Center for Sustainable Development Goals | India Water Foundation | Focus Global Reporter

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CHRONICLE – IX

(March 2023 - August 2023)

आज़ादी का अमृत महोत्सव

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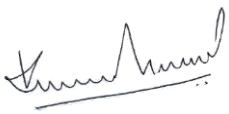
From Editors Desk

Dear Jalmitra,

It gives me immense pleasure to present India Water Foundation's chronicle with highlights of our last six months. In March this year, world leaders, UN agencies, civil societies etc. gathered at the UN 2023 Water Conference in New York to assess progress on the SDG6 and accelerate progress through action agendas for SDG6. It culminated with a breakthrough response to the global water crisis, with governments, businesses and civil society committing billions of dollars to advance the water agenda, a dealmaker for accelerating sustainable development overall.The high-level political forum (HLPF) on sustainable development under the auspices of the Economic and Social Council met from 10 to 19 July 2023 at United Nations Headquarters in New York. It included a three-day ministerial segment, from 17 to 19 July. The 2023 forum was the first fully resumed in-person forum since 2019, prior to the COVID-19 pandemic. The multi-dimensional, transboundary and interdisciplinary context of water calls for policy coherence and more effective, outcome-based cooperation among countries, stakeholder groups and institutions at all levels. The appointment of a UN Special Envoy on Water, the adoption of a UN system-wide strategy as well as regular global dialogues on water would be strongly welcomed by countries. Global actions and momentum should continue following the success of the UN Water Conference in March 2023.We are at a pivotal time – for people, societies, economies, and our planet and need all-inclusive sustainable solutions. Let's find them with cooperation, cohesion and collaboration. I thank my team because I believe teamwork is the ability to work together toward a common vision and is an ability to direct an individual accomplishment toward organizational objectives. It is about finding your unique blueprint and expressing that courageously and confidently."

Thank you



Dr. Arvind Kumar

INDEX

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

EDITORIAL

Artificial Intelligence: A Pandora's Box of Opportunities

Dr. Arvind Kumar*

The desire for intelligent systems to boost productivity and efficiency in industries including IT and telecommunications, retail and e-commerce, BFSI, healthcare, manufacturing, and automotive is driving the growth of the Artificial Intelligence market worldwide. The Artificial Intelligence space is estimated to be worth USD 1,581.70 billion by 2030, with a compound annual growth rate of 38.0% between 2021 and 2030. It has the potential to alter the way we interact with the world around us. From healthcare to banking and engineering to transportation, Artificial Intelligence (AI) is transforming how businesses perceive internal and external business processes across various industries. Regardless of their size or scope, businesses all across the world are already being transformed by AI. This includes providing opportunities for developing countries to thrive. Individuals, irrespective of their work field, must know how AI functions.

Although the adoption of Artificial Intelligence is still in its early stages in India, it is gradually being utilized to develop smart solutions to complex problems, and across all industries. It encompasses several emerging technologies, including self-improving algorithms, machine learning, big data, and pattern recognition. AI expenditure in India is expected to reach $11.78 billion by 2025 and add $1 trillion to India's economy by 2035, as per a World Economic Forum report. Soon, virtually any industry or sector in India would be seen using this potent tool for getting simpler tasks done in less time. Latest innovations in the field of AI are the reason behind the rising demand for online courses in artificial intelligence in India. With new technological innovations happening every day, Artificial Intelligence is becoming more prevalent making it possible to teach machines to make decisions on their own under certain conditions.

It is rapidly transforming the healthcare industry in India, bringing unprecedented tools for diagnosis, treatment and patient care. The AI in Healthcare Market is projected to grow from $14.6 Billion in 2023 to $102.7 Billion by 2028. A report on the National Strategy for Artificial Intelligence by the NITI Aayog showed that shortage of qualified healthcare professionals and non-uniform accessibility to healthcare across the country prevails. India has only 64 doctors available per 100,000 people compared to the global average of 150. It is used to digitize textbooks, early-stage virtual tutors support human instructors, and a facial analysis system gauges student emotions

to identify who is struggling or bored and adapt the experience to their specific needs. Applications such as text translation systems, and real-time message-to-speech, automate redundant and repetitive tasks like taking attendance and automated grading.

In a diverse nation like India, integrating chatbots into the digital framework or making them accessible through the IVRS system in the educational domain could be transformative. Thousands of chatbots are currently in use to speed up tasks to be performed by humans and save time. Chatbots are now connecting with customers and serving business purposes. Chatbots respond to customer questions and handle their problems without any human intervention. This is a ground-breaking invention of artificial intelligence that is currently dominating software applications.

At HLPF 2023 UN secretary General Antonio Guettress also expressed that Member States should develop national strategies on the responsible design, development and use of AI, consistent with their obligations under international humanitarian law and human rights law. Engage in a multilateral process to develop norms, rules and principles around military applications of AI, while ensuring the engagement of other relevant stakeholders. Have agreement on a global framework to regulate and strengthen oversight mechanisms for the use of data-driven technology, including artificial intelligence, for counter-terrorism purposes.

Discussions at G20 meetings also centered on possible consequences of AI involving national security and foreign policy too, the ability to harness AI effectively may determine the global balance of power over the next few decades. Concerns were raised over the increasing challenges faced in protect individuals, particularly women and children, from online sexual exploitation and from other content harmful to their health and well-being. Stakeholders are looking forward to strengthening cooperation to develop initiatives aimed at ensuring safety of users, especially children and women on the Internet. Concern was expressed over malicious cyber activities contrary to established norms, principles and rules of responsible State behaviour in cyberspace and international law. It was stressed that co-ordination on prevention and mitigation strategies against Advanced Persistent Threats (APTs) is needed.

With new developments in the field of AI and machine learning, newer employment prospects also have emerged. Training and events where we make professionals and graduates job-ready in the field of emerging technologies like AI, Data, Cloud, Robotics, and Metaverse, are the first steps to making India ready for the growing AI space and adapting to it, as well as being part of the contribution that AI can make to India's economy. By implementing a multi-pronged framework, India can foster a responsible AI trajectory for itself. Such a trajectory may encourage innovation and mitigate risks without compromising individual rights and privacy

**Editor, Focus Global Reporter*

INFOCUS

Recent Developments

India Water Foundation's water action commitment **'Enhancing water use efficiency through Transversality systemic approach'** SDG Action 50349, Water Action Agenda. For more information please click on the link:https://sdgs.un.org/partnerships/enhancing-water-use-efficiency-through-transversality-systemic-approach

India Water Foundation's water action commitment **'Promoting understanding of interlinkage between water security and climate among grass root communities'** SDG Action 50655, Water Action Agenda. For more information please click on the link:https://sdgs.un.org/partnerships/promoting-understanding-interlinkage-between-water-security-and-climate-among-grass

ACVITIES OF INDIA WATER FOUNDATION (GLOBAL INPERSON)

Representing Asia Pacific region on behalf of UN ESCAP at the UN 2023 Water Conference Dr. Arvind Kumar landed in New York, a city of endless possibilities, high energy, great diversity and much to visit and explore whether you're a foodie, an art enthusiast, a theatre lover or just someone who loves a fast-paced life, New York City is the place for you. However, for him all the roads in New York were leading to the United Nations Headquarters where the UN 2023 Water Conference was being held.

NEW YORK - UN 2023 WATER CONFERENCE

The UN 2023 Water Conference was convened from 22-24th March2023 after 44 years since 1977. The conference opened with energy and optimism for a true watershed moment and began with a clear diagnosis of the situation that progress has fallen severely short in achieving SDG 6 for universal access to WASH and actions that work, exist, but must be taken to scale. Some 10,000 participants gathered at UN Headquarters and online from 22 to 24 March 2023, to urgently scale up action to address the water crisis and ensure equitable access to water for all. Co-hosted by the Kingdom of the Netherlands and the Republic of Tajikistan, the Conference brought together world leaders, civil society, business leaders, young people, scientists, academics, the UN System and others from across sectors — agriculture, energy, environment and water — around a common goal: to urgently tackle the water crisis and set the world back on track to achieving SDG 6 – On Clean Water and Sanitation. It was almost an impossible task to cover such a huge agenda in just a span of three days but some concrete actions came out of it.

INDIA WATER FOUNDATION AT THE UN 2023 WATER CONFERENCE

Being an ECOSOC accredited civil society organization India Water Foundation got several opportunities to organize events, speak at main sessions, plenary and other side events.

1. OFFICIAL VIRTUAL SIDE EVENT- India Water Foundation organized an official side event in collaboration with World Water Council on 18th March 2023 under the aegis of UN 2023 water conference to also commemorate India Water Foundation's 15th founding day. Thehigh-level policy dialogue on 'Accelerating SDG 6 Achievements through Cross Sectoral Partnerships' was chaired by the Hon'ble Minister of Jalshakti Sh. Gajendra Singh Shekhawat and context setting by Dr. Arvind Kumar, President, India Water Foundation. Other Excellencies, dignitaries and speakers in the event were- Ms. Armida SalsiahAlisjahbana, Under Secretary General of United Nations and Executive Secretary of UNESCAP, Mr. Loic Fauchon, President, World Water Council, Mr. Shombi Sharp, UN Resident Coordinator India, Mr. David Cooper, Acting Executive Secretary, Convention on Biological Diversity, Mr. Satya Tripathi, Secretary General, Global Alliance for a sustainable Planet, Mr. Saroj Kumar Jha, Global Director-Water, World Bank Group, Mr. Ruhiza Jean Boroto, Senior Land and Water Officer, FAO, Mr. Jun Watanabe, Senior Representative JICA India Office and Mr. Vishwaranjan Sinha, Programme Officer, Water and Wetlands for South Asia, IUCN. The event was moderated by Ms. Shweta Tyagi, Chief Functionary of India Water Foundation.

