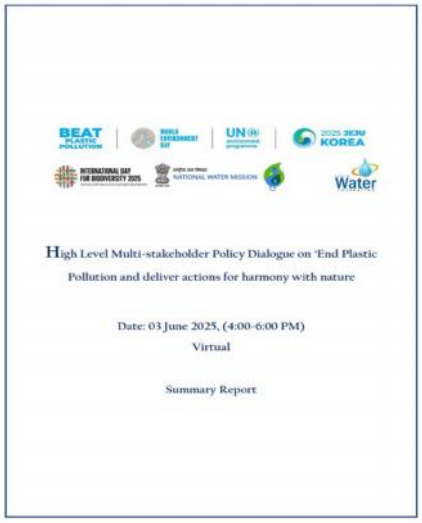
REPORTS

Water Transversality Global Awards & Conclave 2024



On 15 February 2025, India Water Foundation released the official report of the Water Transversality Global Awards and Conclave 2024, which convened global thought leaders, policymakers, researchers, and grassroots innovators to explore holistic solutions for sustainable growth and climate resilience. The report captures innovative water solutions, best practices in integrated water management, impactful case studies, policy recommendations, and expert insights for bridging science, policy, and practice. Serving as a blueprint for collective action, it aims to guide governments, businesses, and communities toward a water- and energy-secure future. Read the report here: https://indiawaterfoundation.org/wp-content/uploads/2025/02/Report_2024-compressed.pdf

High-Level Multi-Stakeholder Policy Dialogue – Ending Plastic Pollution



On June 3, 2025, to mark World Environment Day and International Day for Biodiversity, India Water Foundation, with support from the National Water Mission, Ministry of Jal Shakti, convened a virtual High-Level Multi-Stakeholder Policy Dialogue on ending plastic pollution and promoting harmony with nature. The event brought together government leaders, international experts, scientists, and civil society to address the triple planetary crisis of climate change, pollution, and biodiversity loss.

Key discussions addressed plastic's full life cycle, integration with the Global Plastics Treaty and Kunming–Montreal Global Biodiversity Framework, strengthening Extended Producer Responsibility (EPR), mainstreaming plastic monitoring in wetland and watershed management, promoting zero-waste tourism, and incentivizing biodegradable alternatives. Major recommendations included policy integration

across biodiversity, climate, and waste frameworks; expansion of decentralized waste management infrastructure; innovative financing for plastic alternatives; and large-scale behavioural change campaigns under Mission LiFE.

Speakers included Dr. Arvind Kumar (India Water Foundation), Shri Raj Bhushan Chaudhary (MoJS), Ms. Astrid Schomaker (CBD), and global experts from UNEP, FAO, IUCN, IWMI, CSIR-NEERI, and other institutions. The dialogue concluded with a call for systemic, coordinated, and multi-sectoral action emphasizing that eliminating plastic pollution requires collective responsibility from governments, businesses, and citizens alike. To read the full report please click here: https://focusglobalreporter.org/harmony-with-nature-rethinking-sustainability-from-source-to-sink/

Special Coverage – India Energy Week 2025

Held from 11–14 February 2025 at Yashobhoomi Convention Centre, New Delhi, India Energy Week 2025—Asia's largest and the world's second-largest energy showcase brought together 70,000+ visitors from over 100 countries, 600+ exhibitors, 90+ CEOs, and 20+ foreign energy ministers. Inaugurated by Union Minister Shri Hardeep Singh Puri and addressed by Prime Minister Shri Narendra Modi, the event focused on energy security, just transition, innovation, resilience, and global collaboration. Highlights included major LNG agreements with ADNOC, India's first LNG export to Nepal, renewable and wave energy initiatives, and deep-sea exploration MoUs. Innovation was celebrated through Avinya'25 and Vasudha startup challenges. The event reinforced India's leadership in the global energy transition, with ambitious targets for 500 GW renewable capacity, 5 MMT green hydrogen by 2030, and 20% ethanol blending by October 2025.

Read the full report here: https://focusglobalreporter.org/media-report-india-energy-week-2025/

ACTIVITIES OF INDIA WATER FOUNDATION

GLOBAL INPERSON

India Water Foundation Participates in Kick-off & 1st Stakeholders Meeting for the 11th World Water Forum in Riyadh

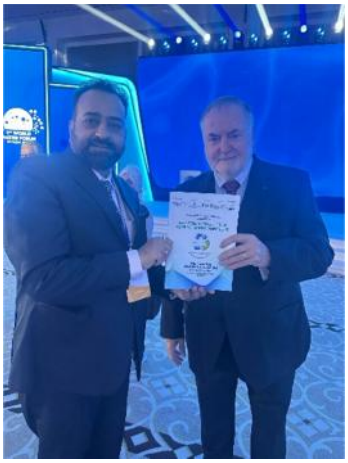
On 14–15 April 2025, Dr. Arvind Kumar, President, India Water Foundation, attended the Kick-off and 1st Stakeholders Meeting of the 11th World Water Forum (WWF) in Riyadh, Kingdom of Saudi Arabia. The event, hosted by the Ministry of Water, Environment and Agriculture (MWEA) of Saudi Arabia in collaboration with the World Water Council (Conseil Mondial de l'Eau), marked a significant milestone towards global collaboration on sustainable water solutions under the forum's theme, **"Working for a Better Tomorrow."**

The Government of Saudi Arabia ensured that the meeting was not only productive but also showcased the Kingdom's rich culture and heritage. Participants were given the opportunity to visit the **Salwa Palace**, a historical landmark that encapsulates a crucial period in the Kingdom's history. A grand reception and musical evening, complete with a captivating sound-and-light show at the palace, reflected the country's warm hospitality and cultural pride.

We sincerely appreciate the Government of the Kingdom of Saudi Arabia for being exemplary hosts. Their outstanding hospitality, seamless organization, and strong commitment to global water cooperation have laid a robust foundation for the success of the 11th World Water Forum, which will take place in Riyadh in March 2027.

During the meeting, the host ministry made detailed presentations on the forum's sub-themes, prospective outcomes, and strategic objectives. The World Water Forum is envisioned as a unifying platform to drive greater coherence and integration across all sectors, ensuring tangible solutions to global water challenges and advancing the achievement of **SDG 6 – Clean Water and Sanitation**.

The meeting was attended by distinguished dignitaries, including: **Mr. Abdul Rahman AlFadli**, Minister of Water, Environment and Agriculture, Saudi Arabia; **Prof. Hani Sewilam**, Minister of Water Resources and Irrigation, Egypt; **Mr. Wu Wenqing**, Chief Planner, Ministry of Water Resources, China; **Mr. Abdulaziz Al-Shaibani**, Deputy Minister for Water, Saudi Arabia; **Mr. Loïc Fauchon**, President, World Water Council; **Mr. Eric Tardieu**, Director General, International Network of Basin Organizations (INBO); **Mr. Benedito Braga**, Former President, World Water Council along with many other eminent global water leaders.



The event underscored the urgency of making water a global priority and highlighted the need for collective action to address pressing challenges through resilient, inclusive, and innovative water management systems. Dr. Arvind Kumar's participation reinforced India Water Foundation's commitment to contributing to global water governance, fostering partnerships, and shaping the agenda for WWF 11 to ensure a sustainable water-secure future for all.

India Water Foundation Highlights India's Agricultural Achievements at UNHRC Side Event in Geneva

On 27 March 2025, Dr. Arvind Kumar, President, India Water Foundation, delivered the keynote address at a side event organised by **Rajasthan Samgrah Kalyan Sansthan (RSKS) INDIA** during the 58th Session of the **UN Human Rights Council** in Geneva. The event spotlighted India's remarkable progress in diverse sectors including agriculture, education, health, and environmental awareness.

In his address, Dr. Kumar noted that **India has made significant strides in agriculture and allied sectors** in recent years achieving self-sufficiency in food production and excelling in horticulture, dairying, milk production, fisheries, post-harvest management, and the development of cold chain infrastructure. He emphasized that **agriculture remains the mainstay of the Indian economy**, contributing **13.7% to the national GDP** and providing employment to **22% of the country's population**.

The session underscored India's integrated approach towards rural prosperity and sustainable development, while also highlighting the nation's commitment to meeting global sustainability goals through innovation, investment in infrastructure, and community empowerment.

https://www.facebook.com/indiawaterfoundation/videos/676647368274867

India Water Foundation Advocates Holistic Approach to Gender Equity at UNHRC Side Event in Geneva

On 27 March 2025, **Ms. Shweta Tyagi**, Chief Functionary, India Water Foundation, addressed a side event organised by **Rajasthan Samgrah Kalyan Sansthan (RSKS) INDIA** during the 58th Session of the **UN Human Rights Council** in Geneva. The event showcased India's progress in key areas including gender equity, agriculture, education, health, and environmental awareness.

In her remarks, Ms. Tyagi stressed that **gender equity requires legislative change, complemented by shifts in gender and social norms**. She underscored the need for a **holistic programme** to address the multifaceted challenges faced by women—from developing strategies and policies to recognising individual agency and understanding structural constraints.

“Overcoming these challenges,” she noted, “requires a nuanced understanding and dedicated efforts at all levels.” Her intervention highlighted the importance of comprehensive, multi-level action to ensure that legislative measures translate into lasting, equitable change in society.

https://www.facebook.com/indiawaterfoundation/videos/551625097952513

Exhibition at the Broken Chair Square, Palais des Nations

India Water Foundation organized a photo exhibition at the Broken Chair Square in front of the Palais des Nations, showcasing India's positive indices regarding a commitment to Religious Freedom, Secularism, and Protection against Discrimination. etc

https://www.facebook.com/indiawaterfoundation/posts/pfbid073APfPA4YH5PBcYZQUcmPCwDmmzKWfaXNfXSS5vVzeAeSXTNZs8pWrTNZgGyVkT6l

India Water Foundation Showcases India’s Governance Model at UNHRC Side Event in Geneva

On 24 March 2025, **Dr. Arvind Kumar**, President, India Water Foundation, delivered the keynote address at a side event organised by **Eco Fawn** during the 58th Session of the **UN Human Rights Council** in Geneva. The event highlighted the positive indices of India’s development across various domains.

In his address, Dr. Kumar stated that **India’s governance model is a blend of top-down and bottom-up approaches**, ensuring a holistic and inclusive development strategy. He explained that the **top-down approach** focuses on strong policy frameworks, large-scale infrastructure projects, and nationwide economic reforms spearheaded by the central government, while grassroots initiatives complement these efforts by fostering local participation and community-led solutions.

The discussion underscored how this dual approach has enabled India to achieve balanced growth, address diverse socio-economic needs, and build a resilient framework for sustainable development.

India Water Foundation Highlights India's Commitment to Minority Empowerment at UNHRC in Geneva

On 20 March 2025, **Dr. Arvind Kumar**, President, India Water Foundation, delivered a statement during **General Debate 4 on Minority Issues in India** at the 58th Session of the **UN Human Rights Council** in Geneva.

Dr. Kumar emphasised that **India demonstrates strong commitment to minority empowerment**, serving **19.3% of the population** through comprehensive initiatives targeting six officially recognised minority groups **Muslims, Christians, Sikhs, Buddhists, Jains, and Zoroastrians**. He highlighted that India's commitment to diversity is reflected in the vibrant cultures, religions, and languages that coexist harmoniously across the nation.

He further stressed that these inclusive policies and programmes are essential to safeguarding minority rights, fostering equal opportunities, and strengthening India's social fabric.

India Water Foundation Reaffirms India's Constitutional Protections for Religious Freedom at UNHRC in Geneva

On 20 March 2025, **Ms. Shweta Tyagi**, Chief Functionary, India Water Foundation, delivered a statement during **General Debate 5** at the 58th Session of the **UN Human Rights Council** in Geneva.

Ms. Tyagi underscored that **India safeguards religious freedom through constitutional provisions under Articles 25–28**, which guarantee the right to freely practice, profess, and propagate religion. She further highlighted that laws such as the **Places of Worship Act, 1991** help preserve the religious character of worship sites, while **Article 30** provides special protections to minority educational institutions.

Her remarks reinforced India's commitment to ensuring that constitutional guarantees and legislative measures work hand-in-hand to maintain harmony, protect diversity, and uphold the rights of all communities.

India Water Foundation Advocates Strong Data Privacy Measures at UNHRC in Geneva

On 20 March 2025, **Dr. Arvind Kumar**, President, India Water Foundation, addressed the 58th Session of the **UN Human Rights Council** in Geneva. He expressed strong support for the Special Rapporteur's report on the Right to Privacy, emphasising that **data privacy is fundamental to achieving the Sustainable Development Goals (SDGs)** particularly in protecting vulnerable populations and ensuring inclusive development under the SDG principle of "leaving no one behind."

He noted that **India Water Foundation has recognised the importance of data privacy since its inception**, aligning with the UN's privacy framework. Highlighting India's proactive stance, Dr. Kumar cited the **Digital Personal Data Protection Act, 2023**, and the **Rules of 2025** as landmark measures that:

- Strengthen individual rights regarding data collection, access, correction, and deletion.
- Mandate transparency from data fiduciaries on data use, consent withdrawal, and complaint mechanisms.
- Safeguard children's data through verifiable parental consent using identity and age verification.

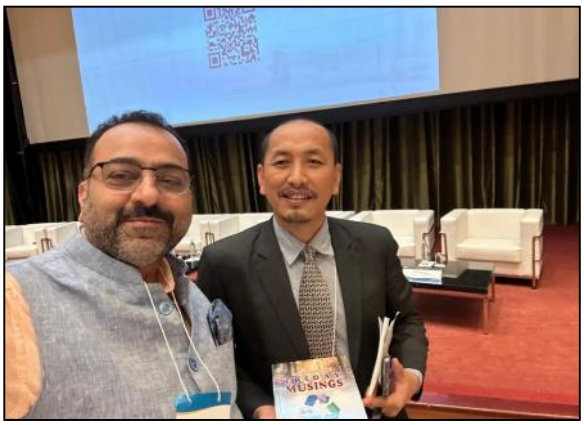
Dr. Kumar also **advocated for smart card adoption** to minimise risks associated with biometric database misuse by criminals, terrorists, or foreign entities. He further pointed out that the **Union Budget 2025's prioritisation of AI, data security, and privacy** reflects India's commitment to advancing global digital rights and cybersecurity.

Meghna Knowledge Forum II

The second edition of the Meghna Knowledge Forum (23–25 July 2025, AIT Bangkok) gathered 120+ participants from over 80 organisations to advance dialogue on climate resilience, sustainable livelihoods, and poverty reduction in the Barak-Meghna River Basin. Jointly organised by IUCN, AIT, and South Asian University under the theme "Building Community and Ecosystem Resilience to Climate Change", the forum featured 60+ speakers spanning government, academia, indigenous organisations, and civil society.

Representing the India Water Foundation, President Dr. Arvind Kumar delivered a keynote in the plenary on “Strengthening Community Livelihood Resilience.” He highlighted IWF’s role in bridging policy with grassroots action, sharing a convergence-based model that integrates water management, agriculture, and climate resilience—boosting local livelihoods and doubling returns. Dr. Kumar called for policy reforms promoting decentralized governance, integration of indigenous knowledge, flexible funding, and sustained capacity building to scale nature-based, community-led solutions.

MKF II concluded as both a regional learning platform and a call to action urging cross-border cooperation and inclusive strategies to safeguard one of South Asia’s most climate-vulnerable yet resource-rich river basins.



GLOBAL ONLINE

India Water Foundation Contributes to Global Dialogue on Mainstreaming Water into Climate Action at Bonn Climate Change Conference

On 20 June 2025, **India Water Foundation** participated in a high-level side event on *"Mainstreaming Water into NDCs and NAPs for Effective Adaptation, Mitigation, and Resilience"* during the **2025 Bonn Climate Change Conference**. The event was organised within the framework of the **UN-Water Expert Group on Water and Climate Change**, coordinated by **UNESCO**, the **World Meteorological Organization (WMO)**, and the **United Nations Economic Commission for Europe (UNECE)**, in cooperation with **COP29 Azerbaijan** and the **UN Environment Programme** as partners under the *Baku Dialogue on Water for Climate Action*. Additional partners included **India Water Foundation**, **Arizona State University**, and the **Association of Sustainable Ecological Engineering Development**.

The session brought together representatives from **UN agencies** and **national governments** to exchange knowledge on integrating water considerations into national climate strategies. **Ms. Sonja Köppel**, Secretary of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention), opened the event, emphasising that water like climate is a transboundary issue and must be embedded in national adaptation and mitigation planning.

Dr. Raj Bhushan Choudhary, Minister of State, Ministry of Jal Shakti, Government of India, highlighted India's experience in mainstreaming water into climate policy. He stressed that water lies at the heart of building a climate-resilient future and noted India's actions, including integrating water into its **Nationally Determined Contributions (NDCs)** and expanding tree-planting initiatives to support climate solutions.

Dr. Arvind Kumar, President, India Water Foundation, shared the Foundation's efforts to ensure that water is included as a cross-cutting issue in India's national plans. He underscored that water serves as a connector for addressing **institutional fragmentation** and called for the integration of **Indigenous Peoples and traditional practices** into climate and water governance frameworks.

India Water Foundation Hosts High-Level Policy Dialogue on Multi-sectoral Partnerships for Marine and Coastal Ecosystem Conservation

On 11 June 2025, **India Water Foundation** organised a virtual **High-Level Policy Dialogue on "Multi-sectoral Partnerships for the Conservation & Restoration of Marine and Coastal Ecosystems"** as an official side event of the **2025 UN Ocean Conference**. The dialogue convened global experts, policymakers, and practitioners to explore collaborative solutions for protecting marine and coastal environments.

Dr. Arvind Kumar, President, India Water Foundation, emphasised that **developing countries require targeted support through funding, technical assistance, and institutional strengthening**. He called for **polycentric models** grounded in local innovation, cross-sectoral coordination, and collaborative governance involving governments, multilateral agencies, industry, academia, and civil society.

Chairing the session, **Shri Bharat Lal**, Secretary General, National Human Rights Commission of India, asserted that the forum must **advance beyond recognition towards implementation**, anchored in collaboration, data-driven approaches, rights-based principles, and measurable outcomes.