SPECIAL EVENT – Out of the four special sessions at the UN Water Conference 2023 was '**Regional Dialogue on Accelerating Implementation of the Water Action Agenda'** and Dr. Arvind Kumar was panellist in this session. It was organised and had contributions by-

Member States: Federal Ministry for Agriculture, Forestry, Regions and Water Management, **Austria**; Ministry of Environment, **Dominican Republic**; Ministry of Water Resources and Irrigation, **Egypt**; Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV), **Germany**; Government of **Tajikistan**, Ministry of Water, **Tanzania**

United Nations Regional Commissions:
Economic Commission for Africa (ECA), Economic Commission for Europe (ECE), Economic Commission for Latin America and the Caribbean (ECLAC); Economic and Social Commission for Asia and the Pacific (ESCAP), United Nations Economic and Social Commission for Western Asia (ESCWA).

CIVIL SOCIETY: India Water Foundation (ESCAP region); African Civil Society Network for Water and Sanitation (ANEW) (ECA region); Bahr Alolom Forum, Iraq (ESCWA region); Latin America Youth Water Network (ECLAC region); Women for Water Partnership and Armenian Women for Health and Healthy Environment (ECE region)

3. On the eve of World Water Day on 23rd March 2023 at UN 2023 Water Conference in New York Dr. Kumar spoke at the side event 'PPP Model for Rainwater Harvesting and Enhancing Native Biodiversity – Use Cases from India' organised by HCL, The Nature Conservancy, ATREE, IIHS and Gorakhpur Environmental Action Group outside the UN headquarters at the Nature Hub, New York. He presented the talk on 'Harnessing cross cutting nature of Water to achieve Agenda 2030.'

BILATERAL MEETINGS - Dr. Kumar had an opportunity to meet several dignitaries, experts and colleagues at New York. Had few bilateral meetings as well-

MS. MUMBA MUSONDA- Dr. Kumar met and interacted with Dr. Mumba Musonda, Secretary General, of The Convention of Wetlands. Their comprehensive discussions steered from the wetlands restoration and rejuvenation work carried out in India and how India Water Foundation and the convention can create a close partnership to strengthen and meet the objectives of the convention. They also discussed on the implementation of decade of ecosystem restoration and how we can contribute towards it by forging committed partnerships and tangible actions.

DR. EDDY MOORS- During the UN 2023 Water Conference in New York Dr. Kumar also had a bilateral meeting with Dr. Eddy Moors, Rector, IHE Delft Institute off water education under the auspices of UNESCO. In their comprehensive discussions they explored strengthening impacts by means of partnerships for co-creating knowledge and capacity development to strengthen individual and organizational performance and learning. To ensure that high-quality and up-to-date water programmes are accessible and affordable to those who need them and support them in developing and implementing water educati on and research programme.

MS. JANE MADGWICK-Dr. Kumar briefly met Ms. Jane Madgwick CEO of Wetlands International and exchanged thoughts on the wetland restoration and rejuvenation programmes in India.

MR. LOIC FAUCHON- The discussions with Mr. Loic Fauchon, President of the World Water Council ranged from the G20 events to the World Water Forum to take place in 2024 in Bali.

MR. GIRIRAJ AMARNATH- He also met Mr. Amarnath, Principal researcher, International Institute of Water Management (IWMI). Their discussions ranged on variety of topics and exchanged notes on technology, food and hot spots of New York.

MEETING WITH MR. LOIC FAUCHON

MEETING WITH MR. GIRIRAJ AMARNATH

MEETING WITH MR. SULTON RAHIMZODA, REPUBLIC OF TAJIKISTAN

MEETING WITH SH. G ASHOK KUMAR, DG NMCG

10TH ASIA PACIFIC FORUM ON SUSTAINABLE DEVELOPMENT

Dr. Kumar travelled to Bangkok, Thailand to attend the 10th Asia Pacific Forum on Sustainable Development from 27-30th March 2023 organized by the Economic and Social Commission for Asia and the Pacific (ESCAP) and presented the learnings gathered from the UN 2023 Water Conference. The Tenth Forum was attended by more than 1,700 participants, including representatives of Governments, intergovernmental organizations, United Nations bodies, international organizations and major groups and other stakeholders.

India Water Foundation at 10th APFSD

SDG6 ROUNDTABLE – Dr. Kumar as speaker attended the roundtable discussions on SDG6 profile at the 10th Asia Pacific Forum on Sustainable Development (APFSD) at Bangkok, Thailand. The round table on the review of SDG 6 was co-organized by the Food and Agriculture Organization (FAO) and the United Nations' Children's Fund (UNICEF) with UN ESCAP. The other country representatives in the discussion were from Indonesia, Australia, Kyrgyzstan and agencies like GWP, FAO and UNICEF. He presented the perspectives from India and highlighted why programme like Amrit Sarovar is imperative because not only are we staring at depletion of groundwater and pollution of surface water but also vanishing water bodies like lakes, ponds, wetlands etc. due to encroachment and development works. As a member of the national wetlands committee of the Ministry of Environment, Forest and climate change, Government of India he made the provision of enumerating, geo tagging and making an inventory of water bodies to make encroachment difficult especially in urban areas by making them part of the revenue records which is being implemented by the government now.

SDG 6 PLENARY- In the SDG6 plenary Dr. Kumar presented the key takeaways and outcomes of the UN 2023 Water Conference. The commitments made by countries, private sector, international and UN agencies and NGOs. Also, the main outcome was 708 and increasing water action agenda commitments registered on the water action website.

BILATERAL MEETING

It was of utmost honour and privilege for Dr. Arvind Kumar to have got an opportunity to meet Ms. Armida Salsiah Alisjahbana Executive Secretary ESCAP and Under Secretary General of United Nations. They discussed the priority areas of ESCAP in the SSWA region and she appreciated India Water Foundation's work to ensure proper management and adequate availability of water resource. She stressed why an integrated approach to SDG6 is essential to bringing the other Global Goals to fruition.

There have been events in the past as well but there is very little sign that these efforts have accelerated progress. Most countries remain off-track on targets for universal WASH. Most have made little progress on water security. And for those countries that have achieved transformational change, there's no evidence that international commitments have been the trigger. If past summits have failed, what UN undertakings would speed up progress on the SDG6? It's not what happens during the conferences and forums, it's what happens afterward?

High Level Political Forum 2023: A Report

10th -19th July 2023

by

Dr. Arvind Kumar*

"Unless we act now, the 2030 Agenda will become an epitaph for a world that might have been" *said UN Secretary-General António Guterres*

The UN Secretary-General's latest progress report on the SDGs makes for sobering reading. Only 12% of the SDG targets are on-track. Nearly 50% of the targets are moderately or severely off-track. About 30% have either stagnated or "regressed below the 2015 baseline." World hunger has returned to 2005 levels and, at the current pace, bridging gender inequality could take 300 years. If present trends continue, it is projected that by 2030. 575 million people will be living in extreme poverty; 84 million children will be out of school, and of those still enrolled, 300 million will leave unable to read and write; renewable sources will constitute a mere fraction of global energy supplies; and 660 million people will live without electricity and nearly two billion will have no access to clean cooking. We're at half-time, we're behind, and we're losing. How do we turn this around in the second half and win?

HLPF 2023 reviewed five SDGs in detail: SDGs 6 (clean water and sanitation), 7 (affordable and clean energy), 9 (industry, innovation, and infrastructure), 11 (sustainable cities and communities), and 17 (partnerships for the Goals). Here, too, the reports from the field were sobering. SDG 6 is alarmingly off-track. Achieving SDG 7 by 2030 poses an unprecedented challenge but is still doable with scaled-up ambition and the right policies. Regarding SDG 11, there is a growing urban divide, inadequate housing is a pressing problem, and only half of the world's urban population has access to public transport. During these specific reviews, many delegates were struck by how often they heard panelists and experts note that we have most of the data, indicators, and diagnoses we need, as well as policy recommendations to follow, and declarations of general commitment to build upon. For example, on SDG 6, the March UN 2023 Water Conference produced what most participants regarded as a concrete action agenda, and the SDG 6 Synthesis Report 2023 on Water and Sanitation provides a clear blueprint to accelerate progress.

Over and over speakers urged translating plans, blueprints, recommendations, and statements of support into concrete, ambitious action. Instead of lip service, it's time to turn the pledges of leave no one behind into actions, actions, actions. How We Got Here?

It's not just a goal to be accomplished – it's hope for a better future to be delivered.

In recent years it has become fashionable among some politicians to blame the lack of implementation of the 2030 Agenda and SDGs on the impacts of the COVID-19 pandemic, supply chain constraints, the war in Ukraine, climate-related extreme events, and even the triple planetary crisis (climate change, biodiversity loss, and pollution). But as UN Secretary-General António Guterres and Under-Secretary-General for Economic and Social Affairs Li Jinhua pointed out more than once during HLPF 2023, countries were already falling short of the Goals before COVID-19 struck or the Ukraine war began. As many speakers during the Ministerial Segment acknowledged, the crafters of the 2030 Agenda and the SDGs, and the UN General Assembly that adopted the package, knew it was ambitious and aspirational. Most were not naïve or self-deluding. They knew the SDGs' predecessor, the Millennium Development Goals (2000-2015), did not meet many of its less ambitious targets, so setting more comprehensive and ambitious targets with another 15-year timeline was aiming high. They chose to offer hope to the world for a better future all could aspire to: "the future we want."

Dr. Kumar with Sh. G Krishan Reddy, Minister of Tourism, Govt. Of India

Some of the difficulties in implementing the 2030 Agenda are inherent in the package itself. The Goals are not just about a few tangible deliverables like clean water and affordable and clean energy for all, but also harder to measure Goals that the UN has spent 78 years seeking, such as peace, justice, good governance, and equality for all. Another difficulty is that the SDGs and targets are considered a package deal—they are all linked and should be pursued together without unduly favoring one over another. This can be frustrating to champions of particular Goals (climate, energy, water, or cities), who see their favorite as key to success in all others, the connector to them all, and want to push progress first and/or hardest on their SDG. But as HLPF 2023 panelists were at pains to point out repeatedly, work on one Goal affects achievement of another, positively or negatively. Everyone likes to point out synergies where they can be identified, but as a panelist on SDG 9 said, tradeoffs and unintended impacts must also be analyzed and considered, but often are not.

This large and complex package also makes it difficult to communicate the relevance of sustainable development to the average citizen. Indeed, many of the presenters of their country's Voluntary

National Reviews (VNRs) noted they had integrated the SDGs into their national plans and programmes and were in the process of doing so for local and sectoral plans and programmes but expressed concern about how to make it real to the average man or woman. The chair of the session on localization of the SDGs urged participants to work on making the SDGs relatable to everyday concerns to increase buy-in from the average person. Furthermore, means of implementation, including financial, technological, and capacity-building resources, as well as the 2015 Addis Ababa Action Agenda, the global framework for financing sustainable development, have fallen short. Even funding for championed popular Goals such as climate, water, and energy is nowhere close to meeting the estimated needs for the transformative change envisioned by the Goals.

Last, but not least, the 2030 Agenda lacks a monitoring and accountability mechanism that can supplement bottom-up and multilateral pressure for SDG defaulters to change course. This concern was reiterated during a side event considering how to revamp VNR reporting processes so they are not primarily "descriptive" texts that can lean towards the self-congratulatory. They discussed how the VNRs can become self-critical and action-oriented reflections capable of spurring genuine learning and improvements in policy and implementation. While acknowledging the difficulty of including robust language to this end in a political declaration, various negotiators involved in preparations for the SDG Summit did call for referencing the need for stronger data to track progress, as well as requiring VNR analyses to explore policy implications of possible synergies and the costs of inaction.

Where We Need to Go!!

It's not time for despondency, or for looking beyond 2030. We need to double down on action. The UN Secretary-General offered his own prescription when he released the progress report in April 2023. Among other things, his doctor's orders proposed: a recommitment to accelerated, sustained, and transformative action; pledges for concrete, integrated, and targeted policies and actions to eradicate poverty, reduce inequality, and end the war on nature; strengthened national and sub-national capacity, accountability, and delivery institutions; a recommitment to the Addis Ababa Action Agenda; strengthening the UN development system; and addressing SDG-related gaps and weaknesses in the international architecture that have emerged since 2015. Subsequently, he called for reform of the international financial architecture and the creation of an

SDG Stimulus plan to unlock at least USD 500 billion annually for developing countries. He has also called for forging a "new social contract" at the 2025 Social Summit.

Guterres also urged every country to come to the SDG Summit armed with concrete national plans and pledges, particularly ones that address poverty and inequality. He repeated this call during the HLPF Ministerial Segment, as did many ministers and other high-level officials who spoke during the general debate. During the HLPF panel discussions, several recommendations were floated to address specific issues, such as new intergovernmental bodies for water matters, energy, clean cooking, and an intergovernmental process to agree on new development indices that go beyond the limitations of GDP. Many of these suggestions have not made it into the draft Political Declaration to be adopted at the Summit. It also remains unclear at this juncture how many countries will come to the Summit with actionable pledges.

At the halfway point between the adoption of the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs) in 2015 and its 2030 deadline, only 12% of the SDG targets are on-track, and some targets are regressing below the 2015 baseline. This message from the UN Secretary-General's progress report on the SDGs haunted participants at the 2023 High-level Political Forum on Sustainable Development (HLPF) held under the auspices of the UN Economic and Social Council (ECOSOC). The theme of general debate during the Ministerial Segment of the 2023 HLPF was "Building momentum towards the SDG Summit." The second SDG Summit, scheduled for 18-19 September 2023, was top-of-mind for delegates throughout the entire eight days. At nearly every session, speakers voiced their wish lists and expectations for the Summit.

Five SDGs were under review at HLPF 2023: SDGs 6 (clean water and sanitation), 7 (affordable and clean energy), 9 (industry, innovation and infrastructure), 11 (sustainable cities and communities), and 17 (partnerships for the Goals). Many status updates confirmed the somber tone of the Secretary-General's report. SDG 6 is "alarmingly off-track." Achieving SDG 7 by 2030 poses "an unprecedented challenge" but is still achievable with scaled-up ambition and the right policies. Regarding SDG 11, there is a growing urban divide, inadequate housing is a pressing problem, and only half of the world's urban population has access to public transport. For SDG 9 "there is hope" with progress on some targets such as mobile network access, but the implementation pace on others needs to quicken and more support for innovation and infrastructure in least developed countries (LDCs) is needed. As for SDG 17, while there have been advances in areas such as development aid, remittance flows, and access to technology, funding for development remains

a major challenge, particularly in low-income countries. Participants discussed possible responses to accelerate implementation for each Goal reviewed.

HLPF 2023 also held sessions on the implementation challenges faced by different groups of countries, including small island developing states (SIDS), Africa, LDCs, landlocked developing countries (LLDCs) and, for the first time, middle-income countries (MICs), which are not considered poor enough to receive concessional financing yet face significant difficulties in raising capital for SDG implementation initiatives. In addition, a session was held to examine how to "localize" the implementation of the SDGs and another spotlighted the perspectives of Major Groups and other Stakeholders (MGoS). Thirty-eight countries presented their Voluntary National Reviews (VNRs) during HLPF 2023: one for the first time, 36 for the second, and one for the third. The European Union (EU) presented the first-ever supranational review. These sessions facilitated the sharing of experiences, including successes, challenges and lessons learned.

HLPF 2023 was convened at UN Headquarters in New York from 10-19 July 2023. Several hundred side events, special events, VNR Labs, and exhibitions took place during the HLPF, which was attended by more than 120 ministers and vice-ministers, as well as other representatives from governments, intergovernmental organizations, and civil society. Participants discussed possible responses to accelerate implementation of the Goals that underwent in-depth review this year.

The ENB summary report of the meeting highlights that:

- SDG 6 (clean water and sanitation) is "alarmingly off-track";
- While achieving SDG 7 (affordable and clean energy) by 2030 poses "an unprecedented challenge," the Goal is still achievable with scaled-up ambition and the right policies;
- "There is hope" for SDG 9 (industry, innovation and infrastructure), with progress on some targets such as mobile network access, but the pace of implementation on others needs to quicken, and more support for innovation and infrastructure in least developed countries (LDCs) is needed;
- Challenges to achieving SDG 11 (sustainable cities and communities) include a growing urban divide, inadequate housing, and limited access to public transport; and
- While there have been advances in some areas of SDG 17 (partnerships for the Goals), such as development aid, remittance flows, and access to technology, funding for development remains a major challenge, particularly in low-income countries.

While delegates acknowledged that only 12% of the SDG targets are on track, according to the *ENB* analysis of HLPF 2023, the Philippines Undersecretary of the Department of Foreign Affairs captured the mood best when he said: "We have not failed. The deadline is still ahead of us."

Thirty-eight countries presented their Voluntary National Reviews (VNRs) during HLPF 2023. Saint Kitts and Nevis presented its first VNR. Chile presented its third. Bahrain, Barbados, Belgium, Bosnia and Herzegovina, Brunei Darussalam, Burkina Faso, Cambodia, Canada, the Central African Republic (CAR), Comoros, Croatia, the Democratic Republic of the Congo (DRC), the EU, Fiji, France, Guyana, Iceland, Ireland, Kuwait, Liechtenstein, Lithuania, Maldives, Mongolia, Poland, Portugal, Romania, Rwanda, Saudi Arabia, Singapore, Slovakia, Syria, Tajikistan, Timor-Leste, Turkmenistan, Tanzania, Uzbekistan, Viet Nam, and Zambia presented their second VNRs. The EU presented the first-ever supranational review. These sessions, *ENB* notes "facilitated the sharing of experiences, including successes, challenges and lessons learned."

HLPF 2023 also included sessions on the implementation challenges faced by different groups of countries, including Small Island developing States (SIDS), Africa, LDCs, landlocked developing countries (LLDCs), and, for the first time, middle-income countries (MICs). According to *ENB*, MICs "are not considered poor enough to receive concessional financing yet face significant difficulties in raising capital for SDG implementation initiatives." In addition, a session convened on how to "localize" the implementation of the SDGs. Perspectives of Major Groups and other Stakeholders (MGoS) also received attention.

Thirteen special events convened during the Forum:

- 2023 SDGs Learning, Training, and Practice Special Event;
- Launch of the Sustainable Development Goals Report: Special Edition;
- Tracking SDG 7: The Energy Progress Report and the SDG 7 Policy Briefs Launch;
- Launch of State of Food Security and Nutrition in the World (SOFI) 2023;
- Local 2030 Coalition Special Event at 2023 HLPF;
- Sixth Local and Regional Governments Forum on the 2030 Agenda;
- Science Day at 2023 HLPF;
- Fourth Global Climate and SDG Synergy Conference;
- HESI Global Forum 2023;
- SDG 6 Water Action Agenda Special Event;
- 2023 SDG Global Business Forum;
- Parliamentary Forum at the 2023 HLPF; and
- Intergenerational Dialogue on Leveraging Skills and Investment to Achieve the SDGs.

Sixteen VNR Labs and several hundred side events and exhibitions also took place. More than 120 ministers and vice-ministers, as well as other representatives from governments, intergovernmental organizations, and civil society attended HLPF 2023.

But most participants refuse to give up hope. Clinging to the sports metaphor that pervaded the 2023 Forum, optimists called for a pep talk at halftime and team captains that can lead everyone to double down on their efforts in the next seven years of the 2030 Agenda and eke out a victory. Using a crew metaphor, current UN Environment Assembly President Leila Benali urged synchronized teamwork, since "nothing is more powerful than everyone rowing together in the same direction." Perhaps the Philippines Undersecretary of the Department of Foreign Affairs put it best in his statement during the general debate: "We have not failed, because that negates all we have accomplished. We knew the agenda had lofty ideas and we committed to this journey. We have not failed. The deadline is still ahead of us

GLOBAL (ONLINE)

A webinar on

"Building back biodiversity: Integrating Multi-Actor Perspectives"

On the occasion of International Day of Biodiversity

Organized by India Water Foundation and Supported by IUCN, UNEP and Namami Gange, GOI

On 22nd May 2023 (Virtual)

Biodiversity decline and the risk of future pandemics have many common root causes: forest degradation and habitat fragmentation that drive humans and wildlife increasingly into contact. More effective biodiversity policies can reduce the risk of future pandemics—potentially with a fraction of the economic and social costs associated with a global pandemic. The benefits and cost effectiveness of working with nature extends to other domains—including food and water security, and climate change. Fortunately, this is becoming better understood, as people have started to realize the importance of biodiversity for their own health, well-being and prosperity. To reduce future shocks and build societal resilience, the postpandemic recovery must focus on well-being and inclusiveness, and trigger investment and behaviour changes. But to achieve this, bold, interdependent actions are needed across several fronts—each of which is necessary and none sufficient on its own.