The distinguished panel included:

- **Dr. Yutaka Michida**, Special Presidential Envoy for UN Ocean Decade, The University of Tokyo
- **Ms. Sinikinesh Beyene Jimma**, Acting Head, Marine and Freshwater Branch, UN Environment Programme
- **Dr. Essam Yassin Mohammed**, Senior Director of Aquatic Food Systems, CGIAR; Director General, WorldFish

- **Mr. Sanath Ranawana**, Director, Agriculture, Food, Nature and Rural Development Sector Group, Asian Development Bank (ADB)
- **Dr. Steffen Knodt**, Chairman, National Ocean Decade Committee, Germany
- **Dr. Rishi Sharma**, Senior Fishery Officer, FAO Regional Office for Asia and the Pacific
- **Dr. Sanjiba Kumar Baliarsingh**, Scientist C, Indian National Center for Ocean Information Services (INCOIS), Government of India
- **Ms. Ine Moulaert**, Valorisation Manager, VLIZ – Flanders Marine Institute, Belgium

The session was moderated by **Ms. Shweta Tyagi**, Chief Functionary, India Water Foundation.

A key recommendation that emerged was the **urgent need to institutionalise integrated ocean and coastal governance** built on scientific evidence, inclusive participation, and innovative financing mechanisms to ensure long-term ecosystem restoration and socio-economic resilience.

High-Level Multi-stakeholder Policy Dialogue on Ending Plastic Pollution

On 3 June 2025, **India Water Foundation (IWF)**, in collaboration with the **National Water Mission, Ministry of Jal Shakti, Department of Water Resources, RD & GR**, convened a **High-Level Multi-stakeholder Policy Dialogue on "End Plastic Pollution and Deliver Actions for Harmony with Nature"**. Held virtually at 16:00 hrs, the event underscored that **plastic waste is not merely an environmental hazard, but a systemic threat undermining ecosystems, water systems, and human health worldwide**.

Key speakers included:

- **Dr. Raj Bhushan Choudhary**, Minister of State, Ministry of Jal Shakti, Government of India
- **Ms. Astrid Schomaker**, Executive Secretary, Convention on Biological Diversity (CBD)
- **Dr. Satya Tripathi**, Secretary General, Global Alliance for a Sustainable Planet
- **Dr. Ritesh Kumar**, Director, Wetlands International, South Asia
- **Ms. Kerry Allbeury**, Senior Policy Advisor, Intergovernmental Negotiating Committee (INC) Secretariat, UNEP
- **Ms. Sara Manuelli**, Communications and Advocacy Officer, FAO
- **Dr. Karine Siegwart**, Senior Policy Advisor, Centre for Policy and Law, IUCN
- **Dr. Gopal Kumar**, Researcher, International Water Management Institute (IWMI)
- **Dr. Bholu Ram Yadav**, Senior Scientist, CSIR-NEERI

The event was moderated by **Ms. Shweta Tyagi**, Chief Functionary, India Water Foundation.

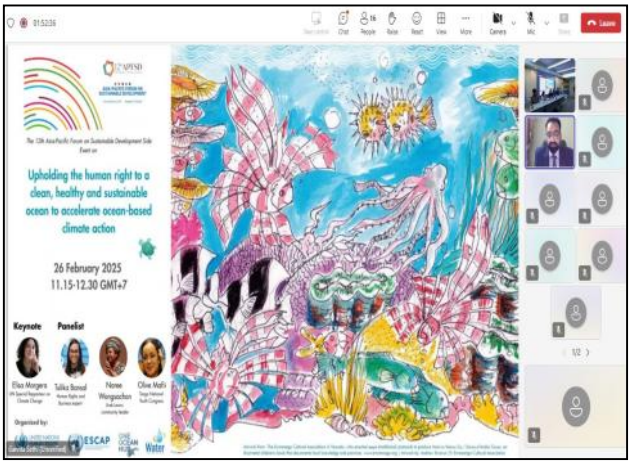
Speakers emphasised the urgent need for an **ambitious and legally binding Global Plastics Treaty** that moves beyond minimal consensus to address root causes, ensure equity, uphold scientific integrity, and advance **circular economy solutions**. Stakeholders called for **cross-sector collaboration**, enhanced financing, and **policy coherence** in alignment with the **Kunming–Montreal Global Biodiversity Framework** and the **Sustainable Development Goals**. Participants collectively declared that **ending plastic pollution is not merely a policy option—it is a moral imperative** for building a resilient and harmonious future.

Side Event on Upholding the Human Right to a Clean, Healthy and Sustainable Ocean

On 26 February 2025, Dr. Arvind Kumar, President, India Water Foundation, participated as a speaker in the side event "Upholding the Human Right to a Clean, Healthy and Sustainable Ocean, Above and Below Water, to Accelerate Ocean-Based Climate Action". The event was organised by the Office of the High Commissioner for Human Rights (OHCHR), One Ocean Hub, India Water Foundation, and United Nations ESCAP, under the auspices of the 12th Asia-Pacific Forum on Sustainable Development.

This dialogue examined current trends and the evolving human rights–ocean nexus in the Asia–Pacific region. Dr. Kumar emphasised that Member States can accelerate ocean-based climate action by: Improving access to reliable information, Fostering public engagement, and Ensuring that effective legal recourse is available for affected communities

These measures, he stressed, are critical to reinforcing sustainable management of marine resources and protecting the rights of vulnerable populations in the face of climate change.



High-Level Policy Dialogue on Fostering Collaborative Efforts to Protect Receding Glaciers

On March 25, 2025, India Water Foundation (IWF), in collaboration with the World Meteorological Organization (WMO) and the Mountain Partnership of the United Nations, convened a High-Level Policy Dialogue in Geneva on "Fostering Collaborative Efforts to Protect Receding Glaciers". The event addressed the alarming impact of glacial melt on water security, agriculture, and global stability.

Distinguished speakers included: Dr. Arvind Kumar, President, India Water Foundation, Shri Dr. Raj Bhushan Chaudhary, Minister of State, Ministry of Jal Shakti, Department of Water Resources, RD & GR, Government of India; Sh. Bharat Lal, Secretary General, National Human Rights Commission of India; Mr. Ignacio Deregibus, Executive Director, International Water Resources Association (IWRA); Ms. Sonja Köppel, Secretary, UNECE Water Convention; Dr. Stefan Uhlenbrook, Director, WMO Hydrology and Cryosphere; Ms. Sara Manuelli, Advocacy Officer, FAO Mountain Partnership; Dr. Mohd. Farooq Azam, Senior Cryosphere Specialist, ICIMOD. The discussion, moderated by Ms. Shweta Tyagi, Chief Functionary, IWF, underscored: Urgent, science-backed interventions to address glacial retreat, Increased funding for glacier monitoring, Gender-inclusive policies for climate resilience, Regional adaptation strategies and transboundary cooperation, Community participation in glacier conservation

The dialogue concluded with a shared call to action for climate-resilient, sustainable water management to safeguard ecosystems and livelihoods dependent on glacier-fed systems.

NATIONAL INPERSON

Keynote Lecture on "Circular Thinking: Saving Water, Reducing Waste" – Ahmedabad Management Association

On June 6, 2025, marking World Environment Day**,** Dr. Arvind Kumar**,** President, India Water Foundation, delivered a compelling keynote lecture at the Ahmedabad Management Association on the theme ***"Circular Thinking: Saving Water, Reducing Waste".***

Dr. Kumar emphasized that water is not merely a resource but the backbone of sustainable development**,** influencing productivity, public health, ecosystems, and economic resilience. Highlighting India's ongoing challenges of mismanagement and fragmented governance**,** he called for an urgent shift from the traditional linear model to a circular economy where water and waste are valued, reused, and regenerated**.**

Drawing attention to successful case studies, Dr. Kumar cited Meghalaya's integrated approach as a model demonstrating the transformative power of water transversality and systemic thinking to enable sustainable, inclusive growth.

The address inspired participants to explore innovative, cross-sectoral solutions for water conservation, waste reduction, and climate resilience, aligning with national and global sustainability goals.

High-Level Roundtable on "Pragmatic Environmental Economics for Viksit Bharat" – Ahmedabad Management Association

On the morning of June 6, 2025**,** Dr. Arvind Kumar, President, India Water Foundation, addressed a high-level Roundtable on *"Pragmatic Environmental Economics for Viksit Bharat"*, hosted by the Innovative Forum at the Ahmedabad Management Association**.**

Dr. Kumar asserted that environmental economics must now take center stage in India's policy imagination, not merely as a driver of growth, but as a framework for redefining value, incentivizing conservation, and integrating nature into economic decision-making**.**

Drawing from both global and Indian examples ranging from Costa Rica's Payment for Ecosystem Services (PES) model **to** Meghalaya's integrated forest-livelihood strategy, he emphasized the urgent need to recognize the true economic value of ecosystem services, including clean water, pollination, carbon sequestration, and biodiversity.

He advocated for the mainstreaming of environmental economics through tools such as green budgeting, PES mechanisms, and natural capital accounting to drive equitable, climate-resilient, and inclusive development**.**

The roundtable underscored that India's journey to Viksit Bharat must rest on the pillars of resource efficiency, ecological justice, and sustainable innovation**.**

Climate Innovation Summit 2025 – Dehradun

On May 9, 2025, Dr. Arvind Kumar, President, India Water Foundation, delivered a keynote address at the Climate Innovation Summit 2025 held at Hotel Regenta, Dehradun.

Dr. Kumar underscored that the path to net-zero is not solely about reducing emissions, it is about reimagining development, restoring our relationship with nature, mainstreaming sustainability across all sectors, and driving convergence between climate, health, food, and water.

During the panel on "Circular Economy & Green Industry Transformation", he emphasized the urgency of fostering collaborations across the entire value chain from suppliers to recyclers to create closed-loop systems. Such systems, he noted, maximize resource recovery while advancing long-term sustainability, innovation, and resilience across industrial and municipal sectors, thereby embedding circularity into water management.

The panel featured prominent experts, including Mr. Ratnesh Jha, Executive Director, UN Global Compact Network India; Dr. Mahesh Kasture, Chief Manager (R&D), BPCL; and Dr. Dimitrios Dimitriou, Group Vice President of ESG & Sustainability, Emsteel, UAE.

Other distinguished speakers at the summit included Mr. Erik Solheim, Former Executive Director, UNEP; Mr. Upendra Tripathy, Advisory

Board Member, Indian Carbon Market; and other leading voices from policymaking, industry, academia, and innovation.

The event served as a dynamic platform for shaping India's sustainable future through collaboration, policy innovation, and actionable solutions.

India Water Summit 2025 – New Delhi

On April 25, 2025**,** Dr. Arvind Kumar, President, India Water Foundation, was a key speaker in the inauguration session of the India Water Summit organized by the Indian Chamber of Commerce at Hyatt Regency, New Delhi**.** The summit was held under the theme "Building Water Secure Viksit Bharat through Innovation, Investment and Governance"**.**

Dr. Kumar highlighted that India generates over 72,000 million litres per day of sewage, yet only 28% is treated and an even smaller portion is reused**.** He called for a fundamental shift from a linear water economy to a circular economy model**,** where water is reused and recycled in a sustainable loop**.**

He stressed that such transformation is not possible without sustainable financing**,** advocating blended finance models where public funds de-risk private investments as an effective pathway to scale wastewater treatment and decentralized water systems, especially in underserved areas.

The event brought together policymakers, industry leaders, academia, and innovators to discuss strategies for shaping India's water-secure future through innovation, investment, and effective governance**.**

Global Business Summit 2025 – New Delhi

On 22 February 2025**,** Dr. Arvind Kumar**,** President, India Water Foundation, spoke at *The Times Group – **ET NOW Global Business Summit 2025*** held under the theme **#Evolve, #Emerge, #Expand**. He participated in the session on "Water-Energy-Food Nexus: A Balanced Approach for Sustainable Development"**,** where he emphasized the importance of a **transversality-based systemic approach** to address the interdependencies between water, energy, and food systems.

Dr. Kumar explained that **transversality** involves **breaking down silos**, integrating governance frameworks, fostering collaboration, and aligning sectoral policies to **optimize synergies and mitigate trade-offs**. He highlighted that misaligned policies such as irrigation measures increasing energy demand or energy policies stressing water resources can create inefficiencies and hinder sustainability.

Drawing from field experience, he shared **examples from Meghalaya, Himachal Pradesh, and Andhra Pradesh**, where integrated planning linked small water reservoirs with small power grids to meet both domestic and irrigation energy demands. He stressed that **circular water management** including wastewater reuse, rainwater harvesting, and efficient irrigation combined with **decentralized renewable energy solutions** like solar-powered irrigation can significantly enhance resilience.

Addressing governance challenges, Dr. Kumar noted that **fragmentation between ministries** handling water, energy, and food often results in **conflicting policies and wasted resources**. He proposed establishing a **National Water-Energy-Food Nexus Commission** or **inter-ministerial task force** to coordinate decision-making, harmonize policies, and promote data sharing. He further recommended **single-window approval mechanisms** for integrated projects, incentivizing initiatives that deliver multi-sectoral benefits.

He also pointed out that **global challenges** such as urbanization, population growth, and climate change are intensifying pressures on resources, creating a vicious cycle of scarcity and competition. Without **integrated, inclusive, and systems-based approaches**, achieving sustainability and resilience will remain elusive.

In his closing remarks, Dr. Kumar underscored that **transversality strengthens resilience, equity, and sustainability** by enabling adaptive strategies to address climate variability and socio-economic challenges, while fostering innovation through interdisciplinary research and cooperation.

HIM Samwaad 2025 – Protecting Himalayan Springs

Date: 25 June 2025 | Venue: Itanagar, Arunachal Pradesh

At HIM Samwaad 2025, serving as Distinguished Chair, Dr. Arvind Kumar underscored the urgent need to protect and rejuvenate Himalayan springs describing them as the "lifeline for over 50 million people across 60,000 villages." He emphasized their role in ensuring water security, sustaining agriculture, and preserving fragile mountain ecosystems. Dr. Kumar called for integrating traditional ecological knowledge with modern science to restore these vital water sources and strengthen climate resilience in the Himalayan region.

The programme brought together eminent dignitaries including Sewa International Global Coordinator Shyam Parande, RM Mission Hospital Secretary Swami Vedasarananda, Indian Institute of Public Health (Hyderabad) Acting Vice Chancellor Prof. Anil Kaul, Indigenous Faith and Cultural Society of Arunachal Pradesh President Dr. Emi Rumi, and RIWATCH Executive Director Vijay Swami, along with delegates from across the country and all Himalayan states.

All India Radio's 'Public Speak' program

Our President, Dr. Arvind Kumar, recently represented the India Water Foundation on All India Radio's Public Speak programme, joining Sh. G. Ashok Kumar, Former DG, NMCG, to address "The Importance of Rainwater Harvesting and its Role in Water Conservation."

Dr. Kumar underscored that water conservation is not solely a government mandate but a collective responsibility. He highlighted the transformative power of small-scale, local actions such as rooftop harvesting, recharge pits, and community systems that cumulatively address water scarcity. Calling for cost-effective innovations and scalable solutions, he urged citizens to make rainwater harvesting a daily habit and a nationwide movement. His message was clear: harness the monsoon's bounty today to secure water for generations to come.

NATIONAL ONLINE

Buland Bharat TV – Ammonia Contamination in Yamuna River

On **31 January 2025**, **Dr. Arvind Kumar**, President, **India Water Foundation**, appeared on **Buland Bharat TV** to address the recent controversy regarding **ammonia contamination in the Yamuna River in Delhi**. He outlined the **primary causes** of the contamination, discussed its **adverse impacts** on the local population including public health risks and disruption to water supply and proposed **practical solutions** to mitigate the crisis.

Dr. Kumar emphasized the urgent need for **strengthened pollution control measures**, **upgraded sewage treatment infrastructure**, and **stricter enforcement** of industrial effluent regulations. He also called for **enhanced inter-agency coordination** and **public awareness campaigns** to reduce contamination sources and protect Delhi's water security.

MEETINGS

Meeting with Prof. Sachin Chaturvedi, DG, RIS

Dr. Arvind Kumar had the opportunity to engage with Prof. Sachin Chaturvedi, Director General, Research and Information System for Developing Countries (RIS). During this meeting, Dr. Kumar presented his latest publication, Friday Musings, and held an in-depth discussion on exploring avenues for future collaborations between RIS and the India Water Foundation.

The interaction was marked by Prof. Chaturvedi's warm gesture and humble demeanour, reflecting a shared commitment to advancing research-driven policies, sustainable development, and impactful partnerships for the Global South.

Meeting with Dr. Raj Bhushan Chaudhary,

Hon'ble Minister of State, Ministry of Jal Shakti

Dr. Arvind Kumar had the pleasure of meeting Dr. Raj Bhushan Chaudhary, Hon'ble Minister of State, Ministry of Jal Shakti, Government of India. During the interaction, Dr. Kumar presented his latest publication Friday Musings, the Final Report of the first edition of the Water Transversality Global Awards and Conclave, and the Special Postal Cover released by the Department of Posts, India to commemorate the event.

The discussion focused on the current water situation in the country and explored the prospective scope for future collaborations, reflecting a mutual commitment to advancing sustainable water management and national resilience.

Meeting with Shri Bharat Lal, Secretary General,

National Human Rights Commission of India

Dr. Arvind Kumar had the pleasure of meeting Shri Bharat Lal, Secretary General of the National Human Rights Commission of India, at Geneva. The two engaged in an in-depth discussion on the critical intersections of water, environment, climate change, and their profound impacts on basic human rights. Dr. Kumar also presented his latest publication Friday Musings along with the Report of the first edition of the Water Transversality Global Awards and Conclave. He was deeply touched by Shri Bharat Lal's humble demeanour and warm gesture throughout the interaction.

Engagement with IIT Roorkee Leadership and Faculty

In May 2025**,** Dr. Arvind Kumar, President, India Water Foundation, along with colleague Sh. Pankaj Sharma, engaged in substantive discussions with Prof. K. K. Pant, Director, IIT Roorkee**,** and distinguished heads and faculty from multiple departments including Civil Engineering**,** Earth Sciences**,** Water Management, and the International Centre for Dam Safety**.**

The interactions paved the way for promising collaborations, unlocking opportunities for research, innovation, and sustainable solutions in water management, infrastructure resilience, and environmental stewardship. This engagement underscored a shared commitment to advancing knowledge, fostering technical excellence, and tackling critical challenges through a synergy of academic insight and field expertise**.**

Meeting with National Institute of Hydrology, Roorkee

In May 2025**,** Dr. Arvind Kumar, President, India Water Foundation**,** accompanied by colleague Mr. Pankaj Sharma, held a productive meeting with the Director of the National Institute of Hydrology (NIH), Roorkee**.**

The discussion centered on strengthening institutional collaboration in hydrology**,** water governance, and climate resilience. Leveraging NIH's technical expertise and IWF's multi-sectoral outreach**,** the engagement marks a significant step toward joint initiatives in sustainable water solutions, research excellence, and policy dialogue.