Efforts to conserve and restore biodiversity, address climate change in ways that limit global temperature rise without imposing unintended pressures on biodiversity, and transform the way we produce, consume and trade goods and services that rely on and impact biodiversity must be increased. Unsustainable subsidies must be redirected into nature-positive incentives. The recently adopted Global Biodiversity Framework (GBF) includes a target to protect 30% of the planet's land and seas by 2030; the Global Plastics Treaty currently under negotiation—and which could be legally binding—will include mandates around plastic environmental pollution; and the EU's global

deforestation law will require companies working in areas with high rates of deforestation to certify their products as deforestation-free.

Financialrelated drivers also mean organisations will have to simultaneously consider how climate disruption and loss of nature will impact their business, and how their business is driving climate change and biodiversity loss. As organisations navigate pathways towards net-zero greenhouse gases (GHG)—while also adapting to the impacts of climate change—biodiversity and nature will inevitably have to become part of the plan, as well as part of risk assessment.

This means greater efforts are needed to address direct and indirect drivers of biodiversity loss including taking integrated and holistic approaches to planning and implementation, greater interaction among government ministries, economic sectors and society; committing to an integrated, whole-of-government, whole of society approach to improve the way we manage the natural environment and interactions with human society; further strengthen integration of gender, the role of indigenous peoples and localcommunities, business, finance sector and all other stakeholder engagement; and, given the present pandemic crisis, taking a "One Health" approach—which calls for managing ecosystems, including agricultural and urban ecosystems, as well as the use of wildlife, through an integrated approach, to promote healthy ecosystems and healthy people.

To delve on these crucial issues India Water Foundation organized a virtual event to commemorate the International day of Biodiversity 'Building Back Biodiversity: Multi-actor Perspectives' on 22nd May 2023 from 18.00 HRS (IST) onwards. The event was organized in collaboration with International Union for Conservation of Nature (IUCN), United Nations Environment Programme (UNEP), Convention for Biological Diversity (CBD) and National Mission to Clean Ganga (NMCG) of the ministry of Jalshakti, Government of India. The event was a multi-actor perspective on why greater efforts are needed to address direct and indirect drivers of biodiversity loss. Around 600 participants joined the webinar from all around the globe from multi sector organizations. All the speakers presented their nuanced perspectives on this crucial issue of biodiversity which is undeniably linked to climate change, water, agriculture, energy etc. and garnered a thunderous response from the wonderful audience who joined in great numbers from different time zones.

Speakers

1. Dr. Arvind Kumar, President, India Water Foundation
2. Mr. G. Asok Kumar, IAS, Director General, National Mission for Clean Ganga, Ministry of Jalshakti, Department of Water Resources, River Development and Ganga Rejuvenation, Government of India
3. Dr. Avinash Mishra, Advisor- Water Resources Niti Aayog, Government of India
4. Ms. Susan Gardner, Director, Ecosystems Division, UNEP
5. Ms. Katinka Weinberger, Chief, Environment and Development Policy Section, United Nations Economic and Social Commission for Asia and the Pacific
6. Dr. Sasha Koo-Oshima, Deputy Director & Water Lead of the Land and Water Division FAO
7. Mr. Vishwaranjan Sinha, Programme Officer Water and Wetlands, IUCN
8. Mr. Vineet Sarin, Chief Development Specialist, JICA

Moderator

Ms. Shweta Tyagi, Chief Functionary, India Water Foundation

Recommendations

- Governments must not only develop their national biodiversity targets but put in place the laws, policies and programmes necessary to achieve them.
- Businesses need to assess and disclose impacts and pivot towards sustainable practices.
- The efforts of indigenous peoples and local communities in protecting biodiversity must be recognized and protected.
- We all need to reduce waste and shift to more sustainable consumption.
- We need to raise the necessary finance to facilitate these actions, reform subsidies and align major investment flows with the goals and targets of the Framework.
- The degraded ecosystems should be restored not just for addressing biodiversity loss

Click here for Full Video Recording: https://youtu.be/NFPr-OihIxQ

Supported by IUCN

Organised by India Water Foundation

Supported by UNITED NATIONS ESCAP

"Multi-Sectoral dialogues: Finding Solutions to Beat Plastic Pollution"

On the occasion of World Environment Day

Organized by India Water Foundation in collaboration with UNEP, IUCN, and UN ESCAP

On 2nd June 2023 (Virtual)

In 2022, UN Member States agreed on a resolution to end plastic pollution. An Intergovernmental Negotiating Committee is developing a legally binding instrument on plastic pollution, with the aim of having it finalized by the end of 2024. While this progress is good news, current commitments by governments and industry are not enough Countries need to encourage innovation and provide incentives to businesses that do away with unnecessary plastics. Taxes are needed to deter the production or use of single-use plastic products, while tax breaks, subsidies and other fiscal incentives need to be introduced to encourage alternatives, suchas reusable products.

Waste management infrastructure must also be improved. Multi-stakeholder and inter-sectoral partnerships should be promoted to address this grave issue. Thisevent will provide a platform to share analysis and experiences with the aim of developingguidance to enhance co-operation, partnerships, policy coherence and sustainable financing solutions to address and prevent plastics pollution.On 5 June every year, the World celebrates World Environment Day. This year, the theme of the Day was "Beat plastic pollution" – a call for action for the world to work together to address one of the great environmental challenges of our time and raise global awareness of the need to reduce the heavy burden of plastic pollution on people's health and the threat it poses to the environment and wildlife.

Humanity produces more than 430 million tonnes of plastic annually, two-thirds of which are short-lived products that soon become waste, filling the ocean and, often, working their way into the human food chain. While the world has derived great benefit from the use of plastics, which have transformed people's everyday lives, the negative ecological effects and adverse impact on health from their misuse and overuse cannot be overlooked. Many people aren't aware that a material that

is embedded in our daily life can have significant impacts not just on wildlife, but on the climate and on human health.

Plastic remains in the environment for a long time, it cannot biodegrade, only break down into smaller and smaller pieces. The economic damage caused by plastic waste is vast. Plastic litter in the Asia-Pacific region alone costs its tourism, fishing and shipping industries $1.3 billion per year. In Europe, cleaning plastic waste from coasts and beaches costs about €630 million per year. Studies suggest that the total economic damage to the world's marine ecosystem caused by plastic amounts to at least $13 billion every year. The economic, health and environmental reasons to act are clear.

To delve on the same India Water Foundation organized a virtual session to commemorate World Environment Day in collaboration with Union for Conservation of Nature (IUCN), United Nations Environment Programme (UNEP) and United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP) on 2nd June 2023, 14.30HRS (IST) onwards.

Speakers

1. Dr. Arvind Kumar, President, India Water Foundation
2. Mr. Avinash Mishra, Advisor, Niti Aayog, Government of India
3. Mr. Erik Solheim, Senior Adviser, World Resources Institute
4. Mr. Atul Bagai, Head-UNEP India Office
5. Dr. Rajan Sudesh Ratna, Deputy Head and Senior Economic Affairs Officer, South and South West Asia Office, United Nations ESCAP
6. Ms. Maeve Nightingale, Senior Programme Officer, Coastal and Marine from the Science and Strategy Group – Asia IUCN
7. Mr. Hitesh Vaidya, Director, National Institute of Urban Affairs
8. Mr. Pema Gyamtsho, Director General, ICIMOD
9. Ms. Martina Burkard, Project Director, Competence in Motion, Support to Ganga Rejuvenation / India EU-Water Partnership

Moderator

Shweta Tyagi, Chief Functionary, India Water Foundation

Recommendations

1. Shifting economic incentives to penalize pollution and reward resource efficiency will increase the economic attractiveness of circular economy solutions**.**
2. We should strive to eliminate plastic products we don't need; innovate, so all plastics that we do need are designed to be safely reused, recycled, or composted; and circulate everything we use to keep it in the economy and out of the environment.

3. Certain priority sectors like packaging have been using an unsustainable quantum of plastics (typically single-use) — they should be regulated and have to be incorporated in the National Action Plans (NAP) and the national reporting system under implementation measures.

4. Under core obligations, transparency with respect to production, consumption and import / export of plastic and plastic waste has to be created and nurtured at a global level

5. Control measures have to be focused on differentiating between recycling and disposal (waste-to-energy and co-incineration) technologies.

6. Many countries have expressed that compostable and biodegradable plastics are the solutions to the plastic crisis. However, it should be brought to the knowledge of the member states that bioplastics come with their own set of challenges and do little to tackle the plastic problem at source

7. The narrative that the plastic crisis is strictly a "waste management problem" needs to change. The problem of plastics is much more complicated. It is a concoction of unsustainable production issues, human health issues, environmental issues and much more

Click here for Full Video Recording: https://youtu.be/WN5hckuG7bE

Organised By

Supported by

A High Level Policy Dialogue on

"Deciphering Inter-linkages of SDG6 through Multi-sector Partnerships"

Organized by India Water Foundation in collaboration with
UNEP, CBD IUCN, UN ESCAP, IHE DELFT, IUCN and JICA
On 10th July 2023 (Virtual)

The High-level Political Forum on Sustainable Development (HLPF) was held from Monday, 10 July, to Wednesday, 19 July 2023, under the auspices of the Economic and Social Council . This includes the three-day ministerial segment of the forum from Monday, 17 July, to Wednesday, 19 July 2023 as part of the High-level Segment of the Council. The last day of the High-level Segment of ECOSOC was on Thursday, 20 July 2023. The theme was " Accelerating the recovery from the coronavirus disease (COVID-19) and the full implementation of the 2030 Agenda for Sustainable Development at all levels."

In the forum, participants were able to further discuss the effective and inclusive recovery measures to address the impacts of the COVID-19 pandemic on the Sustainable Development Goals (SDGs) and explore actionable policy guidance for the full implementation of the 2030 Agenda and the SDGs at all levels. The HLPF in 2023, without prejudice to the integrated, indivisible and interlinked nature of the SDGs, also reviewed in-depth Goals 6 on clean water and sanitation, 7 on affordable and clean energy, 9 on industry, innovation and infrastructure, 11 on sustainable cities and communities, and 17 on partnerships for the Goals.

India Water Foundation got the privilege to organize an official virtual side event at the HLPF 2023 'Deciphering Interlinkages of SDG6 through Multi-sector Partnerships" in collaboration with International Union for Conservation of Nature (IUCN), United Nations Environment Programme (UNEP), Convention for Biological Diversity (CBD), Japan International Cooperation Agency (JICA), IHE DELFT Institute for Water Education, Global Alliance for a Sustainable Planet (GASP) and United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP) on 10th July 2023 from 17.00 HRS (IST)

Water is a fundamental part of all aspects of life. Due to its crosscutting nature, water underpins all three dimensions of sustainable development and supports the achievement of many SDGs through intimate linkages with climate, the environment and health, among many others. The UN 2023 Water Conference vision statement, for example, acknowledges that "without a functioning, resilient water cycle for all people everywhere," human health, environmental integrity and a sustainable, equitable future "will remain out of reach."

Understanding the linkages is a first step towards active management and will help governments establish intersectoral mechanisms and procedures to address these issues, including partnerships, coordinating committees, consultation mechanisms, integrated monitoring and data management and evaluation criteria for inclusive and sustainable development. Water is associated with many sectors and affects the increases and decreases in production of sectors. Water stands out as the most critical sustainable development challenge since it deals with the most valuable and limited resource on earth. If water becomes scarce or threatened, it causes risks to economic, social, and environmental sustainability. Moreover, water also influences the increases and decreases in SDG indicators. Water can help us find a more sustainable path. Since water connects all the 17 SDGs and offers opportunities for partnership for the Goals. When viewed this way, it soon becomes apparent that many new approaches to water will effectively address several of the goals simultaneously.

The primary objective of this high-level policy dialogue is to highlight the interdependency between the targets under Goal 6 on water and sanitation and other social, economic and environmental Goals and targets in the 2030 Agenda. Therefore, the intention is to capture the transversality of SDG6: incorporating water and sanitation in other Goals is necessary for the achievement of Goal 6, and implementing targets under Goal 6 enables the achievement of a number of other targets across the 2030 Agenda. The event aims to capture key messages made by multisectoral participating organizations, experts, leaders, including intergovernmental organizations, UN system entities and stakeholders.

Speakers

1. Sh. Gajendra Singh Shekhawat, Hon'ble Union Minister of Jal Shakti, Ministry of Jal Shakti, Government of India
2. Dr Tedros Adhanom Ghebreyesus, Director-General, WHO
3. Dr. Arvind Kumar, President, India Water Foundation
4. Ms. Susan Gardner, Director-Ecosystems Division, UNEP
5. Mr. David Cooper, Executive Secretary, Convention for Biological Diversity
6. Mr. Shombi Sharp, UN Resident Coordinator, India
7. Mr. Eddy Moors, Rector, IHE Delft
8. Mr. Rajan S Ratna, Deputy Head and Senior Economic Affairs Officer, United Nations ESCAP-SSWA Office
9. Mr. Satya Triathi, Secretary General, Global Alliance for a Sustainable Planet
10. Mr. Katsuo Matsumoto, Director General, JICA
11. Mr. Mark Smith, Director General, International Water Management Institute
12. Mr. Vishwaranjan Sinha, Programme Officer, Water and Wetlands-South Asia, IUCN

Moderator

Ms. Shweta Tyagi, Chief Functionary, India Water Foundation

Recommendations

Goal 6 is one of the goals that is seeing the least amount of progress being made in the sub-region. There is a need to accelerate progress with regard to access to safe drinking water, sanitation and hygiene and transboundary water cooperation to achieve 2030 targets. Concerted efforts are also needed to address regressions in progress that are being seen in the areas of water use efficiency, protection and restoration of water-related ecosystems and participatory water and sanitation management.

- Financing: Government, national and international financial institutions and multi-sectoral actors need to be improved targeting and use of existing funding for water and sanitation initiatives more effectively. There is a need to mobilise domestic resources and additional investment is needed from the private sector and public sources

- Governance: there is a need to enhance institutional and individual capacities to foster cross sectoral decision making, planning and implementation and identifying areas for horizontal and vertical cooperation at all levels. Decision makers need to combine traditional knowledge with the modern technology and innovative methods by involving multiple stakeholders to increase efficiency of water use and ensure sustainable fresh water supplies, especially in water stressed

and transboundary regions. Addressing the rural urban disparities and the decentralization of the freshwater management needs to be prioritized.

- New paradigm: There is a need to shift from a reductionist, hydrologic paradigm to hydro eco-social paradigm, to secure water for humans, ecosystems and food. At the same time gender dimension in the governance of scarce resources is becoming more critical nationally.

- Regional cooperation: There is a dire need of horizontal and vertical cooperation between the countries for water protection which will be beneficial for ecosystem preservation, agriculture and food security. Cooperation between countries on early warning systems is also important. SSWA countries could also learn from Iran on how it has been implementing actions to achieve SDG 6 despite the many problems it faces with international sanctions.

Click here for Full Video Recording: https://youtu.be/dX9aRGw86ug

Quarterly Meeting between stakeholders and the IPBES Secretariat: Attending the Quarterly Meeting between stakeholders and the IPBES Secretariat. One and the International Indigenous Forum on Biodiversity and Ecosystem Services (IIFBES), the two existing IPBES stakeholder networks, meet three or four times per year with the IPBES Secretariat staff updating on ongoing work, exchanging ideas and asking questions. This interesting meeting was a follow up on the IPBES caucus Day which took place in November 2022. It was a great opportunity to engage and interact directly with the IPBES Secretariat!

https://www.facebook.com/drarvind.kumar.3/posts/pfbid0K9mdGJD5nv7rZumdz2L4rivr4etqoWyKxETQqU5iUxJU3YGwgARDXzLnxK9zE7HFl

International Day of Biodiversity: "Every dollar invested in environmental protection generates more than 2,500 dollars in so-called ecosystem services — water regulation, coastal protection, Carbon storage, food, oxygen, medicines, fiber and other invisible functions that nature provides." said Dr. Arvind Kumar during the celebrations of International Day of Biodiversity that India Water Foundation organised with support of IUCN, UNEP, CBD and NMCG on 'Building Back Biodiversity: Multi-actor Perspectives' on 22nd May 2023 from 18.00 HRS (IST) onwards.

World Environment Day: "The international legally binding instrument on plastic pollution should include clear, defined, and monitorable targets – against which Member States can measure progress. It needs to be inclusive and address the concerns of all countries and those that work within the plastics economy and must cover the full life cycle of plastics use" said Dr. Arvind Kumar during the multi stakeholder dialogues on 'Finding Solutions to Beat Plastic Pollution' organised by India Water Foundation and supported by IUCN and UNESCAP on the conclusion of the INC2 negotiations in Paris and observing the World Environment Day on 2nd June 2023

High level policy dialogue on Deciphering Inter-linkages of SDG 6 through multi sectoral partnerships: 'We have to identify opportunities to integrate water management into sectoral programmes and planning processes – such as climate change, agriculture and poverty reduction and establish formal coordination mechanisms, with clear institutional mandates, responsibilities, and incentives for coordination.' said Dr. Arvind Kumar, President, India Water Foundation during the high level policy dialogue on Deciphering Inter-linkages of SDG 6 through multi sectoral partnerships organised by India Water Foundation in collaboration with UNEP, UNESCAP, IHE Delft, IUCN, JICA and Global Alliance for a Sustainable Planet. This was an official virtual side event of High-LevelPoliticalForum2023 being held in New York from 10th-

19th July. The dialogue was moderated by Shweta Tyagi, Chief Functionary, India Water Foundation and chaired by Sh. Gajendra Singh Shekhawat, Hon'ble Minister of Jalshakti, Ministry of Jalshakti, Government of India. Other eminent speakers in the dialogue were Dr. Tedros A. Ghebreysus, Director General, WHO, Ms. Susan Gardner, Director, Ecosystems Division, UNEP, Dr. David Cooper, Acting Executive Secretary, CBD, Dr. Eddy Moors, Rector, IHE Delft, Dr. Rajan Sudesh Ratna, Deputy Head, UNESCAP, Mr. Satya Tripathi, Secretary General, GASP, Dr. Mark Smith, Director General, IWMI, Dr. Katsuo Matsumoto, Director General, JICA, Mr. Vishwaranjan Sinha, Project Officer Wetlands, IUCN.

SIWI World Water Week 2023: During his presentation at the SIWI World Water Week 2023 (20 March 2023, Virtually) on "From Geo-Politics to Geo-Economics: Case study of Brahmaputra Basin" Dr. Arvind Kumar driving from his experience of more than a decade in the north east region highlighted that integrating optimized financing; improved data and information; enhanced Capacity; innovations; and Good Governance when it all comes together it is Transversality approach for peace, stability and shared prosperity in the basin and achieving timely SDGs. He further pointed out that apart from ecological, economic and other benefits transboundary water cooperation shall be beneficial in achieving net zero targets by supporting the development and implementation of adaptation strategies and measures, besides speaking about the stumbling blocks and prospective multifold impacts of cooperation in the Brahmaputra Basin for the riparian countries. This session was organised by WMO and had senior WMO officials and other water and development experts.

IPBES 10TH SESSION: Attended the tenth session of the Plenary of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES 10) virtually from 28 August to 2 September 2023 in Bonn, Germany.

NATIONAL (ONLINE)

Five Day Faculty Development Program organized by Amity University: "A 'zero-harm, zero-waste, zero-discharge' approach can be the step toward transforming industry practices for good through material recovery and reuse. Maintaining economic growth, while creating sustainable livable cities for all, is the biggest urban challenge facing Asia and the Pacific today. The benefits of zero waste include clean seas and fresh air, fertile soils and sanitary cities, and resilient economies and sustainable extraction. A Circular economy involves the reduction and minimization of waste throughout product life cycles." were some of the points highlighted by Dr. Kumar in his valedictory speech as Guest of Honour of the Five Day Faculty Development Program organized by Amity University. Uttar Pradesh on "Building a Sustainable Future with gree ntechnology: innovations, opportunities and challenges".