This partnership aims to tackle water challenges through innovation, knowledge exchange**,** and practical strategies that contribute to both national and global water security goals**.**

Meeting with Shri Harsh Malhotra

Hon'ble Minister of State

On **7** April 2025, Dr. Arvind Kumar, President, India Water Foundation had the privilege of holding a comprehensive and forward-looking meeting with Shri Harsh Malhotra, Hon'ble Minister of State for the Ministry of Road Transport and Highways and the Ministry of Corporate Affairs**,** Government of India.

Discussions focused on fostering sustainable infrastructure**,** enhancing corporate responsibility, and driving inclusive development. The Minister's insightful perspectives and strategic vision underscored his deep commitment to aligning economic growth with environmental stewardship and social responsibility**.**

His warmth, openness, and spirit of collaboration created a productive atmosphere **of** mutual respect and constructive dialogue**.** India Water Foundation sincerely appreciates Shri Malhotra's dynamic leadership and thoughtful engagement, which stand as a beacon for impactful policy action and public–private synerg**y** in nation-building efforts.

Meeting with Sh. Naveen Gulati

Member (Infrastructure), Railway Board

On 5 April 2025**,** Dr. Arvind Kumar, President**,** India Water Foundation had the pleasure of meeting Sh. Naveen Gulati**,** Member (Infrastructure), Railway Board**,** Government of India, and recipient of the First Edition of the Water Transversality Global Award for Leadership**.**

Although unable to attend the December 2024 award ceremony due to Parliamentary commitments, we were honoured to personally present him with the award and citation**.** Dr. Arvind Kumar also presented him with a copy of his recent publication *Friday Musings,* along with the official report of the Water Transversality Global Awards and Conclave**,** held in New Delhi on 5–6 December 2024**.**

India Water Foundation deeply appreciates Sh. Gulati's gracious hospitality and humble demeanour, and is grateful that he took time out of his demanding schedule to meet with us.

Meeting with Shri Rajeev Kumar Mittal

Director General, NMCG

On 16 January 2025**,** Dr. Arvind Kumar, President, India Water Foundation, had the privilege of an audience with Shri Rajeev Kumar Mittal**,** Director General, National Mission for Clean Ganga (NMCG), Government of India.

The meeting was comprehensive and fruitful, covering a wide spectrum of critical issues and challenges, while also identifying potential avenues for collaboration in the domains of water management and sustainability**.** Dr. Kumar expressed deep appreciation for Shri Mittal's warm and gracious hospitality**.**

During the interaction, Dr. Kumar presented his latest publication, *Friday Musings* a thoughtful compilation of reflections on contemporary global challenges and shared the report "Accelerating Progress of SDG 6 (Clean Water and Sanitation) in the South and South-West Asia Sub-Region", prepared for the United Nations ESCAP South and South-West Asia Office**.**

Meeting with Ms. Mikiko Tanaka,

Head, UN ESCAP South and South-West Asia Office

On 22 January 2025**,** India Water Foundation had the honour of welcoming Ms. Mikiko Tanaka**,** Head of the United Nations ESCAP South and South-West Asia Office**,** at our office. We deeply appreciate her warm gesture of taking time from her busy schedule to engage in discussions on prospective future collaborations and to finalize the report of the recently concluded *International Conference on Deciphering Transversality of the Water–Energy–Environment Nexus*, held during the Water Transversality Global Awards and Conclave**.**

The meeting opened with a brief presentation, setting the stage for a productive exchange of ideas. Also present were senior experts from India Water Foundation, including Dr. Ajit Tyagi**,** Dr. S.K. Sharma**,** and Mr. Mahendra Pal Singh**.**

Meeting with Sh. Sharad Agarwal, IPS

Dr. Arvind Kumar, President had the privilege of meeting **Sh. Sharad Agarwal, IPS**, to congratulate him for his appointment as **Director General Police, Mizoram**. He was Special Commissioner of Police, Economic Offences Wing, Delhi and we met him at Delhi Police Headquarters.

During this courtesy call, he had the opportunity to present him a copy of his publication, **Friday Musings**, along with a painting by students of aspirational district **Chitrakoot**. We were overwhelmed by his warm and humble demeanour.

Sh. Agarwal is known for his intellectual depth, integrity, and unwavering commitment to justice. His leadership shall have a meaningful and inspiring impact at Mizoram.

Meeting with Shri Rajeev Krishna

During Dr. Arvind Kumar's recent visit to Lucknow for a meeting with the Government of Uttar Pradesh, he had the privilege of calling on Shri Rajeev Krishna, the newly appointed Director General of Police, at his residence office. His warm and gracious welcome was truly heartening.

As part of this courtesy call, Dr. Kumar presented him with a copy of his publication Friday Musings. Shri Krishna is a leader of impeccable integrity, remarkable character, and a calm, approachable demeanour. He embodies a rare blend of tradition, professionalism, and empathy.

With his unblemished service record and firm yet compassionate leadership, we are confident that Uttar Pradesh is poised to move towards a safer and more secure future under his stewardship.

First Advisory Council Meeting for the Second Edition of the Water Transversality Global Awards & Conclave 2026

Date: 4 July 2025 | Mode: Hybrid | Venue: IWF Corporate Office

The First Advisory Council Meeting for the upcoming Water Transversality Global Awards & Conclave 2026 was convened on 4 July 2025 in hybrid mode. The session focused on strategic

deliberations around event themes, partnerships, stakeholder engagement, ESG integration, and opportunities for international collaboration.

Participants (In Person): Dr. Arvind Kumar, President, IWF, Ms. Mikiko Tanaka, Director & Head, UNESCAP-SSWA, Dr. Ajeet Tyagi, Patron & Chairman, Committee on Climate Change, IWF, Mr. M.P. Singh, Chief Advisor, IWF, Mr. Sunny Pandya, Chief Advisor – National Strategy & State Leadership, IWF, Ms. Shweta Tyagi, Chief Functionary, IWF. Participants (Online): Sh. Ranjit Kumar Pachnanda, Honorary Patron & Chairman, Committee on Water-Energy-Food Nexus, IWF, Prof. Ashok K. Keshari, Department of Civil Engineering, IIT Delhi, Mr. Ruchir Mishra, Legal Advisor, IWF

The meeting laid the foundation for a more impactful and inclusive second edition of the Conclave, with actionable recommendations guiding the preparatory roadmap.

National Advisory Committee – IFAT India 2025

On 7 May 2025, Dr. Arvind Kumar, President of the India Water Foundation, participated in the first National Advisory Committee meeting for IFAT India 2025 at Hotel Sahara Star, Mumbai, in his capacity as an esteemed committee member. IFAT India—Asia's leading environmental technology trade fair—is organised by Messe Muenchen India, a subsidiary of Messe Muenchen Germany, and will host its 12th edition from 14–16 October 2025 in Mumbai.

Dr. Kumar underscored the significance of IFAT as a premier platform for showcasing innovative technologies, policies, and practices in environmental management. Such forums, he noted, play a pivotal role in aligning national and regional priorities with global environmental goals, fostering the adoption of best practices, and accelerating the transition to a circular economy. He expressed appreciation for the organisers' warm hospitality and reiterated his commitment to contributing to the success of the event alongside other distinguished committee members, with a shared focus on advancing dialogue and innovations in the water, environment, and sustainability sectors.

VIDEO MESSAGES

Living in Harmony with Nature

Living in harmony with nature is not a barrier to development; it is the only path to sustainability.

In a powerful video message, **Dr. Arvind Kumar**, President of **India Water Foundation**, urged collective action to **revive ecosystems** including forests, wetlands, rivers, mangroves, marine habitats, and soil systems as **nature-based solutions** to address climate change, ensure food and water security, reduce disaster risks, and support sustainable livelihoods.

He called for **inclusive, people-centric, and nature-positive development**, emphasizing that such an approach is essential to building a **resilient future**. https://youtu.be/8eJS8VW9wiQ

Global Climate Action Call

"The world is facing unprecedented climate disasters from wildfires to hurricanes to record-breaking heat waves. The urgency for multilateral action has never been clearer."

In a compelling video message on 4th February 2025, Dr. Arvind Kumar, President, India Water Foundation, highlighted the pressing need for global cooperation in the face of escalating climate crises. He posed critical questions: *Will donor countries fill the void in climate finance? Can India take a leadership role in global climate negotiations?*

Emphasizing that we are at a **defining moment in history**, Dr. Kumar called on nations to **reaffirm their climate commitments** and act decisively toward a **sustainable future**. https://youtu.be/D5pLfSqvxnc

World Wetlands Day

On the occasion of **World Wetlands Day**, **Dr. Arvind Kumar**, President, **India Water Foundation**, delivered a passionate call to action: *"Protecting and conserving wetlands is not an option — it is our duty for a resilient and sustainable tomorrow."*

Dr. Kumar emphasized that **wetlands are nature's vital organs** teeming with biodiversity, supporting millions of livelihoods, safeguarding ecosystems, and contributing directly or indirectly to all **17 Sustainable Development Goals (SDGs)**. Yet, they are disappearing **three times faster than forests**.

He stressed their critical role in floodplains, providing habitat for aquatic biodiversity, ensuring groundwater recharge, and maintaining river health. Without **integrated wetland restoration plans**, achieving water security targets will remain a distant goal.

Highlighting the threats of **pollution, encroachment, and unsustainable development**, Dr. Kumar warned that losing wetlands means losing the fight against **climate change and water insecurity**. Urban flooding, he noted, is a stark reminder of the consequences of wetland degradation.

His message was clear: governments, communities, and individuals must **unite to restore and protect** these irreplaceable ecosystems. https://youtu.be/r9dBhUwJlms

ARTICLES

Water Auditing & Conservation Management

- **Dr. Arvind Kumar –** President & Founder, India Water Foundation
- **Dr. S.K. Sharma –** Consultant (Top Level Expert (TLE) WAPCOS Limited and Former Member, Central Ground Water Board (*CGWB*). Ministry of Jal Shakti, Government of India) & Principal Advisor, India Water Foundation
- **Lalit Gupta-** Senior Engineer, WAPCOS Limited, Gurugram

Abstract

Water conservation has evolved from traditional resource storage to efficient utilization practices, emphasizing sustainability amidst climate change and water scarcity. This paper explores water auditing and conservation management, detailing methodologies for industries, institutions, and households. Industrial water use, spanning processes like manufacturing, cooling, and wastewater discharge, is a significant focus, with strategies for efficiency gains such as recycling and closed-loop systems. Case studies highlight auditing practices that identify water-saving opportunities, reduce waste, and enhance efficiency. The paper underscores the necessity of water policies for industrial applications, advocating for comprehensive reporting and sustainable groundwater recharge practices. These measures aim to balance economic growth with ecological preservation.

1. Introduction

We know that throughout the history the need for providing water supplies has been met by developing additional resources. Water conservation is defined to mean storage of surface flows in reservoirs. Of late, the conservation has come to mean increasing the efficiency of water use. Better and effective water management including its practices is now possible through stretching already developed supplies.

The climate changes and present dry weather stresses the need for water conservation. The indiscriminate usage of surface and ground water determine the need for annual water auditing. Both, however, remind us that our resources are finite and that its wise use is essential.

Therefore as a policy, water resources should be managed strategically to ensure maximum long-term benefits for society.

2. Industrial Water Uses

It is rather difficult to imagine any industry in which water is not used. It is used for heating, cooling or as a part of manufacturing and cleaning process. Bulk processing industries need bulk supply of water, while specialized industries such as pharmaceuticals may need smaller but higher quality water. Water and pollution are two outputs of industry, both of which affect lives and ecology of downstream communities.

Commonly water is raw material used in washing, cooling and processing and so on. The water use efficiency refers to practices, products or systems that use less water without sacrificing performance.

Industrial water use encompasses water utilized for manufacturing products, process and production activities, air conditioning, boiler feed, washing, and other related purposes. The sources include withdrawals from ground water and surface water, wastewater treatment and recycling.

One of the primary industrial uses of water is in the manufacturing process and the production of the final product. Water usage can be categorized as either consumptive or non-consumptive. The consumptive use includes water used to manufacture a product for instance in a water bottling plant and then distributed for consumption. It is non-consumptive such as water used in colouring fabrics in textile industry and then discharged to wastewater system. The proportion of water consumption may be 1.25% for sugar sector to as high as 87% for thermal power plants.

The annual wastewater discharge in industrial sector ranges from 150Mm^3 for sugar producing sector to 27,000Mm^3 for thermal power plants. Pulp and paper, steel, textile and engineering sectors are largest industrial wastewater discharge sectors next to thermal power plants.

(i) Common water uses in Industries

Following are common uses in industry:

- Washing or rinsing of raw material & final products
- Preparation of slurries
- Cleaning of equipments
- Removing of heat
- Irrigation of landscape

Water usage in various segments of an industry are given in table.

Table 1: Water usages at various industries

Types of Industries	Segment water use (%)
1. Computer & Electronic Manufacturers	Rinsing takes 40% water
2. Food processes	Washing & sanitation consume 42% of water
3. At offices	Restrooms & domestic use 40%
4. Motels & Hotels	Laundry & guest room together consume 50%

(ii) Benefits of improving water use efficiency

These include:

- Lower water bills
- Reduced waste water charges
- Lower energy cost, and
- Reduced cost for chemicals and water purification

3. Water Management in Industries

Broad Element of Water Management:

Water resources already explored and developed may be used to the maximum extent before new sources are developed. Besides this,

- Alternative sources of supply shall be found.
- Optimum application techniques and processes for water conservation shall be implemented and waste shall be avoided.
- Water quality shall be protected and ecosystem preserved.
- Water Management however, is to be based on existing rules and guidelines and by using new rules where existing one's are inadequate.

4. Water Auditing And Conservation

Briefly the role of water auditing and water conservation is described.

(i) Why carry out "Water Auditing"

- To find out status of water source(s) & its use.
- To yield information on pattern of use
- Social environmental issues affecting access to water
- To identify opportunities for water saving for making equitable use.

- To check accuracy of available status of water and its quality & validity
- To check spatial and temporal scale at which data is utilized.

(ii) Methodology Steps, Include;

- Basic Data Collection
  - Analysis of current water use
  - Detection of potential leaks in water system
- Determining opportunities for reducing water use
- Detailed Water Audit
  - Determining detailed water balance
- Outline procedure to maximize water savings
- Follow Rules of 3 R's
  - Reduce
  - Recycle and
  - Reuse
- Install water saving technologies & process
- Undertake continued assessment on annual basis

(iii) Water Auditing Methods:

- Water audit kits
- Water meter reading
- Comparing water metering with water bill
- Using water pressure testing devices
- Using water flow rate testing devices

Basically, water auditing is an exercise to locate, analyse and quantify each water demand and supply facilities.

(iv) Queries for water using processes in Industry:

A checklist is as follows:

- How much water is entering processes area
- The quality of water at entry point
- Cost of bringing water to process area
- How much water is incorporated in final product and how much rejected with effluent stream.
- What are water losses to soil and air
- What are characteristics of effluent streams
- What is cost of managing effluents.

(v) A Self Audit Format

1. Obtain a site plan / water plan & breakdown of sites
2. Mark all water using entities on map.
3. Set up water sub-meters if site is bigger.
4. Review water bills of last one year & plot water use to understand water use trend of the site. Establish a baseline for use in future comparisons (last 12 months water use date)
5. Check for water meters of number of consecutives days, and read meters of atleast two weeks,
   - before work begins in morning
   - again after work is shut down in evening
   - difference between two readings is the daily water use of a site under audit.

Detailed monitoring require installation of data loggers to electronically read water use.

5. Case Examples And Procedures for Water Auditing

(i) <u>Institutional Areas:</u>

Use walk through procedure;

a) Create inventory of items that use water

b) Draw graph of water bill vs annual consumption

c) Locate water meters for checking data for sufficient period of record at least for 2 weeks and check morning/ evening water meter readings

d) Study graph results for (ii) & (iii) above

e) List out enumeration of water using entities

- Hand wash Basin
- Cistern/toilets
- Urinals
- Showers
- Bubblers
- Sprinklers
- Water Pools

f) Locate above (v) also on a suitable scale map

g) Determine daily / weekly water use for lawns/ gardens

h) Examine water consumption by plants types

(ii) Hospital Case:

- Hospital in big cities are largest water users
- For example at a Hospital on a given day upto 500 people may be working and 150 patient are treated.
- Using practice of data logging and data processing daily and hourly usage is determined at site of utilities
- It would be seen that water consumption was taking place by night though site activities were not occurring
- Daily water usage equivalent to water losses of 50 KLD water if detected would represent an annual saving of 77500 KLD.
- Total Water Intake (MG/yr.)
- Total water consumption (MG/yr.)
- Annual cost of water (Rs.)
- Use in cooling compressors – (percentage say 65%)
- Cooling of steam condensation before disposal (5%)
- Process usage (X ray developers, kitchen, and labs) (15%)
- Sanitary and general cleanup (15%)
- Adopt conservation measure to reduce / save upon high water usage
    - Control compressor cooling flow
    - Use chilled water for compression
    - Eliminate condensate cooling
    - Add temperature control valves to compression cooling water discharge lines

(iii) Shopping Mall Case:

- These Cover Large area
- Major water uses may include
    - Evaporative cooling towers
    - Food preparation
    - Public toilet flushing amenities
    - Washing
- Water audit to enable possible causes of high water use & high consumption with hydraulic design engineers
- Faulty cooling towers & hot water system are possible feature of high water use
- Repairs to them can reduce water losses

6. Industrial water conservation practices

Water users are divisible into two groups, the system users and operators.

The industries belong to System-users group. Industrial users apply a number of conservation and water use efficiency practices. Some of these are described below:

(a) Water Reuse and Recycling:

(1) **Water Reuse:** Water reuse is the use of reclaimed water from one application to another such as use of treated industrial waste water for landscape irrigation. Factors that should be considered for industrial water reuse include:

(i) Identifying water reuse opportunities

(ii) determining minimum water quality need for a given use identified from (i) above

(iii) identifying waste water sources that satisfy water quality requirements

(iv) Determining how water can be transported to identified new use area.

Reuse of waste water reduces demands on available freshwater from surface and ground water sources.

(2) **Water Recycling:** It is the reuse of water for same application for which it has originally used but require treatment before its reuse.

(b) Factors that should be considered in Recycling:

(i) Evaluation of water quality degradation resulting from use

(ii) Determining of treatment steps that may be required before preparing the water for recycling.

7. Conservation Approaches

(i) **Cooling water circulation**: The use of water for cooling in industrial application is by far the largest water use in industry. Water is used to cool heat generating applications. The method lowers the temperature of a source and then discharges it. Recirculating cooling system reduces water use by using the same water for several cooling operations. The cooling water conservation approaches include evaporative cooling, ozonation and air heat exchange.