National (INPERSON)

Meeting with Chief Secretary & DGP Government of Sikkim: During our visit to Sikkim to attend the C20 working group meetings and conclave of the G20, on the side lines I had an opportunity to make a courtesy call with Sh. V B Pathak, Chief Secretary, Government of Sikkim at his office and apprised him of our current endeavours and future prospects. Fortunately, at his office also got an opportunity to meet Mr. Amrendra Kumar Singh, Director General of Police, Sikkim. Their humble demean our, warm gesture and positive stance is much appreciated. I also presented them my book 'India at 75 and beyond'. I had a long discussion on various wonderful initiatives of the sikkim government and how Sikkim had transformed in last five years since my previous visit in 2017.
https://www.facebook.com/drarvind.kumar.3/posts/pfbid02fjytmFLU5dh8AKAeDhc2w6XCb3k7qzZnFqWS9fVZ1dwjxxxAGUQauvgLdN2za7wbl

Strategic Meeting of Tibetan Parliamentarians: 
"While harnessing technology for carbon sequestration, emphasis on Nature Based Solutions efforts like reforestation and Ecosystem Restoration need to be focused on because triple benefits – carbon sequestration, boost to biodiversity, and promotion of human well-being – accrue from such solutions. There is a need to leverage both nature and technology to head off the worst of climate change" said Dr. Arvind Kumar, President, India Water Foundation at the Strategic Meeting of Tibetan parliamentarians in Delhi at Hotel The Ashok on 8th August 2023. He spoke on the topic - Endanger of Climatic Changes in Southeast Asia. The session was attended by MPs of the Tibetan Parliament-in-Exile and was followed up by a comprehensive interaction round.

Opening &Valedictory Sessions organized by REACH, SRM Institute of Science and Technology, Chennai on 5th June 2023: 
As Chief Guest during the opening and the valedictory sessions at the World Environment Day celebrations organised by Centre for Research in Environment Sustainability Advocacy and Climate Change (REACH), SRM Institute of Science and Technology, Chennai on 5th June 2023. The opening session was followed up by technical presentations by Professor Bommanna Longanathan, Murray State University, USA, Dr Pravakar Mishra, Scientist, National Centre for Coastal Research, Ministry of Earth Sciences, Dr Kine Baek, Team Leader, Environmental Chemistry and Technology, Norwegian Institute of Water Research, Norway, Ms Emmy Noklebye, Research Scientist, Norwegian Institute of Water Research, Norway and Prof. Paromita Chaktaborty, Convener, WED 2023, Head, REACH, SRMIST and Prof. Neppolian Bernaurdshaw , Dean, Directorate of Research, SRMIST gave a vote of thanks. Prizes were also distributed to faculty members, students and other staff of the University. I also had an opportunity to meet the Vice Chancellor of the SRM University Prof. C Muthamizhchelvan and presented him my book 'India at 75 and beyond'. We also witnessed the great work done by SRMIT University by visiting their labs and appreciating the work especially on the topics of environmental nuclear research, air pollution, remote sensing, societal health, transboundary movements of pollutants, waste processing, Geographic Information Systems, and soil and water resources. We look forward to enhanced partnership and collaboration with the University for various future endeavours.

Meetings with Mr. Pravakar Mishra, Scientist G, NIOT: Our recent visit to Chennai we visited the National Institute of Ocean Technology (NIOT) and National Centre for Coastal Research (NCCR) of the Ministry of Earth Sciences, Government of India and had meetings with Mr. Pravakar Mishra, Scientist G and Ms. Tune Usha Scientist G and other Scientists of the research Centre. We were amazed by the tremendous work done by the NCCR in coastal management and shoreline research, coastal water quality monitoring, prediction, monitoring marine litter and micro plastics. Coastal resources and ecosystem services, and capacity building and training. People are not aware of the great work done by these institutes despite the high-end research they are conducting to develop and improve the country's capabilities in addressing the challenging problems prevailing in the coastal zone, which have societal, economic and environmental implications which we personally witnessed during our tour of their labs and workshops. I presented Mr. Pravakar Mishra my book 'India at 75 and beyond' and during our discussion explored various opportunities for future endeavours.

Stakeholder's Meet: Jal Jeevan Mission, Waste Water Treatment And Waste 2 Wealth", at CSIR-CSIO, Chandigarh: "It is important to align policy, institutional, regulatory, and financing frameworks to encourage and incentivize the development of wastewater resource recovery projects." Said Dr. Arvind Kumar at the Stakeholder's Meet: Jal Jeevan Mission, waste water treatment and Waste2 Wealth", on 26th June 2023 at CSIR-CSIO, Chandigarh**.**

India Water Foundation & G20

IWF attended the Civil-20 working group of G20 on Sustainable and Resilient Communities at Sikkim from 29 to 30 April 2023: Dr Arvind Kumar and Shweta Tyagi attended the meeting. Ms. Tyagi, Chief Functionary made a presentation on the success story and best practice developed at Meghalaya by India Water Foundation. It was a great vibrant atmosphere interacting with civil societies from all over the world on the sidelines of having meetings with the Govt. of Sikkim as their partners in progress.

ARTICLES*

Navigating the Flow: Embracing Water Challenges, Seizing Opportunities, and Confronting the Global Climate Reality

Mr. Satya S. Tripathi*

In the intricate web of global sustainability, few issues hold as profound a significance as water. It is the lifeblood of our planet, intricately woven into the fabric of ecosystems, societies, and economies. As the world grapples with an era of rapid transformation, the imperatives of addressing the multifaceted challenges and seizing the opportunities surrounding water management take center stage.

At the heart of this discourse lies the formidable challenge of water scarcity. The surge in global population and the relentless march of urbanization have intensified our demand for water, pushing against the limits of this finite resource. But water scarcity is not solely a matter of temperature and rainfall. It is a complex interplay of factors. Longer and more intense heatwaves, fueled by climate change, have the potential to exacerbate droughts by parching soils and causing more rapid warming of the air above. This domino effect is further compounded by increased water demand from both human populations and agriculture during hot weather, straining water supplies to the brink.

Real-world examples starkly illustrate the dire consequences of these dynamics. Consider the case of East Africa, where five consecutive failed rainy seasons between 2020 and 2022 left more than 20 million people at risk of severe food shortages. This alarming reality is exacerbated by the fact that climate change has made such droughts over 100 times more likely, according to the World Weather Attribution (WWA). This stark illustration underscores the pressing need for comprehensive and collaborative action to mitigate the effects of water scarcity.

The Himalayan Cryosphere also stands as a stark example of the fragile balance between nature's bounty and human needs. The accelerated melting of mountain glaciers in the region presents a looming crisis that puts the lives and livelihoods of more than two billion people at risk. As these towering ice giants recede at an alarming pace, they jeopardize the freshwater supply of major rivers like the Indus, Ganges and Brahmaputra, which serve as lifelines for countless communities in the Indian subcontinent. The potential consequences reverberate across agriculture, energy production, and overall water security, necessitating urgent international cooperation and innovative solutions to avert catastrophe.

The urgency of this situation is underscored by the heightened threat of glacial lake outburst floods (GLOFs), which can be triggered by the rapid melting of glaciers and the subsequent formation of

glacial lakes in the Himalaya. The escalating size of these lakes raises the specter of devastating floods that can wreak havoc downstream, wiping out homes, infrastructure, and entire ecosystems. The need of the hour is a united effort to address the complex challenges posed by the Himalayan Cryosphere's decline, blending traditional wisdom with modern science, and fostering international collaboration to ensure a sustainable water future for the communities at risk.

However, amidst these challenges, there emerges a beacon of opportunity — the ability to harness innovation and cooperation to redefine water management. The convergence of cutting-edge technologies offers a promising avenue for more effective water resource management. The amalgamation of data analytics, artificial intelligence, and the Internet of Things enables us to monitor, predict, and manage water resources with unprecedented accuracy. Imagine precision agriculture techniques that optimize water usage or real-time pollution monitoring that informs decision-making in real-time. These innovations hold the potential to revolutionize water management and cultivate a more sustainable future.

Moreover, the clarion call for collaboration resounds more urgently than ever. Governments, non-governmental organizations, and the private sector are converging to pioneer innovative financing models that leverage capital, expertise, and resources for sustainable water infrastructure development. This intersection of sectors fosters transformative projects that span the spectrum from remote rural communities to bustling urban centers. This united approach is emblematic of the potential of cross-sectoral partnerships to drive meaningful change.

Central to this endeavor is an unwavering commitment to ensuring equitable access to clean water and sanitation. The profound principle of leaving no one behind resonates through the advocacy for marginalized communities that bear the disproportionate brunt of water scarcity and contamination. In the spirit of inclusivity and social justice, efforts are directed toward providing access to clean water and sanitation for all, a mission that epitomizes the vision of organizations like the India Water Foundation.

Universities also emerge as pivotal players in the journey toward water sustainability. As hubs of research, innovation, and knowledge dissemination, academia possesses the potential to spark transformative breakthroughs. Collaboration between universities and organizations like the India Water Foundation serves as a conduit for groundbreaking solutions. Moreover, the emphasis on interdisciplinary education, a hallmark of the vision advocated, equips the next generation of water leaders with diverse skills to drive innovative solutions and policy reforms.

The symphony of challenges and opportunities surrounding water management resounds with a compelling call to action. It beckons us to embrace challenges as catalysts for innovation and seize opportunities to craft a future where clean, accessible water underpins prosperity for generations. When organizations such as the India Water Foundation, governments, UN agencies, universities,

and stakeholders unite, a shared purpose materializes — steering the course toward resilience, sustainability, and hope.

The recent floods and extreme weather events, such as those witnessed in China, serve as stark reminders of the urgent need to address climate change and its impact on water resources and management. More than a million people were displaced from their homes by the remnants of a storm in China's northeastern Hebei province. Typhoon Doksuri's torrential rains saturated Hebei, Beijing, and Tianjin, causing flooding, washed-out bridges, and highways, and tragically claiming lives. These events, exacerbated by climate change, underscore the critical importance of global efforts to combat its effects.