(ii) **Rinsing:** A yet another common use of water in industry is application of deionized water for rinsing and cleansing in removing contaminants from products and equipments.

(iii) **Landscape irrigations:** A yet one more way in which industries can minimize or reduce water use is through effective landscape irrigation with use of drip systems.

Common Approaches to water efficiency measures in industry:

These are given in table below:

Table 2: Water Efficiency Measures

Approaches	Activity	Practices
1. Improved production planning	Minimizing water consumption	⁾ Reducing the products and equipments cleaning needs
2. Good Housekeeping	Introducing resources conservation solutions in operation	⁾ avoiding spillage ⁾ minimizing transport of pollutants from one process to the next
3. Process / equipment modification	Making of modification in process / equipments	⁾ Installing level-controlled valves to prevent tank overflows; closing open-ended cooling in heating systems.
4. Replacing equipments / technology	Substituting technology option	⁾ Using high pressure cleaning equipment.

The potential for water conservation in industry is enormous. In our case a ton of steel needs approximately 20 to 65 m^3 of water for its production as against Japan, USA, and Germany, where average is less than 6 m^3. Similarly a ton of paper production requires 300-500 m^3 of water twice as much as used in European countries.

Given below are likely percent water savings caused with use of various water efficiency measures:

Table 3: Industry Water Saving

Efficiency Measures	Potential saving (%)
1. Closed loop reuse	Upto 90%
2. Closed loop recycling water treatment	60%
3. Automatic shut off valves	15%
4. High pressure, low volume upgrades	20%
5. Reuse of waste water	50%

8. Risk Management by Industry

Various components of water risk management by industries are:

- ⁾ Industries to measure their current water use and waste water discharges
- ⁾ Establish policy for water related issues

- Establish target for water use efficiency, conservation and minimizing water impacts and associated risks
- Implement best technologies for reducing water use and waste water discharges
- Publically report water use and impacts

9. Need for Industrial Water Policy

With water resources coming increasingly under stress, there is inescapable necessity and need for a separate water policy for industrial water use. There is none at the moment. Water supply and water prices are emerging as major constraints in the location of industries and growth of industrial units. Therefore, there is need to develop instruments and structure to reallocating water between sectors. We need to give relook to economic and no-economic options that might influence water policy.

10. Water Information Reporting by Industries

There has to be some system of reporting water use by industries as part of their water auditing exercise. Such information and data shall be of use for industry business managers, heads of concerned Ministry in the state government as wells as part of compliances by regulatory and advisory bodies.

The following aspects may be worth their consideration in generating periodic water use information by industries:

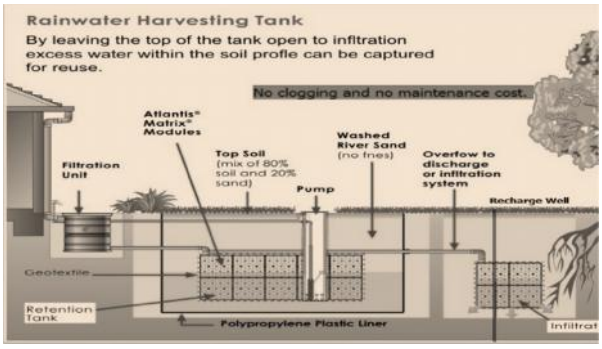
- The type of business
- The purpose for which water is used
- Water source and quantity withdrawal
- The specific industry processes using water
- The water self-serviced and or serviced by service providers
- waste water discharged
- The extent to which water is recycled i.e. the ratio of consumptive to no-consumptive use

We need to understand and be aware of various aspects of water and energy saving. Large energy is used to extract, treat and deliver water yet more energy is needed to use, collect and dispose it.

Water intensive industries need to report water information and its use as a practice and routine. They need to report on:

- Company water policy
- Company water management objectives
- Actual water use and waste water volume information
- Water related risks

- Water recycling data (rates)
- Waste water quality



11. Ground Water Recharge with Recycled Wastewater

Whereas many countries are practicing ground water recharging schemes with use of recycled wastewater, such ventures are hampered in our case largely because of non-existence of guidelines for implementation of large scale ground water recharging operations. Recharge with recycled waste water have challenges on health considerations. Many questions, some of which are listed below, need to be addressed.

- What treatment processes would produce water suitable and compatible with aquifer water under recharge?
- What are main health issues?
- How does water quality change during infiltration – percolation in vadose and ground water saturation zones?
- Whether infiltration – percolation as tertiary on a technology treatment would meet WHO's guidelines?
- Whether recharged water with use of treated recycled water could be used for both potable and non-potable uses?

12. Ground Water Recharge with use of Modular Rain Water Harvesting System

The Rain Water Harvesting & recharging are being practiced in the country as per guidelines and designs of CGWB in the country. As against this the Modular tank water harvesting which is an innovative design free from hazards of clogging and maintenance is now in vogue. This is illustrated in Fig.1 and is now being promoted in the country with technical / material support of Atlantis Australia by Great System Ltd., New Delhi. The system has been demonstrated in Faridabad and in Manesar areas of Haryana.

Fig.1: Ground Water Recharge using Modular Rain Water Harvesting System

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India's Green Energy Progress

Sh. Ranjit Kumar Pachnanda*

Energy security of supply and access at a reasonable rate is critical for economic transformation, prosperity, and well-being and is a goal that many countries are pursuing to ensure that their economies function without interruption and that their people have access to adequate, reliable and affordable supplies of modern and clean energy. India is one of the major growing energy consumers in the world. The global Covid - 19 pandemic since 2020 had a severe economic fallout and jolted all countries across the globe. While many economies continue to struggle with sluggish economic growth and record-breaking inflation, India has been recognized by global institutions like IMF and World Bank, to be one of the fastest growing economies of the world - "a bright spot on this otherwise dark horizon." The government's "Aatmanirbhar Bharat Plan" turned the crisis into an opportunity and gave the much needed impetus to economic development i.e. growth with structural change.

India is likely to become the most populous country and by 2050 with population in the range of 1.66 billion. The energy choices that India considers will not only have a direct bearing on its growing population but will also, in interconnected ways, affect the global energy market, carbon emissions and the flow of technologies and capital. Energy security of supply has been a key priority of Prime Minister Narendra Modi, often expressing that "India would continue to do what it thinks is best in the interest of its own energy security of supply when it comes to the question of global oil trade." But Prime Minister Modi also has a clear policy articulation that India's energy development is inextricably tied to its climate goals, a sentiment that continues since the Climate Summit in Paris in 2015. Last year in Glasgow, the Prime Minister presented India's 'Panchamrita' or five pledges/targets:

- Achieving net-zero emissions by 2070.
- Achieving non-fossil fuel energy capacity of 500 GW by 2030.
- Meeting 50 per cent electricity demand with renewable energy by 2030.
- Reducing projected carbon emission by one billion tonnes by 2030.
- Reducing carbon intensity of India's economy by 45 percent by 2030.

The momentum that the renewable energy pathways has set for this decade suggests that with careful planning India can achieve its net-zero goals as envisioned by Prime Minister Modi. In the mid-term a significantly higher mix of renewable energy can help large number of India's coal fired power plants reach its natural end of life between 2030 and 2040 and be replaced by cleaner and greener renewable energy sources. The roadmap though has several challenges. India's pathways require its energy sector to integrate into the global energy market and at the same time align its energy policies with global practices.

The primary objective for deploying green energy is to advance economic development, improve energy security of supply, improve access to energy and mitigate climate change. Sustainable development is possible by use of sustainable energy and by ensuring access to affordable, reliable, sustainable, and modern energy for citizens. Strong government support and the increasingly opportune economic situation have pushed India to be one of the top leaders in the world's most attractive renewable energy markets. The Modi led government has designed policies, programs, and a liberal environment to ramp up the country in the renewable energy market at a rapid rate. A mixture of push policies and pull mechanisms, accompanied by pin-pointed strategies have helped in the development of renewable energy technologies in India.

Since the wind and sun are available in abundance in India, India's focus and plan of action to achieve its targets is the following:

- To ensure that a better and affordable solar and wind technology should be easily and conveniently available to all.
- To increase the proportion of solar and wind energy in the energy mix.
- To encourage the innovation so that the solar / wind and hybrid solutions can be provided for several requirements.
- To provide concessional financing and less risky finance for solar and wind power projects.
- To develop such regulatory aspects and standards that can provide a new momentum to the development and adoption of solar solutions.
- Development of consultancy support for bankable solar and wind projects.
- To create a comprehensive network of centers of excellence that can take into account the local factors and situations.

The Indian wind industry has achieved a remarkable growth. This growth was triggered by incentives, fiscal / non-fiscal as well as advancement in wind turbine technology so that generation can take place even in low wind velocity conditions. The initial fiscal incentive of accelerated depreciation provided by the Central Government and the provision of the banking mechanism by the State Governments made private investment in captive wind farms attractive in the States were there was good wind potential. These two mechanisms propelled the growth of the wind sector in the country. Wind power tariffs declined as the investments scaled up. The Global Wind Energy Council estimates that the Indian wind sector is expected to add 20.2 GW of wind power capacity between 2020 and 2025. A pragmatic and viable policy framework for repowering older wind projects at high-resource sites is being put in place after stakeholder consultations. This would accelerate India's wind energy development. There is a potential of 4.5 GW for repowering old sites (GWEC, 2021).

India's plan titled 'Transmission System for Integration of over 500 GW Renewable Energy Capacity by 2030 entails connecting mega solar parks and wind power zones with the national grid. The transmission line length (ckt km) that stood at 3,67,851 in 2017 has increased TO

4,48,407 IN 20122. The Government has approved a plan to build transmission lines to link 20 gigawatts of reasonable energy at a cost of USD 1.61 billion over next five years as India moves forward towards reducing its carbon footprint by cutting carbon emissions. The plan includes construction of 8,120 circuit kilometer (ckm) of high voltage direct current transmission corridor (+800 kV and + 350 kV), 25,960 ckm of 765 kV ac lines, 15,758 ckm of 400 kV lines and 1,052 ckm of 220 kV cable. It envisages installation of battery energy storage capacity of 51.5 Gw by 2030 as against the existing 27.2 GWh, the potential by 2040 is estimated at 140 - 200 GW. This is to provide round- the-clock power to consumers. Various initiatives have been taken to establish a conducive environment for attracting domestic as well as foreign direct investment in the sector. The public policy as well as the Regulations framed by the power sector Regulators, at Central and State levels are all directed towards giving a 'big push' to the renewable energy sector viz. Renewable Purchase Obligation (RPO) increased from 21.18% of the energy consumed in the FY 2021-22 to 43.33% of the energy consumed in the FY 2029-30, Foreign Direct Investment (FDI) permitted up to 100%, waiver of Inter State Transmission of System (ISTS) charges on transmission of electricity generated from solar and wind power for projects commissioned up to 30 June 2025 etc.

The plan has identified upcoming non-fossil fuel-based generation centers. And, transmission systems have been planned accordingly. This includes Fatehgarh, Bhadla and Bikaner in Raasthan, Khavda in Gujarat, Anantapur and Kurnool Re Zones in Andhra Pradesh, offshore wind potentials in Tamil Nadu and Gujarat as well as a RE park in Ladakh, among others.

Today, India is the fourth largest Renewable Power generator in the world with 11% share, fourth largest Renewable power generator in the world with 5% share, fifth largest in solar and fourth largest in wind. It has recorded the fastest growing renewable energy capacity addition in the world in 2020. India has several of the world's largest solar power plants. In order to meet its energy needs, India is also emphasizing on installing solar panels in more and more homes besides setting up large solar plants. A national portal has also been started so that people can easily install roof-top solar projects. This will help both in generating electricity at homes and earning with electricity generation. Besides increasing the production of electricity, the emphasis of the government is also on saving electricity. Saving electricity means securing the future. The Prime Minister's Scheme for upliftment of farmers (Pradhan Mantri Kisan Urja Suraksha evam Utthan Mahabhiyan also known as 'KUSUM') is a great example of the same. By this scheme the government of India is providing subsidies for installation of solar pumps by the farmers to enable them to meet their electricity requirement as well as sell the surplus energy. And due to this, the food provider is also becoming the energy provider. It will also serve the purpose of Rural Electrification through solarization. UJALA Yojana (a free LED Bulb Scheme) has also played a major role in reducing the electricity bill of the common man of the country.

A major non-CO2 emitting power source is nuclear power, which is the fifth-largest source of electricity in India. As of November 2020, India has 22 nuclear reactors in operation in 8 nuclear power plants, with a total installed capacity of 7,380 MW. India has been making advances in the

field of thorium-based fuels, in order to develop a prototype for an atomic reactor using thorium and low-enriched uranium, a key part of India's nuclear programme.

India's decarbonisation journey received a boost after the announcement of the National Green Hydrogen Mission which aims to produce green hydrogen by splitting water through electrolysis. Green hydrogen has the advantage of being a clean burning molecule, which can decarbonize sectors including iron and steel, chemicals and transportation. The Mission aims to produce five million tonnes of green hydrogen annually by 2030.

The Prime Minister of India has announced that India needs to become self-reliant in the energy sector with the "need to take these initiatives to the next level of energy independence". The initiative taken by the Prime Minster of India of forming the International Solar Alliance, to fulfill the mission of One Sun, One World, One Grid (OSOWOG), is extremely commendable. Let us support India in its passionate resolve and effort and hope the end result is fully successful.

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The Tariff Tangle : When Reality TV Meets Economic Policy

Shweta Tyagi*

In the world of geopolitics, there are staid, predictable performances, and then there are productions so riddled with twists and plot devices you'd swear they were written by a Netflix showrunner working overtime. Into this latter category falls Donald Trump's latest foray into international trade drama: an abrupt imposition of 25–50% tariffs on a wide range of Indian exports to the United States. This high-octane move, sparked by India's continued oil dealings with Russia and long-standing trade imbalances, has set both economies ablaze with speculation, anxiety, and let's be honest a fair bit of confusion.

Tariffs, at their core, are taxes imposed on imported goods, and no one loves a good tax story quite like US political leaders during election campaigns. In Trump's economic playbook, tariffs serve several purposes. They can be retaliatory tools (think: "You won't play by my rules? Here's a big, beautiful tariff!"), bargaining chips at the negotiating table ("We'll drop the tariffs if you do what we want"), or simply a way to jazz up a slow news cycle. This time, the rationale is a cocktail of genuine trade grievances and the apparent need to chastise India for pumping rubles into Russian oil pipelines.

India, meanwhile, is staring down the barrel of a massive economic recalibration. With the US accounting for nearly 18% of India's total exports a cool $87 billion in goods each year according to recent trade statistics the country depends heavily on American demand. The products at risk make up the heart and soul of the Indian export dream: diamonds, textiles, garments, leather goods, furniture, gems, jewelry, and, to a lesser extent, pharmaceuticals and IT services though those two sectors have, so far, escaped the 50% tariff onslaught. Indian exporters, suddenly faced with the prospect of a US market either shutting out their goods with suffocating duties or pricing them out for consumers and businesses alike, are now collectively holding their breath. Warehouse facilities from Surat to Kanpur are reportedly filling up with unsold stock, as American buyers pull back on orders and scramble for global alternatives.

The pain will not be evenly distributed. For India, labor-intensive industries especially textiles and diamonds, which collectively employ millions in small and medium enterprises are in the firing line. Dropping export revenues will cascade into lower industrial output, higher unemployment, and a muted GDP growth projection. While India Inc. is resilient, analysts estimate the new tariffs could shave off as much as 0.3-0.5 percentage points from the national GDP, and drag 2025 growth just below 6%, the lowest in years. The nervousness on Dalal Street is palpable, with the rupee facing downward pressure thanks to dollar outflows and uncertain business sentiment. India's banking sector could also find itself with more non-performing assets, as cash-strapped exporters and small manufacturers struggle to make loan payments.

50% Drama, 100% Confusion

Trump's tariffs aren't just a one-way street of pain aimed solely at New Delhi. In fact, their ricochet effect will soon be felt across Main Street, USA. While some American manufacturing workers have applauded the move, hoping it will throw a life vest to dying domestic industries, economic reality has a way of stealing the show. US jewelry makers who rely on Indian-cut diamonds, textile companies that depend on low-cost fabric imports, and furniture retailers keen to stock affordable woodcraft are all facing a grim new supply chain math. Raising input costs leads to higher retail prices, fewer choices, and ironically no guarantee that any of the 'lost' production will shift to American soil. Most of these industries offshored years ago because building the same supply chains domestically is neither nimble nor cheap.

Consumers, of course, will ultimately foot the bill, paying more for engagement rings, yoga pants, and stylish sofas. Small businesses may be unable to absorb these costs in an already strained post-COVID economy, preferring instead to shift supply chains to other low-tariff nations like Vietnam or Bangladesh. The US may see a symbolic narrowing of its trade deficit with India, but it will come at the cost of consumer satisfaction and variety never mind any short-term market volatility as Wall Street digests another jolt of "policy by surprise".

As India strategizes for a way out of this sudden limelight, New Delhi is taking a two-pronged approach. First, diplomats are trying to calm the waters in quiet rooms and discreet back channels, hoping for a negotiated truce (or at least a partial rollback) before the full economic shock sets in. Meanwhile, policymakers are scouting aggressively for new markets African economies, the European Union, Southeast Asia where Indian exporters might shore up their losses. The playbook involves not just market diversification, but also boosting domestic consumption and rolling out new incentives for affected industries. However, replacing the US as a buyer at scale is no trivial feat, and few global partners can soak up excess production on such short notice.

Leading by Whim

If governing with consistency and predictability were Olympic sports, Donald Trump would probably still claim he set the record while changing the rules halfway through. In the Trump era, policy especially foreign policy has often been transactional and impulsive. Announcements come via tweet just as often as through formal channels. International partners are alternately celebrated or threatened, depending on the news cycle or the whisperings of cable news hosts. Trump's defenders call his unpredictability 'savvy negotiation'. They argue he's a master of the element of surprise, leveraging chaos to elicit concessions no one else could. What's clear, though, is that this is a rollercoaster for governments, businesses, and ordinary citizens in both countries.

Reliability in a national leader isn't about agreeing with every decision. Trust is built on consistent expectations, fair warning, and the sense that today's handshake will mean something

tomorrow. Trump's record on trade is filled with abrupt decisions, steel and aluminium tariffs on the EU, trade wars with China that roiled global markets, abrupt about-faces in relationships with NATO and traditional allies, and now these unpredictable blows in the direction of India. Even Trump's own advisers and American business lobbies are frequently left scrambling to respond, as the ground shifts beneath their feet.

For US-based firms, the unpredictability justifies greater caution: new investments are delayed, manufacturing plans postponed, inventories hedged at higher costs and in the end, innovative momentum is lost, all because no one is certain what the rules will be tomorrow. As one exasperated trade lobbyist commented, "Running a business is hard enough without needing a crystal ball to guess the next White House tweet."

In both countries, the effect reaches beyond economics. Unpredictable leadership frays the diplomatic trust which is the foundation of long-term alliances and partnerships. The US and India may be strategic friends, but the dustup over tariffs has introduced awkwardness and second-guessing if not outright mistrust. Allies quietly ponder how reliable the US really is under Trump, wondering whether friendship is just as transactional as any business deal. Meanwhile, citizens on both sides see everyday costs rising, jobs threatened, and political leaders more interested in symbolic gestures than sustainable solutions.

What next?

Despite all this, there is hope that the turbulence won't last. Both the US and India boast robust civil societies, vocal business lobbies, and institutional backchannels capable of deescalating headline-driven tensions. Election cycles, global economic realities, and grassroots commercial interests may yet force a walk-back of the most debilitating of these tariffs, even if Trump is in no hurry to blink first. Until then, the lesson is clear: whims are fun on reality TV, less so as a basis for international economic strategy. For India, the silver lining may be the impetus to accelerate internal reforms and market diversification. For the US, the episode should remind voters that the world is a more stable, prosperous place when unpredictability is reserved for game shows rather than trade deals.

In the meantime, enjoy your imported goods while they last or until they're replaced with the "great all-American alternatives" nobody really asked for. Because in a world where tariffs change at the speed of a tweet, and nations are governed by personalities as much as policies, everyone is left guessing which, come to think of it, might be the only certain outcome in this entire saga.

Chief Functionary, India Water Foundation

India's Renewable Energy Revolution

Accelerating Growth, Empowering Industry, and Building the Future

Avi Sharma* / Pankaj Sharma*

India is in the midst of a profound transformation—one that is not only redefining its energy mix but also reshaping the way industries function, how infrastructure is built, and how the nation positions itself on the global climate and economic stage. Over the past two decades, the country has moved from being an energy-deficient nation dependent on coal and oil imports to becoming one of the world's most ambitious and active proponents of renewable energy.

This change is not merely symbolic. With more than 225 GW of installed renewable energy capacity, India is currently the fourth-largest renewable energy producer in the world, behind only China, the U.S., and Germany. The government has set an aspirational goal of 500 GW of renewable energy capacity by 2030, and significant progress is being made across solar, wind, hydro, and biomass sectors. More importantly, this shift is not confined to policy papers and pilot programs. It is playing out in villages through solar irrigation pumps, in cities via rooftop solar panels, and across industrial corridors through large-scale wind-solar hybrid parks and open access renewable projects.

India's energy transition story is not only visionary—it is backed by unprecedented on-the-ground achievements. Over the last ten years, the country has recorded some of the fastest renewable energy growth figures globally.

- **India ranks 4th globally in total renewable energy installed capacity**, according to the International Renewable Energy Agency (IRENA).
- **It ranks 3rd in solar capacity** and **4th in wind power capacity** globally, reflecting the strategic focus and technological investment made in both segments.
- **The cumulative share of installed capacity from non-fossil fuel sources now stands at 49%**, inching toward the target of **50% by 2030** set under the Paris Agreement commitments.
- Since 2014, **renewable energy generation has increased 2.12 times**, rising from 190 billion units to 403 billion units per year.
- **Solar power capacity has grown nearly 38-fold**, from a mere 2.82 GW in 2014 to over **107.95 GW as of 2024**—a globally unparalleled scale-up.

- **Wind power capacity has more than doubled**, increasing from 21 GW in 2014 to **51.06 GW** today.
- India has achieved a **record renewable capacity addition of 86 GW in just the last five years**, showcasing both demand-side appetite and supply-side readiness.
- Innovative regulatory and policy instruments have underpinned this expansion, including:
    - **ISTS (Inter-State Transmission System) charge exemptions** to promote cross-border renewable trade.
    - A clearly defined **Renewable Purchase Obligation (RPO) trajectory** till 2029–30 for DISCOMs and large consumers.
    - The **Green Energy Open Access Rules (2022)** that lower the threshold for consumers (now 100 kW and above) to directly source renewable power across state lines.

These achievements place India in a leadership position—not only among emerging economies but also within the broader global context—demonstrating that scale, speed, and inclusivity can coexist in clean energy deployment.

What distinguishes India's energy transition from many other countries is its multi-layered nature. It is not just top-down—driven by government incentives and international commitments under the Paris Agreement—but also bottom-up, powered by the very real needs of industries and communities. The rise of renewable energy is not just about combating climate change; it is fundamentally about **economics, reliability, and competitiveness**.

The Industrial Sector's Awakening to Renewable Energy

Among the most significant shifts in recent years has been the rapid realization by Indian industries of the cost-saving potential and strategic value of renewable energy. Historically, power in India has been both expensive and unreliable, especially for large manufacturing and commercial establishments that rely heavily on consistent electricity to sustain operations.

This made the case for captive generation—initially through diesel or gas—especially compelling. However, over the last five years, as the costs of solar and wind technologies have declined dramatically, a new era has begun. Solar tariffs in India have reached record lows, often between ₹2.4–3.5 per unit, compared to grid power rates that can exceed ₹8–10 per unit in many states. For large energy consumers, this pricing differential can result in millions of rupees in annual savings, improving operational margins significantly.

More than just cost, renewables offer long-term predictability. With Power Purchase Agreements (PPAs) ranging from 10 to 25 years, industries can hedge against volatile grid tariffs and fuel price fluctuations. This price certainty is increasingly being seen as a strategic asset in financial planning.

Additionally, industries are now facing increasing pressure to meet Environmental, Social, and Governance (ESG) criteria—not just from regulators, but from investors, clients, and international supply chains. Global sustainability mandates such as the RE100 initiative, which requires companies to commit to 100% renewable electricity, are pushing Indian manufacturers and exporters to transition to clean energy or risk being left out of global value chains.

In this context, renewable energy is no longer just an environmental choice—it is a business imperative.

Rooftop Solar and Open Access Projects: Key Engines of Growth

Two primary formats have emerged as the engines driving industrial-scale renewable adoption: rooftop solar and open access projects.

Rooftop solar is particularly well-suited to small and mid-sized industrial units. It offers the advantage of generating electricity on-site, avoiding transmission charges, and providing faster payback periods. In some regions, commercial rooftop systems have demonstrated breakeven periods as short as 2.5 to 3 years, especially when accelerated depreciation and GST input credit benefits are factored in. Net metering policies, where available, further enhance the viability by allowing excess power to be fed back into the grid.

For larger corporates with multiple facilities or higher energy demand, open access models have gained popularity. These projects allow consumers to procure renewable electricity from offsite solar or wind farms, often located in states with better resource availability. The electricity is wheeled to the consumer through the existing grid infrastructure, under regulatory frameworks governed by the Electricity Act and the Open Access Rules.

One of the most promising developments is the rise of wind-solar hybrid projects, which combine the generation profiles of both technologies to provide more consistent power throughout the day and night. When paired with battery storage, these solutions are capable of delivering nearly round-the-clock renewable power, making them attractive even for energy-intensive sectors such as cement, steel, and textiles.

Integrating Storage: The Next Leap

As India's renewable capacity continues to grow, integrating Battery Energy Storage Systems (BESS) into the grid and industrial projects is becoming increasingly critical. Storage enables time-shifting of energy usage—storing excess solar power generated during the day for use at night or during peak load periods. This not only enhances grid stability but also increases the reliability of renewable power for industries with sensitive or uninterrupted power needs.

The government has recognized this need and is actively promoting policies to incentivize storage deployment. While costs remain a hurdle, technological advancements and economies of scale are rapidly improving the business case for integrated solar-plus-storage solutions.

The Long Learning Curve: Why Gestation Periods Remain Long

Despite the favorable economics and growing interest, many industries still experience long gestation periods between decision-making and project implementation. The reasons are manifold.

First, the regulatory environment is complex and varies across states. Banking and wheeling policies, cross-subsidy surcharges, open access charges, and connectivity approvals differ widely, making it difficult for industries to standardize their approach across facilities located in different regions.

Second, many industrial stakeholders are still building internal understanding and capabilities. Unlike traditional electricity procurement, renewable projects—particularly captive or group captive formats—require engagement with technical, legal, and financial dimensions that are unfamiliar to most procurement or operations teams.

Third, renewable energy adoption often involves multiple stakeholders within a company, including finance, operations, compliance, and sustainability teams. Aligning these groups and building consensus can take time, especially in large organizations.

As a result, even with high intent, project timelines can stretch to 9–12 months, especially when state approvals, land due diligence, or third-party investments are involved.

A Government That Understands the Spectrum: From Farmers to Factories

One of the most commendable aspects of India's renewable strategy is its broad-based inclusivity. Whether it's powering a smallholding farmer's irrigation pump or helping a Fortune 500 company reduce carbon emissions, the Indian government has introduced programs that cater to every segment.

At the grassroots level, the PM-KUSUM scheme has emerged as a cornerstone of rural energy transition. Under its various components, the scheme supports the installation of solar-powered pumps, solarization of existing grid-connected pumps, and development of decentralized solar plants on barren or fallow land. This not only reduces diesel dependence but also allows farmers to become energy entrepreneurs by selling excess power back to the grid.

The beauty of PM-KUSUM lies in its multi-dimensional impact—it reduces input costs, increases cropping intensity, boosts rural incomes, and strengthens grid infrastructure. By

including DISCOMs and TRANSCOMs in the value chain, the scheme fosters ownership and accountability across the energy ecosystem.

On the industrial side, the government has introduced accelerated depreciation benefits, tax exemptions, viability gap funding for select projects, and a Green Energy Open Access policy that simplifies cross-state transactions and allows smaller consumers (above 100 kW) to directly access green power. The push for domestic solar manufacturing through Production Linked Incentive (PLI) schemes is another strategic move that not only reduces import dependency but creates employment and export potential.

Policy Fragmentation and Implementation Bottlenecks: The Silent Saboteurs

Despite the strong policy intent and impressive growth figures, the lack of policy harmonization across states remains a major challenge. Each state has its own set of rules, incentives, and interpretation of central regulations, creating confusion and delay for developers and consumers alike.

Some states impose restrictive banking limits or levy high cross-subsidy surcharges that erode the cost advantage of renewable energy. Others delay SLDC or CEIG approvals, causing unnecessary project stagnation. The lack of a single-window clearance system further complicates the execution of large-scale or inter-state projects.

A harmonized regulatory approach is urgently needed—one that offers transparency, predictability, and a unified process for approvals and grid integration. Digitalization of regulatory workflows, state-level capacity building, and time-bound service-level agreements could go a long way in addressing these bottlenecks.

The Road Ahead: Resilience, Innovation, and Decentralization

As India marches toward its 2030 goals, the renewable energy sector is poised for a phase of qualitative evolution. The focus is no longer just on adding capacity, but on building systems that are flexible, decentralized, and intelligent.

Technologies such as green hydrogen, virtual power plants (VPPs), peer-to-peer energy trading, and AI-based load forecasting are expected to gain traction. The integration of electric vehicles with renewable-powered charging infrastructure offers another growth vector. For industries, energy procurement will evolve from fixed PPAs to dynamic, portfolio-based strategies that combine onsite generation, open access power, and carbon credit monetization.

The success of this future will depend on collaboration—between public and private sectors, between central and state governments, and between technology providers and consumers.

Financing innovation, especially through blended capital, infrastructure investment trusts (InvITs), and green bonds, will also play a pivotal role in scaling deployment.

Conclusion: India's Renewable Energy is More Than a Transition—It is a Transformation

India's journey in renewable energy is not merely about switching power sources. It is about building a more resilient, equitable, and sustainable economic foundation. It is about giving industries the tools to compete globally, empowering farmers to prosper locally, and enabling the country to meet its climate goals with ambition and authenticity.

In the years ahead, energy will no longer be seen just as an input cost. It will be a strategic lever—one that determines competitiveness, compliance, and carbon neutrality. For India, the energy revolution is not on the horizon. It is already here. What matters now is how swiftly, equitably, and intelligently we carry it forward.

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Can ESG Transform from Compliance to Conscious Capitalism in India?

Ashish Sharma*

India's newly minted ESG (Environmental, Social, and Governance) regime has transformed corporate sustainability disclosures into a mainstream requirement. Yet already there is a danger that it degenerates into a bureaucratic formality, another annual report to 'file away' rather than a force for real change. Without sharper focus on data quality and accountability, today's enthusiasm risks becoming tomorrow's compliance hollowed out. We are seeing significant steps for instance, SEBI's new BRSR Core framework and its phased assurance mandate but the gaps are wide: limited third-party scrutiny, patchy Scope 3 emissions reporting, and inconsistent use of emission intensity metrics threaten to turn ESG into an exercise in box-ticking. The opening moments of our ESG journey must therefore be analytical and forward-looking to ensure the promise of sustainable business is fulfilled.

SEBI's phased rollout illustrates both ambition and challenge. BRSR Core, launched mid-2023, initially required only the top 1,000 listed companies to disclose key ESG indicators. Assurance of those disclosures is now compulsory on a defined glide-path: from FY2023–24 it applied to the top 150 companies, expanding to 250 in FY24–25, 500 in FY25–26 and all 1,000 by FY26–27. Companies must also detail Scope 1 and 2 emissions and report emission intensity per unit of PPP-adjusted revenue and per unit of output. But rules alone will not change reality. Three striking gaps loom.

The Missing Links

First, *assurance gaps remain wide*. In the FY2022–23 reports, external assurance of environmental data was entirely voluntary. One study found only about one-third (99 out of 300 companies) even opted for an assurance report on their ESG data. That means two-thirds went unverified before SEBI's rules kicked in. Even now, reliance on a small pool of traditional auditors risks conflicts of interest and limits specialist expertise. If ESG reviews are rushed or superficial, the whole enterprise slides towards mere form-filling.

Second, *Scope 3 reporting*; emissions across the value chain is still embryonic. Scope 3 covers everything from upstream suppliers to downstream product use, but only about half of India's largest companies have engaged with it. A PwC review of the top 100 firms by market cap found just 51% volunteered any Scope 3 data for FY2022–23, even though those disclosures were still optional. Broader surveys show the picture among the top 1,000 companies is even grimmer: only ~27% reported any Scope 3 emissions for FY2023–24. This patchiness undercuts our understanding of true carbon footprints. Without shared standards and capacity-building, corporate sustainability becomes a house of cards, overlooking the greatest slices of emissions hidden in the supply chain.

Third, *the quality of intensity metrics varies.* An encouraging 90% of India's leading firms do report GHG emission intensity, suggesting awareness of these KPIs. But intensity figures can obscure as easily as they illuminate, depending on calculation methods and revenue bases. SEBI's guidance now insists on intensity per PPP-adjusted revenue and output to improve comparability. Yet without audits and clear standards, companies can "optimize" the numbers. For example, some sectors show deceptively low energy intensity simply because their revenues are large, not because they are clean. If we are to prevent greenwashing, intensity data must be backed by hard proofs, not just spreadsheets.

These gaps point to the clear risk: ESG could slip into ritual compliance. Instead, it needs to drive transformation. Retaining the urgency of language and numbers now emerging in disclosures, we must reinforce the system. In particular, three practical steps can keep us on track:

1. *Diversify and accredit assurance providers.* Rather than depending on the same handful of audit firms, India should promote a broad ecosystem of accredited third-party verifiers for ESG data. This would include domain experts (for example, energy engineers or sustainability consultancies) alongside trained accountants. Accreditation programs – possibly run by professional bodies and regulators – should certify assurance capabilities in areas like carbon accounting or social impact. Having more providers also means avoiding conflicts: companies could choose verifiers without ties to their own business units. A diversified assurance market would raise the quality of audits and make it harder for firms to escape scrutiny by hiring lenient reviewers. Ultimately, this ensures ESG reports are verified, not just signed off.

2. *MSME data capacity programs for value chains.* Indian supply chains are dominated by small and medium enterprises that today lack reporting expertise. Many suppliers cannot yet measure their emissions or build sustainability plans. Targeted capacity-building can

change that. Structured programs led by industry bodies, government institutes like SEBI's NISM, or large corporates themselves should train SMEs in basic ESG data collection and reporting. Curricula might cover how to calculate energy use and GHG emissions, or even simple tools to track water and waste. By improving SMEs' data literacy, large companies will then have real numbers to aggregate for their own disclosures. For example, a steel manufacturer mentoring its midstream suppliers on carbon accounting could, within a few cycles, collect credible Scope 3 data instead of guesses. This way, value chains become full participants in ESG rather than blind spots.

3. *Institutionalize civil society participation.* Finally, we must remember ESG is ultimately about public goods. Involve independent stakeholders like NGOs, academics, community groups in designing and monitoring ESG initiatives. Think of these civil actors as watchdogs and collaborators. They can sit on advisory panels for reporting frameworks, critique corporate claims and even perform third-party validations (for example, verifying a company's water stewardship project on the ground). Some precedents exist globally: multi-stakeholder forums on sustainability criteria, or rating agencies that include environmental NGOs. Formalizing such roles in India would pressure companies to live up to their commitments, beyond what regulators or auditors alone can enforce. It also democratizes ESG: a committee of experts and citizens can flag if a company's social or governance claims seem hollow.

These steps should not be purely theoretical. They can and should be mobilized at platforms where business, government and civil society converge. One such opportunity on the horizon is the Water Transversality Global Awards & Conclave, 2026, which explicitly frames challenges around the water-energy-health & environment nexus through an ESG lens. This event bringing diverse sectors together could spotlight innovative assurance models, SME partnership programs, and participatory governance examples as award-winning solutions. By tying our way-forward proposals to its agenda, we galvanize collective action: winners and participants could commit to adopting them, and policymakers might be inspired by showcased case studies.

Way Forward

India's ESG transition is at a critical inflection. The narrative could easily become stale compliance jargon about governance reported dutifully but with no change on the ground. Instead, we need a next chapter focused on measurement and accountability. The data already hints at challenges: many companies still rely on voluntary Scope 3 reporting, only a third assured their data last year, and intensities vary sector by sector. But those statistics also show progress awareness has grown, and rules are tightening. It is time for businesses, regulators and civil society to lock arms. By diversifying assurance, empowering SME suppliers, and embedding independent voices, we can ensure ESG yields genuine transformation. Let this be a rallying cry as India moves from proof-of-concept to proof-of-performance in corporate sustainability.