The journey is guided by visionary leaders and organizations who navigate the complexities of water management. By harnessing collective wisdom and expertise, we can usher in an era where the challenges we confront serve as catalysts for transformative change. As the symphony of water management unfolds, let us heed the clarion call and unite to build a sustainable and equitable future for all.

**Secretary General, Global Alliance for Sustainable Planet*

AI and Smart Cities: A Transformative Synergy for a Sustainable Future

Mr. Sridhar Paladugu*

As urbanization continues to accelerate globally, the role of artificial intelligence (AI) in fostering the development of smart cities has become increasingly critical. Smart cities, by definition, are urban spaces where information technology is integral to infrastructure and services, improving the quality of life for residents. AI has emerged as a powerful tool to harness the immense volume of data these cities generate and extract meaningful insights that drive efficiency, sustainability, and livability.

Integrating AI in smart cities can revolutionize urban living, tackling pressing issues from traffic congestion to energy conservation and public health. Let's explore this intricate relationship and how it promises to reshape our urban landscapes.

AI: The Engine Powering Smart Cities

Artificial intelligence lies at the core of a smart city. It allows for automated processes, real-time data analysis, and predictive modeling. These capabilities enable city authorities to monitor, analyze, and predict urban activities, optimize resources, and enhance public services.

Navigating the Future: AI-Driven Traffic & Transport

As urban areas continue to grow, the arteries of our cities - the roads, intersections, and transit lines - face mounting pressure. The effects ripple throughout the city, causing delays, elevating stress, and escalating environmental concerns. Central to AI's success in addressing traffic woes is its ability to process vast data streams. By continually analyzing real-time data from GPS systems, surveillance cameras, and social media updates, AI platforms can gain insights that were previously impossible.

1. Dynamic Traffic Light Control: Traditional traffic lights operate on fixed timers, occasionally causing unnecessary waits and contributing to traffic buildup. AI transforms this by adjusting the signals in real time. By understanding where traffic is heavy or light, signals can be extended or shortened to optimize the flow of vehicles, minimizing wait times and reducing gridlocks.

2. Real-time Route Recommendations: Mobile navigation apps powered by AI can suggest routes based not only on distance but also on current traffic conditions, historical data, and

even events that could affect traffic. Over time, these systems learn from collective driver behaviors, continually refining their recommendations.

3. Public Transport Sync: Commuters often face the frustration of just missing a bus or train, resulting in long waits. By integrating AI into public transportation scheduling, buses and trains can be dynamically rescheduled to align with real-world variables, like sudden influxes of passengers or unexpected delays, ensuring smoother commutes and reduced crowding.

4. The Autonomous Revolution: As AI propels the emergence of self-driving vehicles, we anticipate transformative impacts. These autonomous systems prioritize safety, leveraging sensors and algorithms to preempt accidents. Their capacity for inter-vehicle communication promises to streamline traffic flow and mitigate congestion. Moreover, their frequent pairing with eco-friendly powertrains and integration with AI-led traffic management suggests a promising future for reduced urban emissions.

Empowering Green Cities: Energy & Sustainability via AI

As urban populations swell, the energy demands of cities skyrocket, placing immense strain on traditional energy grids and resources. The quest for sustainable, efficient, and environmentally friendly energy solutions has never been more critical. Artificial Intelligence has emerged as a powerful tool in this quest, bridging the gap between energy supply and demand, optimizing resource use, and nudging us toward a sustainable urban future.

1. Deep Data Analysis for Energy Efficiency

    - Pattern Recognition: AI's strength lies in recognizing patterns. By analyzing vast datasets from various energy sources, AI can identify inefficiencies in power consumption across city sectors, from industrial areas to residential neighborhoods.

    - Adaptive Grids: Gone are the days of static energy grids. AI-powered grids can adapt in real-time, rerouting energy to areas of high demand and drawing back from regions of low use, minimizing wastage.

2. Championing Renewable Energy

    - Optimal Harvesting: AI algorithms can predict the best times to harvest energy from renewable sources. For example, by analyzing weather patterns, they can determine when solar panels will receive maximum sunlight or when wind turbines will operate at peak efficiency.

- Storage Solutions: One challenge with renewables is the inconsistency of supply. AI can predict these fluctuations and manage energy storage solutions, ensuring that excess energy is stored during peak production times and released during lulls.

3. Balancing Peak Loads
    - Demand Forecasting: Through AI, energy grids can anticipate periods of high demand, such as during heatwaves or major city events, and adjust accordingly.
    - Distributed Energy Resources (DERs): AI can integrate and manage multiple smaller energy sources, like household solar panels, to contribute to the overall grid during peak times.
4. Predictive Energy Needs
    - Anticipating Growth: By studying urban development patterns, population growth rates, and technological advancements, AI can predict a city's future energy requirements. This ensures that infrastructure developments are in sync with anticipated needs.
    - Seasonal Adjustments: AI models can analyze historical data to predict seasonal energy needs, ensuring optimal energy distribution during summer's heat or winter's chill.
5. AI in the Home
    - Smart Thermostats: Leveraging AI, modern thermostats can learn a resident's patterns, like when they're typically home or away, and adjust heating or cooling for maximum efficiency.
    - Energy Consumption Insights: AI-driven home management systems can provide residents with insights into their energy consumption patterns, offering recommendations for conservation.

Trash to Treasure: AI's Take on Waste Management

As urban populations soar and consumerism amplifies, cities grapple with an increasing amount of waste. Ensuring effective waste management is paramount not only for aesthetics but also for the health of residents and the planet. Stepping into this critical domain, AI offers game-changing solutions that combine data analysis, machine learning, and robotics to transform how cities manage waste.

1. Data-Driven Collection and Routes

- Real-time Monitoring: Embedding sensors in trash bins allows AI systems to monitor waste levels in real-time. This ensures collection trucks are dispatched only when bins are full, reducing unnecessary trips and carbon emissions.
- Optimized Routing: With GPS data and machine learning, AI systems can chart out the most efficient collection routes, minimizing fuel consumption and ensuring timely pickups. As conditions change, like road constructions or major events, the system adapts routes on-the-fly.

2. Predicting Waste Generation
    - Trend Analysis: By studying patterns in waste generation, AI can predict times of increased waste output, such as holidays or festivals, allowing cities to prepare in advance.
    - Educative Insights: Providing communities with data about their waste habits can drive behavioral change. For instance, if a neighborhood consistently produces excessive food waste, they could be targeted with educational campaigns.
3. Robotic Sorting and Processing
    - Precision Sorting: Robots equipped with computer vision systems trained via AI can identify and sort waste materials with incredible precision, ensuring a higher percentage of waste gets recycled.
    - Material Recovery: Advanced AI-driven systems can detect materials like certain plastics, metals, or e-waste that can be repurposed or sold, adding an economic incentive to recycling.
4. Landfill Management
    - Volume Predictions: By analyzing the types and amounts of waste coming in, AI systems can forecast landfill capacity needs, guiding decisions about expansions or the establishment of new facilities.
    - Hazard Detection: Sensors in landfills can detect hazardous emissions or chemical leaks. AI processes this data in real time, alerting officials to potential environmental or health risks.
5. Waste-to-Energy Initiatives
    - Energy Potential Analysis: AI algorithms can evaluate waste streams to identify those with the highest potential for energy conversion.

- Optimizing Conversion: Machine learning models can adjust waste-to-energy plant operations to maximize energy yield, ensuring minimal waste and the highest return.

Vigilant & Vibrant: AI in Public Health & Safety

With growing urban populations and evolving threats, both natural and man-made, cities are under increasing pressure to ensure the well-being and safety of their inhabitants. AI stands as a beacon in this scenario, heralding new strategies in public health surveillance and safety protocols.

1. AI in Public Health

    - Surveillance & Early Detection: Gone are the days of solely relying on sporadic reports and isolated incidents. AI systems today can analyze vast and varied data sources—from hospital admissions to social media mentions—to detect early signs of disease spread.
    - Predictive Modeling: Using historical health data, climate patterns, and population mobility, AI can model potential future outbreaks, helping health professionals to allocate resources and initiate preventive measures proactively.
    - Vaccination & Treatment Strategies: In areas prone to recurrent outbreaks, AI can map the most affected regions and predict future hotspots, aiding in targeted vaccine drives or treatment camps.
    - Health Communication: Based on the demographics and preferences of a region, AI can optimize health campaigns, ensuring maximum reach and impact.

2. AI in Public Safety

    - Facial Recognition & Crime Prevention: Advanced AI systems can scan crowded areas, flagging known criminals or missing persons in real time. This not only aids in apprehending suspects but also acts as a deterrent for potential offenders.
    - Behavior Analysis: Beyond mere facial recognition, AI can analyze behavioral patterns, detecting suspicious activities or identifying individuals exhibiting signs of distress, thereby preempting potential incidents.
    - Emergency Response Optimization: AI can analyze data from emergency calls, social media, and other communication channels to prioritize and direct response teams during crises. This ensures that aid reaches the most affected areas swiftly.
    - Infrastructure Safety: Sensors embedded in public infrastructure, when integrated with AI, can detect wear and tear or potential hazards, ensuring timely maintenance and reducing the risk of accidents.

3. Ensuring Data Privacy & Ethics

    - Balancing Surveillance with Privacy: Using AI in public safety, especially facial recognition, brings forth concerns about privacy and civil liberties. Cities must ensure transparent protocols, allowing residents to know how their data is used and providing opt-out options when possible.
    - Ethical AI Frameworks: Implementing AI in public health and safety necessitates a robust ethical framework. Bias in AI models, especially facial recognition systems, must be addressed to ensure equitable treatment of all citizens.

Healthcare Meets AI: Urban Services Reimagined

The demand for dynamic and responsive healthcare systems is ever-present in urban ecosystems, where population densities are high, and needs are multifaceted. With AI taking center stage, cities are now better equipped to address these challenges while enhancing overall resident experience.