What is at stake is not just the form of ESG reports, but the substance of India's growth. If we fail to deepen our approach, a bureaucratic ESG will achieve little beyond checkmarks. But if we act now with sharper oversight, better data and broader participation the ESG regime can become the engine of innovation and accountability that its advocates intended. The future of a cleaner, fairer economy depends on it, and the time to secure that future is today.

Junior Researcher, India Water Foundation

ARTICLE PUBLISHED

Rethinking Pricing the Priceless for Sustainability

Published on 08th July 2025 in The Tribune.

What is the true cost of natural resources in a country that holds them sacred yet treats them as limitless entitlements? In India, water holds a revered place in our culture, celebrated in rituals and daily life. But in a climate-stressed, densely populated, and rapidly urbanising nation, the belief that water should be free is proving dangerously outdated. How do we shift public perception? What policies can balance reverence with responsible use?

Click on the link ahead to read the complete article: https://www.tribuneindia.com/partner-exclusives/rethinking-pricing-the-priceless-for-sustainability/

Legal Frameworks for a Melting World: Protecting Glaciers through Policy

Published in the April 2025 issue of Law Street Journal.

Glaciers are vanishing at alarming rates, threatening global water security, increasing disaster risks, and accelerating sea level rise. What role can legal frameworks play in preserving these vital ice masses? This article by Dr. Arvind Kumar explores international policies, legal challenges, and actionable solutions for protecting glaciers from climate change's mounting impacts. Are existing laws sufficient? How can countries work together to safeguard these frozen reserves for future generations?

Click on the link ahead to read the complete article: https://lawstreet.co/environment/legal-frameworks-for-a-melting-world-protecting-glaciers-through-policy

Can India Meet China's Hydro-Hegemony?

Published on 24th March 2025 in The Tribune.

China's push to build the world's largest dam on the Brahmaputra River, the Yarlung Tsangpo Dam could generate 60 gigawatts of power, triple that of the Three Gorges Dam. What will this mean for India and Bangladesh? In this article, Dr. Arvind Kumar examines the strategic, geopolitical, and environmental stakes for the region. Can India counter China's growing hydro-hegemony? What strategies can safeguard national and regional water interests?

Click on the link ahead to read the complete article: https://www.tribuneindia.com/partner-exclusives/can-india-meet-chinas-hydro-hegemony

The Third Pole's Dilemma: China's Brahmaputra Dams and the Future of South Asian Water Security

Published on 17th January 2025 in Focus Global Reporter.

China's plans to build one of the world's largest dams on the Brahmaputra River could reshape the water security landscape of South Asia. Known as the "Third Pole" for its vast glacial reserves, the Himalayas are central to billions of lives. Dr. Arvind Kumar's article explores the geopolitical tensions, environmental risks, and livelihood impacts of this mega-project. Will regional cooperation and science-informed diplomacy be enough to avert conflict and ensure sustainable governance?

Click on the link ahead to read the complete article: https://focusglobalreporter.org/the-third-poles-dilemma-chinas-brahmaputra-dams-and-the-future-of-south-asian-water-security/

Rejuvenation of Water Bodies

Published on January 21, 2025 in Focus Global Reporter.

Urban lakes and ponds across India are rapidly degrading due to industrial growth, unplanned urbanisation, and pollution. This article by Dr. Arvind Kumar, Dr. S.K. Sharma, and Lalit Gupta outlines preventive and remedial measures to restore these critical ecosystems from desilting and aeration to encroachment removal, buffer zone maintenance, and community engagement. Can cities prioritise lake rejuvenation as a necessity rather than an option? Drawing from case studies in Gurugram and Faridabad, the authors call for urgent, integrated action.


Focus Global Reporter

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Rejuvenation of Water Bodies

- Dr. Arvind Kumar – President & Founder, India Water Foundation
- Dr. S.K.Sharma – Consultant (Top Level Expert (TLE) WAPCOS Limited and Former Member, Central Ground Water Board (CGWB), Ministry of Jal Shakti, Government of India)& Principal Advisor, India Water Foundation
- Lalit Gupta- SeniorEngineer, WAPCOS Limited, Gurugram

ABSTRACT

The changes in catchment areas of Lakes & water bodies influence their water yield and quality. The industrial, agricultural and anthropogenic activities variously degrade devaluate the status of water bodies. Lake-pond contaminants caused by in-flow of untreated waste water create severe problems for human livelihood and environment. In order to reduce the impacts of degradation of Lake-pond water bodies, detailed restoration plans are necessarily required including solution for rejuvenation of lake-water bodies. Preventive & Ameliorative Lake-restoration methods are discussed which basically illustrate diversion &treatment of waters before entry into water bodies. Paper also discusses possible outcomes of Restoration methods described. Case studies of two selected lake-water bodies from Gurugram and Faridabad districts of Haryana are described

Click on the link ahead to read the complete article:

https://focusglobalreporter.org/rejuvenation-of-water-bodies/

ANNOUNCEMENT

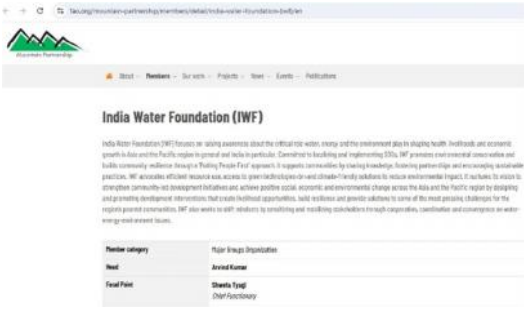
2nd Water Transversality Global Awards & Conclave on 6-7 March, 2026

Theme: ESG Transversality for Sustainable Water, Energy, Health and Environment Nexus. We are delighted to invite you to this two-day landmark conference, bringing together policy makers, industry leaders, innovators, and sustainability experts from across the globe.

This high-impact event will explore: **ESG integration** into water, energy, health, and environmental systems; Advancing the **Water-Energy-Health & Environment Nexus**; **Global collaboration** for sustainable development; **Innovations** accelerating the path to **carbon neutrality**. Join us for inspiring discussions, strategic partnerships, and ground-breaking ideas shaping a sustainable future.

India Water Foundation Joins the UN Mountain Partnership

Another proud milestone for **India Water Foundation** , we are now an official **member of the Mountain Partnership**, a United Nations alliance dedicated to improving the lives of mountain communities and safeguarding mountain environments worldwide. This collaboration places us alongside esteemed institutions such as ADB, FAO, WMO, ICIMOD, and IUCN, all working together for a transformative global impact. Becoming part of this alliance reinforces our commitment to: Sustainable development, Climate resilience, and integrated ecosystem approaches.



We look forward to engaging with like-minded organizations, sharing knowledge, and fostering partnerships that strengthen the **mountain agenda** both regionally and globally.

Let’s work together to ensure **Mountains Matter** and contribute meaningfully to the **2030 Agenda** and the **SDGs**.

Become a Direct Member!

At the India Water Foundation (IWF), we're more than just a network—we're a movement for sustainability and resilience. By becoming a member, you become part of a community of individuals, organizations, and institutions committed to environmental conservation, policy advocacy, and transformative change.

Why Join Us?

As a member, you'll gain opportunities to:

- Shape Policies with us – Participate in advocacy initiatives that influence sustainable development strategies.
- Learn and Grow Together – Access exclusive workshops, training programs, and thought-leadership events.
- Connect with Change-makers – Collaborate with a global network of experts, innovators, and leaders.
- Make a Grassroots Impact – Support and engage in community-driven projects that enhance resource efficiency and resilience.
- Be Recognized for Your Efforts – Get featured, awarded, and celebrated for your contributions at IWF events.

Who Can Join?

Membership is open to:

- **Organizations** – Companies, institutions, NGOs, government bodies, and intergovernmental organizations.
- **Individuals** – From young professionals to experienced leaders and retirees—anyone passionate about sustainability.

Whether you're a policymaker, innovator, or community advocate, there's a place for you here at IWF. Together, let's shape a sustainable and inclusive future.

Apply Now - https://indiawaterfoundation.org/direct-membership/

Become a Jal Mitra – Join the Social Outreach Membership

Be part of a people-powered movement dedicated to water conservation, ecosystem restoration, and sustainable living. The Jal Mitra Outreach Program is a mass initiative of the India Water Foundation (IWF) that seeks to inspire awareness, nurture grassroots action, and foster behavioural change for a more sustainable future across India and the Global South.

Why Become a Jal Mitra?

By joining, you:

- **Support Sustainability** – Play your role in reducing ecological footprints and advancing national and global sustainability goals.
- **Drive Action on the Ground** – Participate in plantation drives, cleanup campaigns, and community awareness programs.
- **Be Part of a Movement** – Join a vibrant network of individuals committed to water conservation, climate action, and ecosystem resilience.

Membership Benefits (Free of Cost)

As a Jal Mitra, you will:

- Receive regular updates on IWF's activities and impact.
- Get invitations to conferences, seminars, and symposia organized by IWF.
- Actively participate in conservation and community development campaigns.
- Be acknowledged through certificates and featured stories on our platforms.
- Contribute directly to grassroots initiatives that create lasting change.

Apply Now- https://indiawaterfoundation.org/jal-mitra/

FRIDAY BLOGS

India's Pivotal Moment in Changing South Asian Geopolitical Paradigms

South Asia is undergoing a profound geopolitical transition. While India has historically anchored regional dynamics, the accelerating strategic realignment marked by China's expanding footprint over the hydrological systems of the Tibetan Plateau and its assertive Belt and Road Initiative has significantly altered the balance of influence. Although not a party to the Indus Waters Treaty, China's upstream control over key tributaries of the Indus basin introduces new variables into an already sensitive transboundary water framework……Read more https://focusglobalreporter.org/indias-pivotal-moment-in-changing-south-asian-geopolitical-paradigms/

Reweighing Rainwater Harvesting to Unlock this Potential?

In a world grappling with climate uncertainty and rapid urbanization, managing water wisely is no longer optional, it's essential. Pause and think for a moment: if the rains don't reach our reservoirs this year, where will your next glass of water come from? That question is no longer hypothetical; it's a pressing reality for millions across India. With erratic monsoons, plunging groundwater tables, and growing demand, we need urgent solutions. And at the heart of the answer is something simple yet powerful……Read more https://focusglobalreporter.org/reweighing-rainwater-harvesting-to-unlock-this-potential/

Valuing Wetlands for Resilience

The Global Wetland Outlook (GWO) 2025 is poised to make waves with its official launch at the UN Nairobi on July 15, 2025. This year's theme "Valuing, conserving, restoring and financing wetlands" reflects a growing global recognition that wetlands are not just ecological curiosities, but vital assets at the heart of climate resilience, biodiversity, and sustainable development. As the world faces mounting environmental and economic pressures, the GWO 2025 aims to spotlight the urgent need to invest in wetlands,……..Read more https://focusglobalreporter.org/valuing-wetlands-for-resilience/

Rewilding the Narrative to Restore What Matters!

Every July, as monsoon clouds gather, photo ops bloom across India, the country dives headfirst into Van Mahotsav, the grand annual plantation ritual. Politicians roll up their sleeves, dig ceremonial pits, and declare green revolutions in the making. The stated goals are always noble capture carbon, boost biodiversity, recharge aquifers, and, of course, impress the evening news. But the uncomfortable question remains:….Read more https://focusglobalreporter.org/rewilding-the-narrative-to-restore-what-matters/

Assuring that No One is Left Behind?

At the midway point of Agenda 2030, the outlook is grim: only 17% of targets are progressing as planned. While there's steady improvement in access to electricity, internet, and child healthcare, critical areas like press freedom, corruption control, and sustainable nitrogen use are regressing. Europe, led by Finland, Sweden, and Denmark, continues to dominate the SDG Index, yet even these frontrunners face hurdles on climate and biodiversity goals……..Read more https://focusglobalreporter.org/assuring-that-no-one-is-left-behind/

Pricing the Priceless: A Path to Sustainability

What is the true cost of natural resources in a nation that reveres them as sacred, yet treats them as an unaccountable entitlement? Pricing the so-called "priceless" resources is essential because it brings economic visibility to their ecological and social value. When resources are freely available or under-priced, they are often overused, wasted, or degraded……..Read more https://focusglobalreporter.org/pricing-the-priceless-a-path-to-sustainability/

Beyond the Surface: Listening to the Ocean's SOS?

If the ocean could speak, what warnings would it give us about the future we are shaping?

Would it whisper of warming waters and dying coral, or cry out over rising tides and plastic-laden waves? The ocean—covering over 71% of our planet's surface—is not only where life first began, but where it continues to be nurtured every day. It regulates the Earth's climate, sustains vast biodiversity, and provides food and livelihoods for more than three billion people…….Read more https://focusglobalreporter.org/beyond-the-surface-listening-to-the-oceans-sos/

Eliminating Plastics: A natures call for Emergency?

This question strikes at the heart of the ecological crisis of our time. For centuries, human societies have thrived by drawing from nature's bounty yet, this bond, once rooted in reciprocity and reverence, has frayed under the weight of exploitation, pollution, and disregard. Nature operates on balance and trust. It offers resilience, but not without limits…….Read more https://focusglobalreporter.org/eliminating-plastics-a-natures-call-for-emergency/

Recalibrating India's Next Leap

In a world reeling from economic uncertainties and shifting power centres, India's steady ascent to becoming the world's fourth-largest economy marks a defining moment in global history. With a projected nominal GDP of $4.187 trillion by 2025–26, India is not only surpassing Japan but also signalling a broader……Read more https://focusglobalreporter.org/recalibrating-indias-next-leap/

Reimagine Wetland Governance: Bridging Policy and Implementation Gaps

Water is a limited and irreplaceable resource, yet its demand continues to rise relentlessly due to population growth, urban expansion, and industrialization. Unlike energy, where advancements have led to the discovery and deployment of alternative sources such as solar, wind, and hydrogen, there exists no substitute for water—an essential element for all forms of life. This makes its scarcity not only a developmental challenge but a fundamental threat to human survival and ecological……Read more https://focusglobalreporter.org/reimagine-wetland-governance-bridging-policy-and-implementation-gaps/

Reclaiming People first Approach for Harmony with the Nature?

More than 75% of global food crops rely on pollinators, contributing US$ 235–577 billion annually to global agricultural output. Over 50% of modern medicines are derived from natural sources, including antibiotics from fungi and painkillers from plant compounds. Forests store 80% of terrestrial biodiversity, absorbing approximately 2.6 billion tonnes of carbon dioxide annually, helping mitigate climate change……Read More https://focusglobalreporter.org/people-first-approach-for-harmony-with-the-nature/

From Risk to Readiness: Adapting Dam Safety to Climate Extremes

Changing and increasingly extreme weather patterns around the world have heightened the risks facing dams, as seen in recent safety incidents in India, the US, Libya, Nigeria, and Sudan. Dams are critical infrastructure — essential for national security, energy generation, water supply, flood control, and disaster resilience. Their safety is vital for protecting lives, property, and the stability of entire regions…….Read more https://focusglobalreporter.org/from-risk-to-readiness-adapting-dam-safety-to-climate-extremes/

Claims to Compliance: False Shades of Green-washing?

Amidst the growing wave of sustainability initiatives, there is an alarming rise in green washing practices that cannot be ignored. According to RepRisk's October 2024 data, one in four climate-related ESG risk incidents globally is now linked to green washing-a notable increase from previous years-with the banking and financial services sectors……..Read more https://focusglobalreporter.org/claims-to-compliance-false-shades-of-green-washing/

Towards a Cooler Planet: Renewing Renewables

This Earth Day 2025, the theme "Our Power, Our Planet" echoed a powerful global sentiment that the future of humanity depends on how wisely we harness renewable energy today. With renewable energy now growing at a record 15.1% annually, it has become a cornerstone in the global push toward a healthier, more resilient, and equitable world.……Read more https://focusglobalreporter.org/towards-a-cooler-planet-renewing-renewables/

Besides Linking Trade, Linking Civilizations & Cultures: Will IMEC be a Game Changer?

The world today stands at the crossroads of fragmentation and integration. As protectionist rhetoric resurfaces, most notably through U.S. President Donald Trump's renewed calls for sweeping tariffs the global economy faces the looming threat of escalating trade wars, disrupted supply chains, and a retreat into economic nationalism. In this uncertain environment, the India-Middle East-Europe…….read more https://focusglobalreporter.org/besides-linking-trade-linking-civilizations-cultures-will-imec-be-a-game-changer/

Reweighing "Neighbours First" Approach for Global Leadership

World is at a crossroads at this bewildering spring of 2025, one with skyrocketing geo-economic showdowns and geo-political tensions. The re-elected President of America had squeezed in another significant thud on the already fragile world order with his re-elected protectionist trade agenda. Heavy tariffs were imposed on trade with other enormous economic powers such as China……....Read more https://focusglobalreporter.org/reweighing-neighbours-first-approach-for-global-leadership/

Rethinking Disaster Resilience

We live in a world with increasingly interconnected and compounding risks and disasters affecting more and more communities, while also exacerbating existing inequalities. Understanding of risk has both expanded and deepened, with over 110 countries systematically collecting data on disaster impacts and several applying this data to better inform risk governance. Preparedness isn't……Read more https://focusglobalreporter.org/rethinking-disaster-resilience/

Revaluating the Zero Waste Blueprint for a Net Zero Future

Our planet's trash trouble is only getting worse, with predictions that we'll produce 70% more waste by 2050, thanks to growing cities and shifts in how we consume. The market for managing all that waste is expected to jump from $1,352.6 million in 2025 to $2,155.83 million by 2033 (growing at a rate of 6% annually). This increase is fuelled by the ever-growing amount of waste from our homes, factories…….Read more https://focusglobalreporter.org/revaluating-the-zero-waste-blueprint-for-a-net-zero-future/

Receding Glaciers, Rising Seas: The Global Impact of Glacier Retreat

Glaciers aren't just geographical feature, they're sacred symbols of power and dignity deeply woven into cultural and religious traditions. These icy giants form the backbone of a delicate water-food-energy balance, providing essential melt-water for drinking, farming, and electricity generation for millions. But there's trouble in paradise. Recent studies show global warming is melting these frozen reservoirs……Read more https://focusglobalreporter.org/receding-glaciers-rising-seas-the-global-impact-of-glacier-retreat/

Reassessing Climate induced Health Emergency

With the U.S. retracting its financial support for the World Health Organization (WHO), the global health landscape faces an uncertain future. This decision raises critical questions: How essential is sustainable health for global stability and development? Can nations in the Global South, already grappling with resource constraints, sustain health advancements without external funding? Moreover, how do environmental factors like air, water, soil, and food quality intersect with human health outcomes? A holistic …….Read more https://focusglobalreporter.org/reassessing-climate-induced-health-emergency/

Reinvigorating Food Systems for a Sustainable Future

As per World Bank in 2023, around 733 million people in the world were undernourished, showing a steep rise of 152 million since 2019. The World Food Programme's 2025 Global Outlook shows that acute hunger afflicts 343 million people in 74 countries, of whom 1.9 million of them are on the brink of famine. With only five years left until 2030, achieving the Sustainable Development Goals (SDGs) demands urgent action. UN Secretary-General António Guterres has stated, "Food systems are at the heart of achieving ……..Read more https://focusglobalreporter.org/reinvigorating-food-systems-for-a-sustainable-future/

Re-envision the Green Energy: Amid Climate Emergency

The year 2024 will go down in history—not for a groundbreaking climate breakthrough, but for an unsettling milestone: it became the first year to surpass the 1.5°C temperature threshold above pre-industrial levels. That's according to the Copernicus Climate Change Service and the World Meteorological Organization (WMO)—and no, it's not the kind of record we should be celebrating. So, let's get real: Are governments worldwide truly prepared to tackle the climate crisis head-on?.....Read more https://focusglobalreporter.org/re-envision-the-green-energy-amid-climate-emergency/

Viksit Delhi: Utopia or Attainable Goal?

Delhi's new government has taken charge with much fanfare, but now the real work begins. Every administration has promised a "Viksit Delhi," yet the ground reality tells a different story. With the same party ruling both state and centre, there are no excuses—only expectations. Pollution still chokes the city, despite years of efforts and crores spent. The Yamuna remains a toxic drain. Unauthorized colonies expand, deepening the housing crisis. Governance remains tangled……..Read more https://focusglobalreporter.org/viksit-delhi-utopia-or-attainable-goal/

Rethinking the Regulation of AI and Ethics

Artificial Intelligence (AI) is a powerful tool that can revolutionize industries, improve efficiency, and solve complex problems. A recent IBM survey shows that 42% of large companies have adopted AI, and 40% are considering it. Generative AI has been implemented by 38% of organizations, with 42% considering it. As AI advancements continue at a rapid pace, its impact on society in the future remains to be seen. At the recent AI Action Summit in Paris, co-hosted by India and France, Prime Minister Modi said, "while the positive……Read more https://focusglobalreporter.org/rethinking-the-regulation-of-ai-and-ethics/

Reweighing India's Green Budget 2025

India's goal to become the third-largest economy by 2030 conflicts with its commitment to environmental sustainability, particularly its pledge to achieve net-zero emissions by 2070. While the Union Budget 2025 and economic survey acknowledge this challenge, they show a significant gap between the ambitious targets and the funding allocated. India must address this discrepancy by overhauling its policies and implementing strategic measures. As a developing nation, India faces the demanding task of aligning economic growth with environmental protection and achieving broader Sustainable Development Goals……Read more https://focusglobalreporter.org/reweighing-indias-green-budget-2025/

Transversality Systemic Approach for Integrated Wetland Ecosystems

India, one of the world's fastest-growing major economies and currently ranked as the sixth largest, is ambitiously pursuing its goal of becoming a USD 5 trillion economy by 2025. Yet, even as it chases this target, pressing issues like air and water pollution dominate discussions, especially during elections. If the nation's capital struggles with such fundamental challenges, the situation in smaller cities and towns is likely even more critical. Managing water is deeply intertwined with power and politics, a reality that becomes ……...Read more https://focusglobalreporter.org/transversality-systemic-approach-for-integrated-wetland-ecosystems/

Climate on Crossroads in New World Order

It's that time of the year again, when the Swiss Alpine town is hosting the Annual Meeting of the World Economic Forum under the theme "Collaboration for the Intelligent Age". The topic of "rebuilding trust" aims to explore how stakeholders can find new ways to collaborate on solutions both internationally and within societies. The WEF Annual Meeting will also host 26 live sessions on the theme of "safeguarding the planet". This includes everything from carbon pricing and nature markets to changes in the weather and COP30…….Read more https://focusglobalreporter.org/climate-on-crossroads-in-new-world-order/

Mahakumbh: A Sustainable Leap or Just a Dip?

The event of Mahakumbh, which takes place once in 12 years in India, is a vastly rich event with a religious perspective and its spiritual side; however, it also offers a rare stature in terms of using it for building a constituency for environmental issues. The tremendous crowd which includes millions of worshipers from all corners of the world is a great opportunity for mobilising public opinion to favour issues related to the environment. The communities with the participation of several stakeholders such as religious……Read more https://focusglobalreporter.org/mahakumbh-a-sustainable-leap-or-just-a-dip/

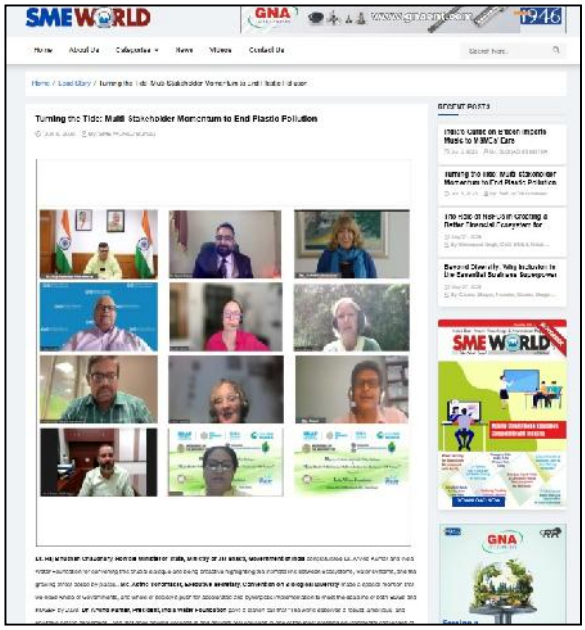
No one Killed Yamuna?

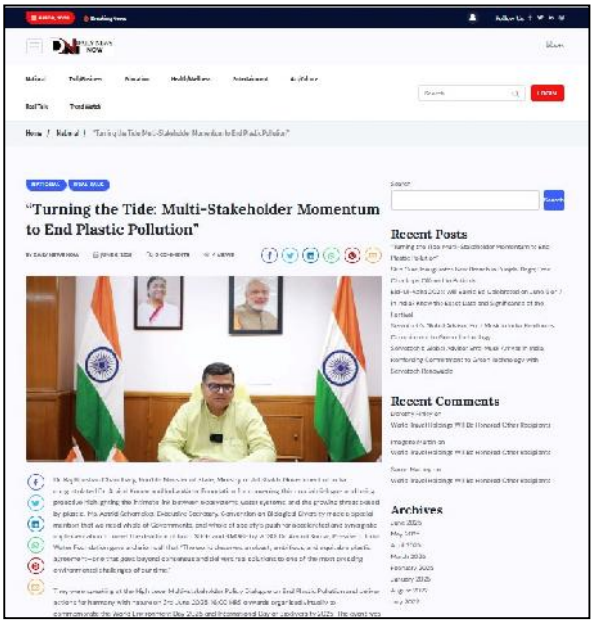
Let's be absolutely clear, no one actually killed the Yamuna. There's no single villain to blame. It's not like it was a carefully orchestrated murder mystery. It simply runs crystal clear…right into a polluted mess. So, it's nobody's fault, really. Definitely not a political issue – heaven forbid! It's just a river doing its thing, while we, with the purest of intentions, of course, stand by and watch it gasp for breath. It's about the undeniable reality of our rivers struggling, a tragedy unfolding in plain sight, conveniently masked by our collective……Read more https://focusglobalreporter.org/no-one-killed-yamuna/

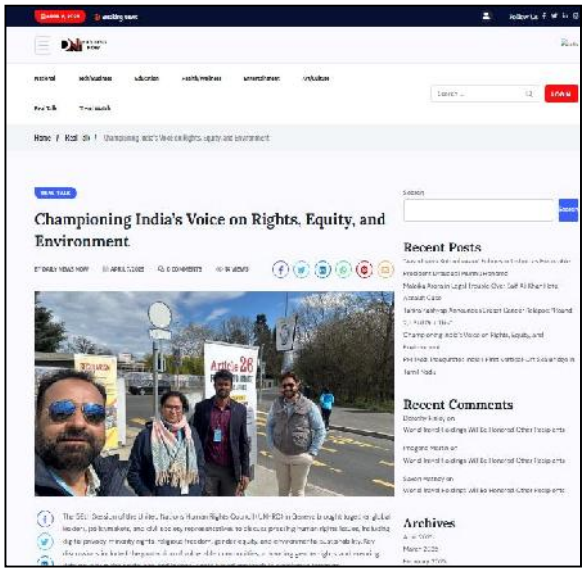
Reflections on Global Sustainability and the Path Ahead

The year 2024 marked a transformative period in the realms of environment, energy, water management, and international relations. With nations grappling with climate change, resource scarcity, and geopolitical complexities, the year saw significant advancements, challenges, and the laying of groundwork for future initiatives. In his new year message Antonio Guterres, Secretary General, United Nations mentioned that, "this is climate breakdown in real time. We must exit this road to ruin and we have no time to lose. In 2025, countries must put the world on a safer……..Read more https://focusglobalreporter.org/reflections-on-global-sustainability-and-the-path-ahead/

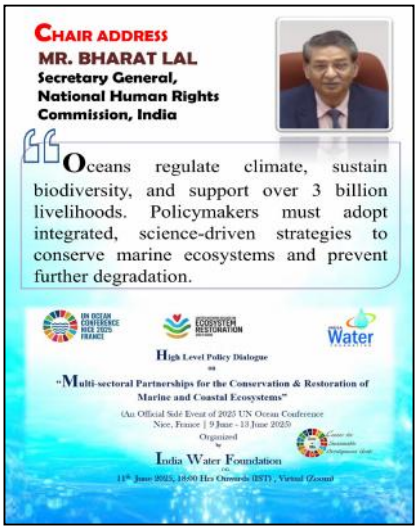
MEDIA COVERAGES

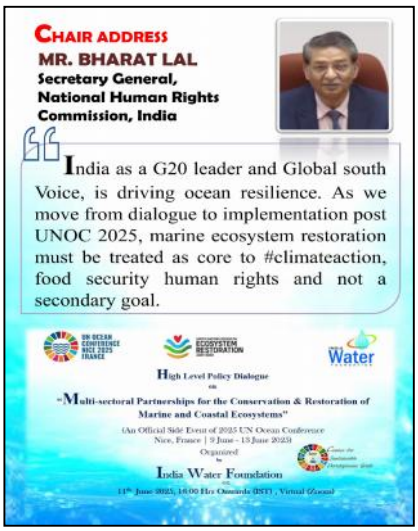


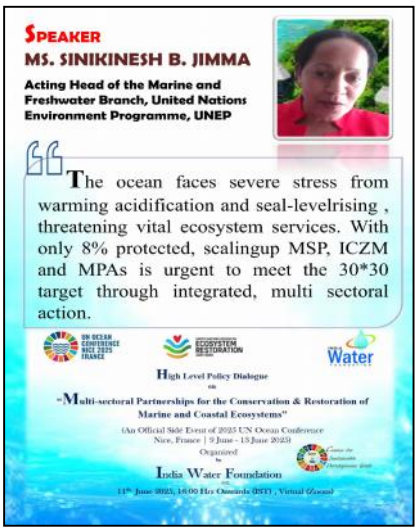


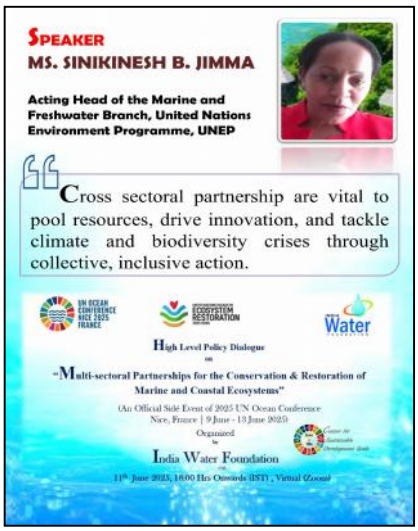


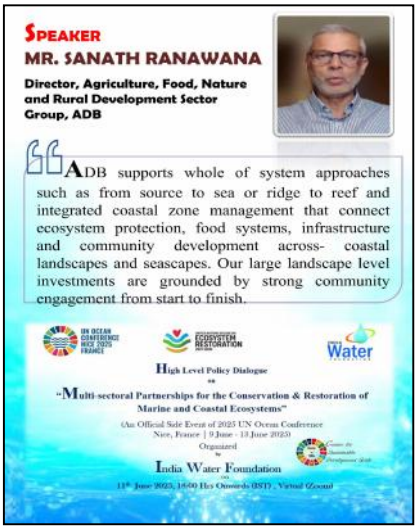
MAJOR EVENTS TWEET'S GALLERY

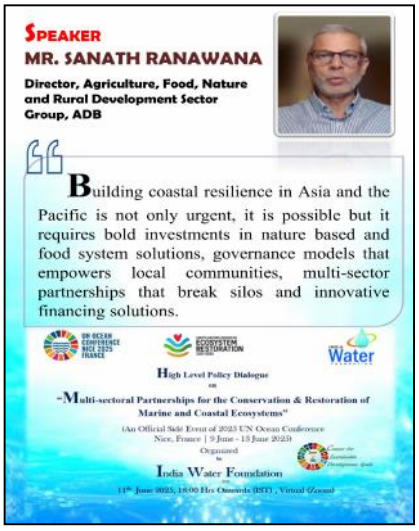


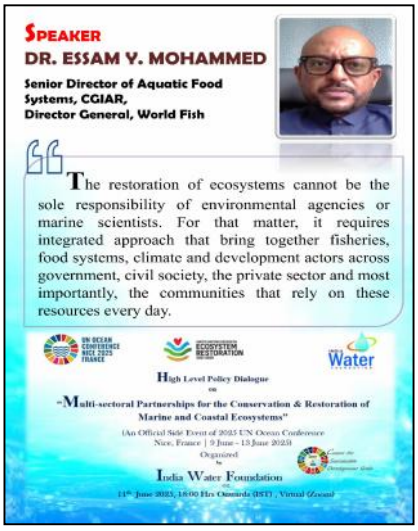


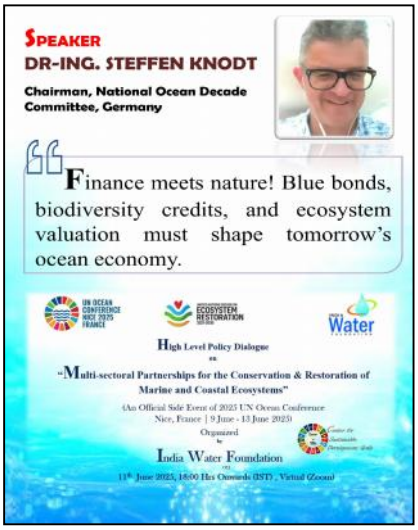


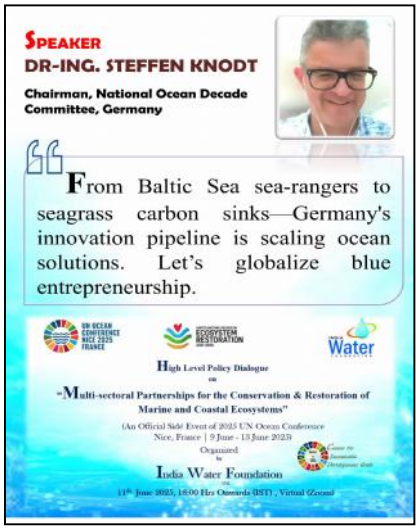


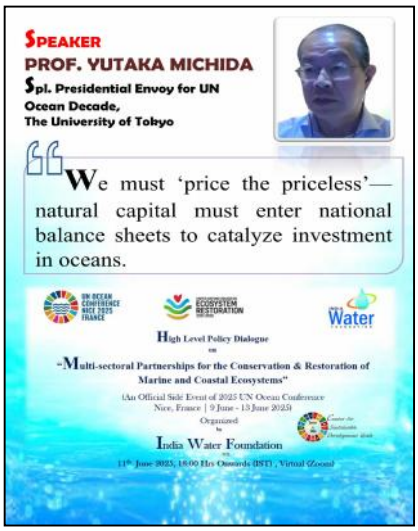


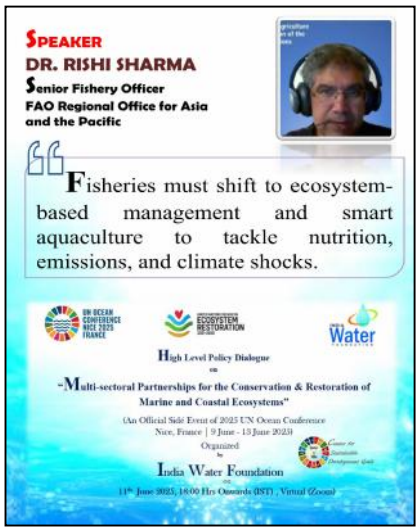


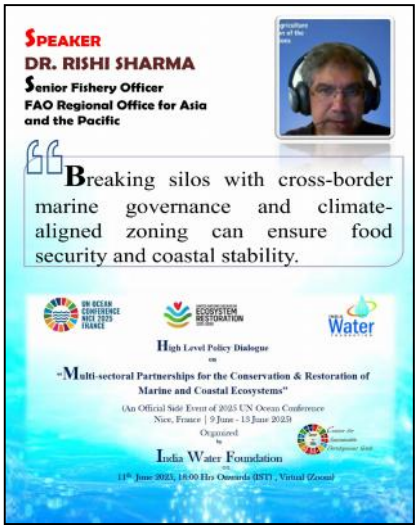


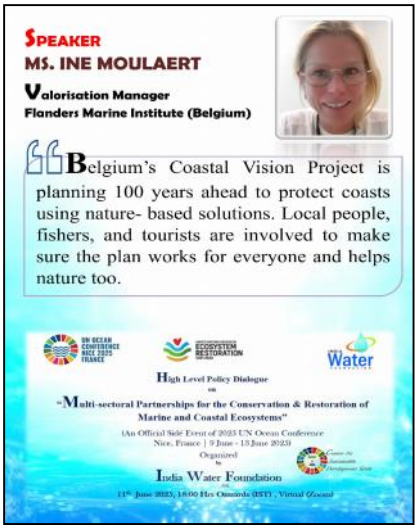


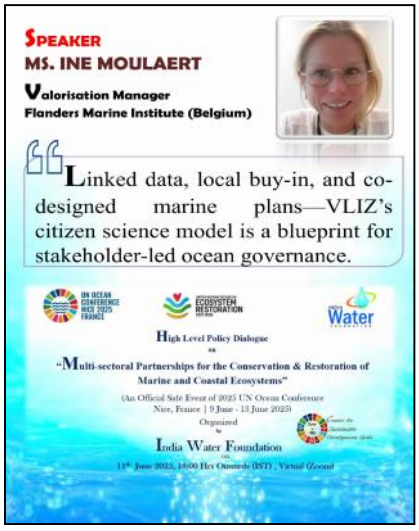


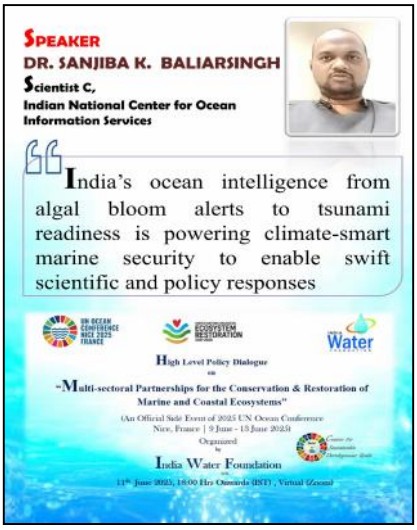


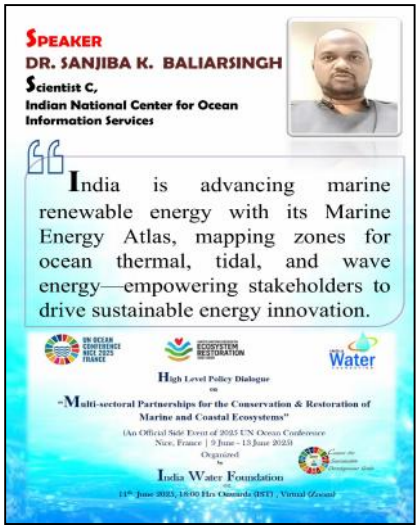


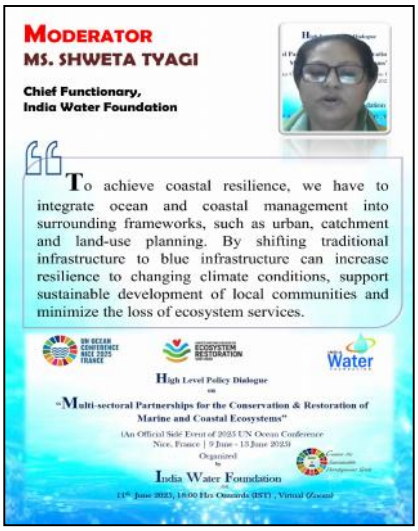


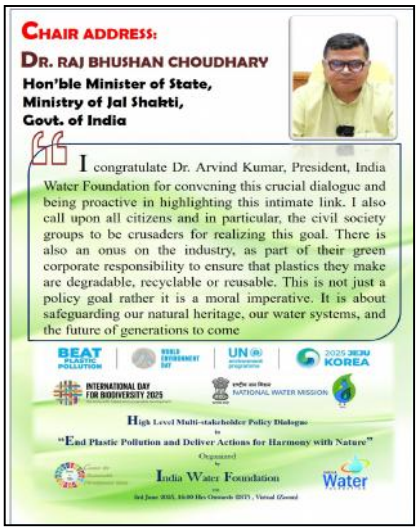


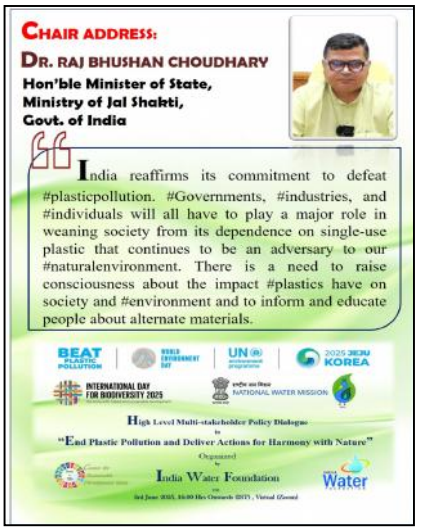


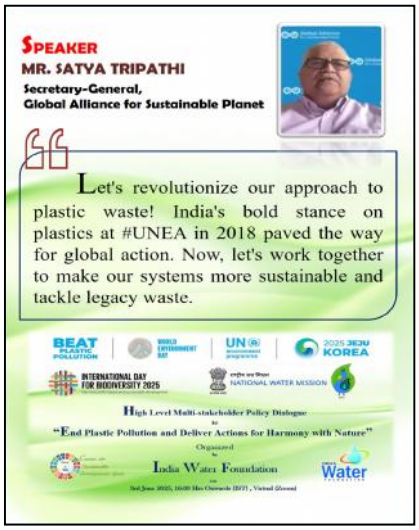


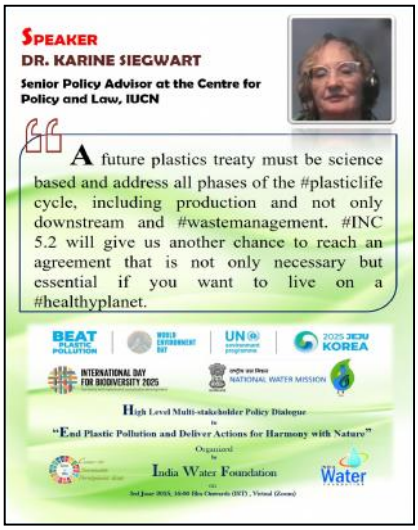


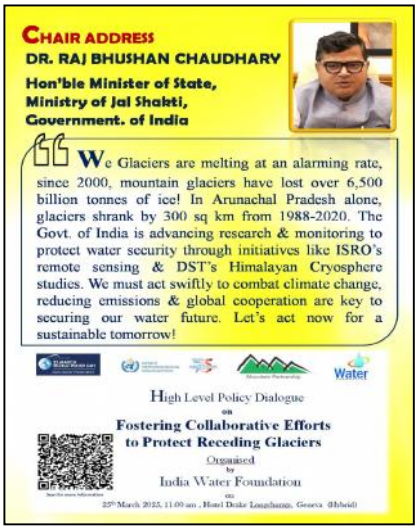


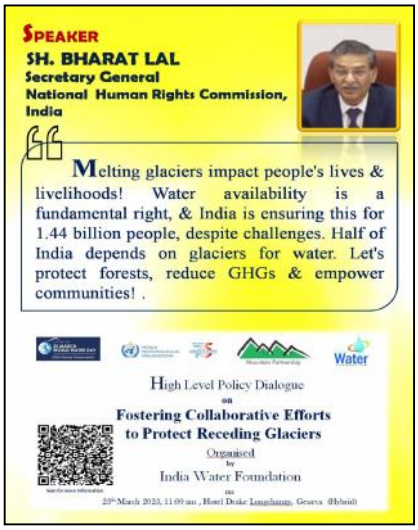


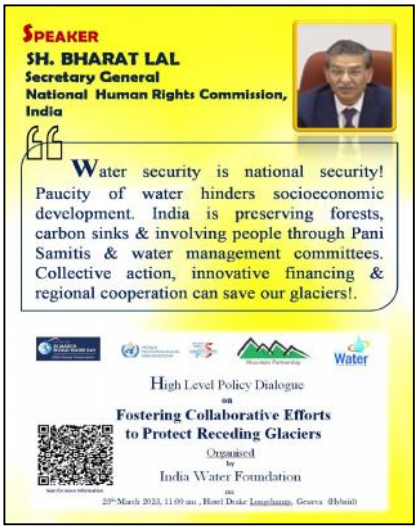


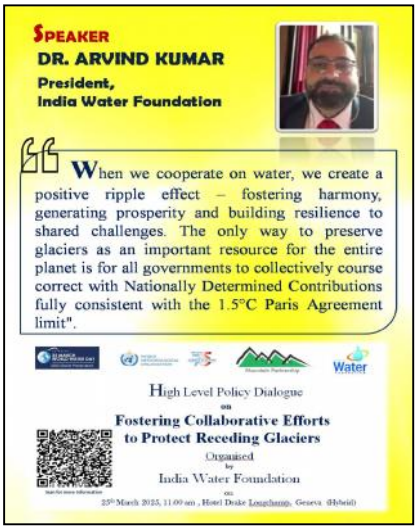


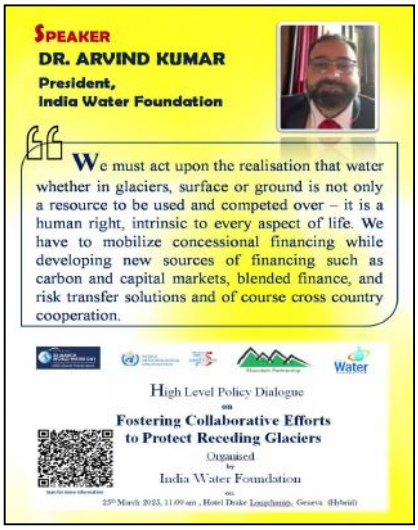


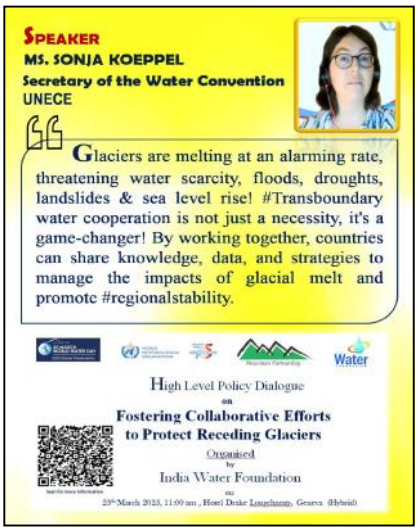


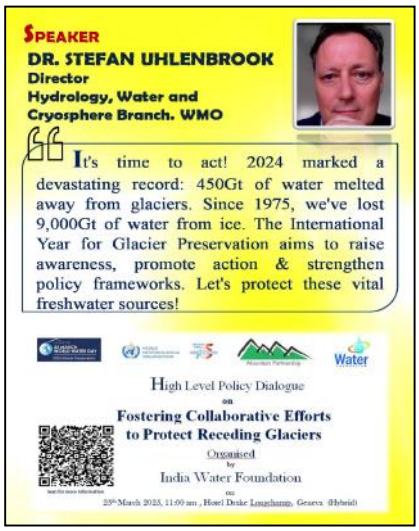


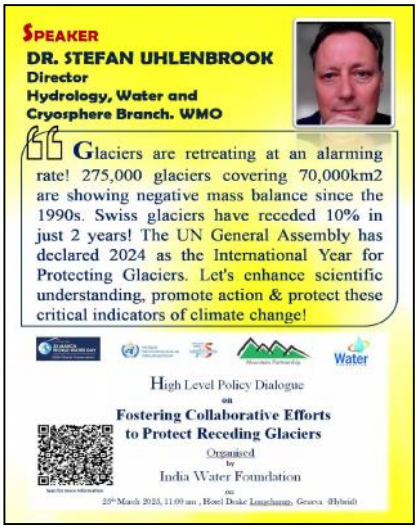


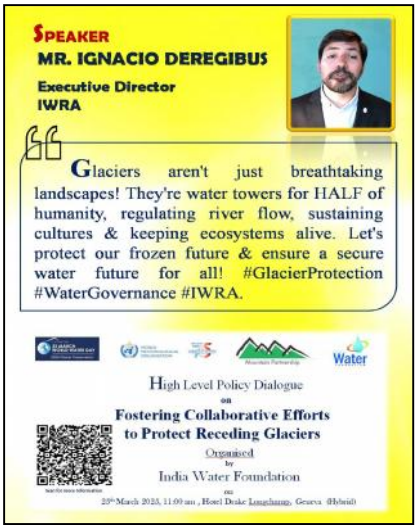


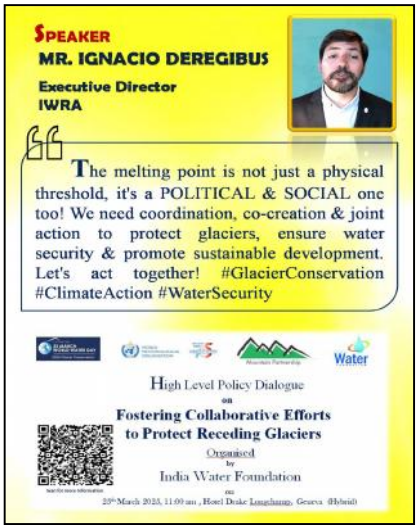


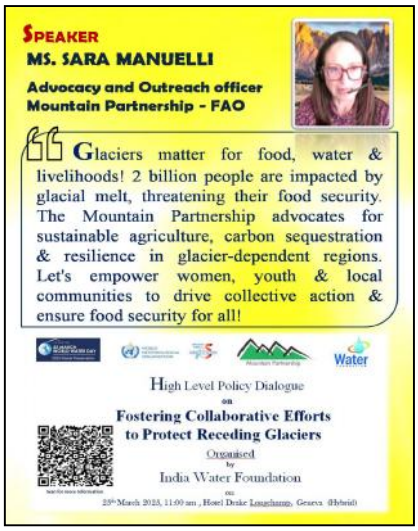


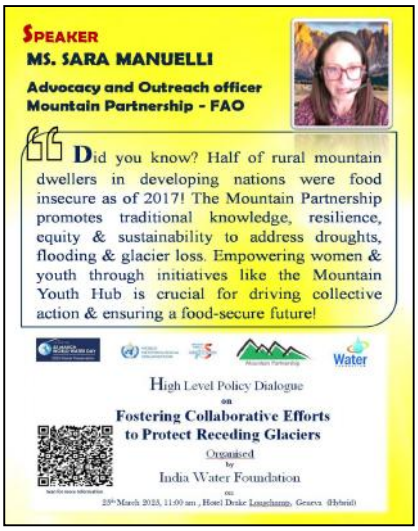


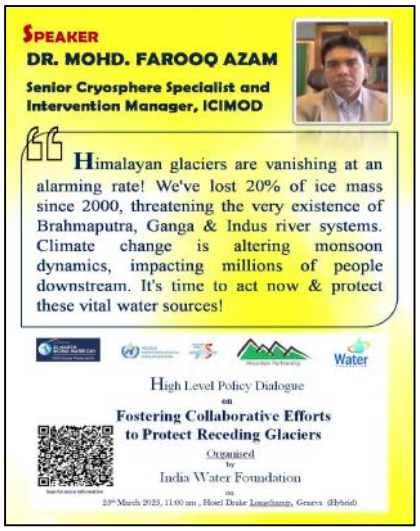


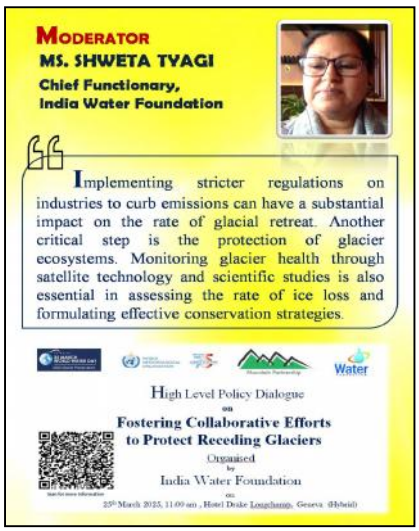


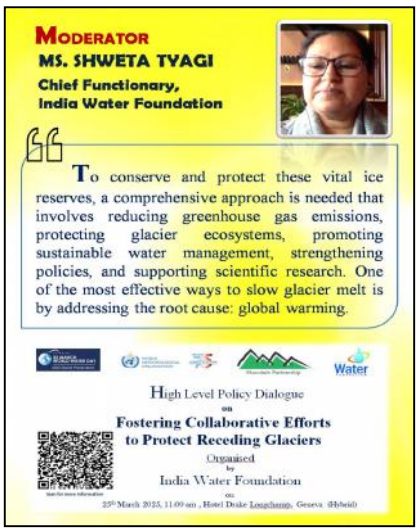


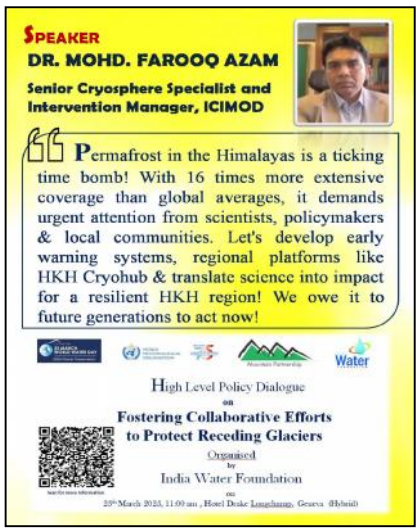












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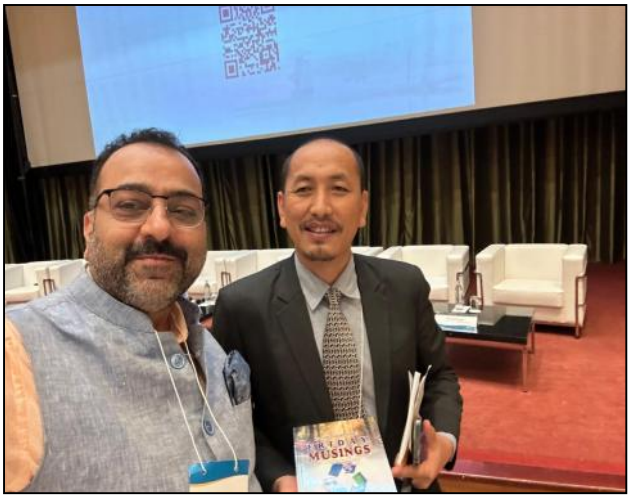

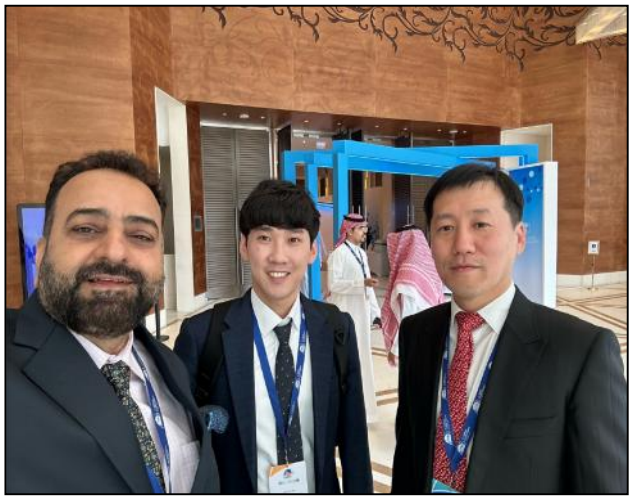

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