1. AI-Driven Proactive Healthcare

    - Disease Surveillance & Outbreak Prediction: By analyzing vast arrays of data—from medical records to social media discussions—AI can detect early signs of potential health crises, ensuring cities can enact preventative measures before situations escalate.
    - Individualized Health Risk Assessments: Leveraging personal health data and wider environmental factors, AI can pinpoint individuals or communities at higher risks for certain diseases, enabling targeted interventions.
    - Telemedicine & Remote Monitoring: Wearable devices integrated with AI allow constant health monitoring. Anomalies can trigger alerts to both patients and professionals, enabling timely interventions and reducing hospital visits.

2. Optimizing Hospital Operations with AI

    - Resource Allocation & Staffing: AI models can predict patient inflows, helping hospitals to optimize staff rosters, ensuring adequate personnel during peak times, and conserving resources during lulls.
    - Diagnostic Assistance: AI-driven diagnostic tools, especially in radiology and pathology, can assist medical professionals in detecting diseases with greater accuracy and speed, leading to faster and more effective treatment plans.

- Patient Journey Personalization: AI can help in creating tailored treatment plans by considering a patient's genetic makeup, medical history, and even lifestyle factors, ensuring treatments with the highest likelihood of success.

3. Redefining Urban-Citizen Interactions

    - Virtual Healthcare Assistants: AI-powered virtual entities can provide health advice, schedule appointments, or even give medication reminders, bridging the gap between healthcare institutions and city residents.
    - Smart City Portals: These AI-driven platforms can integrate healthcare with other urban services. They offer residents a one-stop solution for all their city-related needs, from booking health check-ups to finding local community events.
    - Feedback and Continuous Improvement: AI can collate and analyze feedback from citizens on various urban services, identifying patterns that can guide future policy and service enhancements.

4. Ethics, Privacy, and AI in Healthcare

    - Data Security and Confidentiality: With the extensive use of personal data in AI-driven healthcare, cities must implement stringent measures to ensure data privacy, encryption, and secure storage.
    - Transparent AI Algorithms: The algorithms used, especially in diagnosis and treatment suggestions, should be transparent, interpretable, and free from biases, ensuring that healthcare decisions are both informed and just.

Aqua Intellect: AI's Strategy for Water Management

Water is a life-sustaining resource that cities across the world grapple to manage efficiently. With climate change, urbanization, and population growth amplifying these challenges, AI emerges as a potent solution, ensuring that urban water systems are both sustainable and efficient.

1. Real-time Monitoring & Rapid Response

    - Sensor-Driven Insights: Advanced sensors placed throughout the water infrastructure send continuous data streams to AI systems. This data includes flow rates, pressure, water quality, and other crucial metrics.
    - Leak Detection & Prevention: Instead of relying on sporadic inspections or waiting for a visible rupture, AI can detect anomalies in real-time, predicting potential weak points and triggering immediate repair actions, thereby preventing significant water wastage.

- Quality Analysis: By analyzing sensor data, AI can detect impurities or contaminants in the water supply, enabling swift interventions and ensuring consistent water quality for residents.

2. Balancing Demand and Supply

    - Demand Forecasting: Using historical consumption patterns, weather data, and population growth rates, AI can predict future water demand with a high degree of accuracy.
    - Supply Optimization: With these demand forecasts, cities can regulate water storage, pumping rates, and distribution schedules to ensure that there's always adequate supply without overstraining the system.

3. Efficient Water Treatment

    - Automated Treatment Processes: AI can optimize various processes within water treatment plants, from mixing coagulants to activating filters, ensuring that water is treated efficiently and meets quality standards.
    - Waste Minimization: AI-driven systems can segregate and manage waste generated from water treatment processes, optimizing recycling and reducing environmental impacts.

4. Sustainable Water Resource Management

    - Rainwater Harvesting: AI can predict rainfall patterns, guiding cities to maximize rainwater collection during peak periods and conserve it for drier spells.
    - Aquifer Management: With AI tools, cities can monitor underground water levels, ensuring that they are not overdrawn and are allowed to recharge, thereby preventing long-term water shortages.
    - Ecosystem Preservation: By understanding the broader water ecosystem, AI can help maintain wetlands, riverbanks, and other critical habitats, ensuring that biodiversity thrives alongside urban expansion.

5. Citizen Engagement & Water Literacy

    - Smart Consumption Insights: With AI-driven tools, residents can receive insights into their water usage patterns, encouraging mindful consumption.
    - Education & Awareness: AI can tailor water conservation campaigns for various demographics, ensuring maximum engagement and fostering a culture of water responsibility.

Breathing Easy: AI's Air Quality Prognostics

Air quality, a silent yet potent determiner of public health, has become a focal point for urban planners and policymakers worldwide. With the augmentation of AI, cities are now better positioned to predict, understand, and respond to air quality challenges, fostering healthier urban environments.

1. Data Integration & Real-Time Analysis
    - Comprehensive Data Collection: AI systems rely on data from a diverse array of sources: meteorological stations provide weather forecasts, traffic systems offer insights into vehicle flow and congestion, and industrial sensors track emissions and pollutants.
    - Continuous Monitoring: With an extensive network of air quality sensors, AI continuously assesses pollutant concentrations, from common contaminants like PM2.5 and nitrogen oxides to more specific industrial pollutants.
2. Predictive Air Quality Modelling
    - Short-Term Forecasts: Leveraging intricate machine learning models, AI can provide hour-by-hour air quality predictions, allowing municipalities to issue timely advisories or interventions.
    - Long-Term Projections: Using broader datasets, including climate change models and urban growth predictions, AI can also help cities anticipate long-term air quality trends, guiding sustainable urban planning and policy formulation.
3. Targeted Interventions & Adaptive Responses
    - Traffic Management: On days with forecasted poor air quality, AI-driven traffic systems can reroute heavy vehicles, reduce speed limits, or suggest alternate transportation methods, minimizing vehicular emissions.
    - Industrial Regulation: Industries could be given real-time feedback on their emissions, and in extreme conditions, AI might suggest temporary halts or reductions in production.
    - Urban Greening Recommendations: Based on air quality data and patterns, AI can guide urban planners on where to strategically plant trees or establish green belts to absorb pollutants and refresh the urban atmosphere.
4. Public Awareness & Health Advisory Systems

- Customized Alerts: AI can dispatch personalized air quality alerts to residents based on their specific vulnerabilities—asthma sufferers, children, or the elderly might receive tailored advice on precautions during high pollution periods.
- Community Engagement Platforms: AI-driven apps and platforms can educate residents about air quality, its determinants, and its health implications, fostering community-wide responsibility and proactive behavior.

5. Collaboration with Healthcare Systems
    - Predictive Health Metrics: By correlating air quality data with health records, AI can predict potential spikes in respiratory or cardiovascular ailments, allowing hospitals to prepare resources and staff.
    - Telehealth Check-ins: During adverse air quality events, AI-backed telehealth platforms can provide virtual consultations for those affected, offering advice without the need for physical hospital visits.

Crafting Tomorrow's Cities: AI in Urban Design

The urban spaces of tomorrow are envisioned not just by architects and planners but also by intricate algorithms and datasets. AI's involvement in urban design signifies a fusion of human creativity with machine precision, culminating in functional and sustainable cities.

1. Data-Driven Insights & Urban Analytics
    - Mapping Urban Dynamics: Through satellite imagery and geospatial data, AI can provide detailed insights into urban growth patterns, infrastructure development, and green spaces.
    - Population Density Analysis: AI evaluates the concentration of inhabitants in various areas, facilitating better planning for housing, amenities, and public spaces.
    - Mobility Patterns: By analyzing traffic flow and pedestrian movements, AI helps design roads, bridges, and public transportation routes that align with actual commuting behaviors.
2. Smart Zoning & Land Use Optimization
    - Intelligent Zoning Proposals: Instead of static zoning, AI can recommend dynamic zones based on real-time needs, ensuring efficient land use while accommodating changing urban requirements.

- Green Space Integration: Recognizing the environmental and health benefits of green spaces, AI can identify optimal locations for parks, urban forests, and community gardens, balancing concrete jungles with pockets of nature.
- Infrastructure Development: AI aids in determining the best spots for vital amenities like schools, hospitals, and fire stations, ensuring easy accessibility for all residents.

3. Revitalizing Existing Urban Spaces
    - Urban Decay Identification: By assessing structural health, land value trends, and community feedback, AI can pinpoint areas needing redevelopment or refurbishment.
    - Sustainable Retrofitting: AI-driven models can suggest energy-efficient upgrades for old buildings or propose ways to integrate renewable energy sources in urban renewals.
    - Cultural Preservation: While encouraging modernization, AI can also help identify and preserve historical landmarks or cultural hubs, ensuring that cities retain their unique identities.
4. Public Participation & Stakeholder Engagement
    - Digital Public Consultations: AI-backed platforms can gather resident feedback on proposed urban projects, ensuring that community voices shape city planning.
    - Stakeholder Coordination: With AI streamlining communication, urban planners, architects, environmentalists, and policymakers can collaboratively decide on urban designs, ensuring a holistic approach.
5. Future-Proofing and Resilience Building
    - Climate Resilience: By incorporating climate data and predictions, AI assists in designing cities that can withstand future environmental challenges, from rising sea levels to extreme weather events.
    - Economic Growth Modeling: AI can forecast economic trends, guiding cities in creating commercial hubs, business parks, or innovation districts that fuel economic growth and offer employment opportunities.

Digital Governance: AI's Role in City Administration

Against the backdrop of rapidly growing urban centers, the traditional mechanisms of governance are undergoing a technological revolution. AI stands at the forefront of this transformation, ensuring city administrations are faster, more responsive, and citizen-centric.

1. Citizen Engagement & Services

    - AI-powered Chatbots: These digital entities answer routine questions and can help citizens navigate complex administrative procedures, from tax payments to license renewals.
    - Virtual Town Halls: AI platforms can host online forums where citizens voice concerns, propose ideas, or vote on local issues, fostering a direct line of communication between city officials and residents.
    - Automated Service Delivery: Whether utility bill payments, parking space reservations, or appointment bookings, AI-driven systems ensure smooth and timely delivery, reducing bureaucratic red tape.

2. Streamlining Administrative Tasks

    - Smart Document Processing: Natural language processing (NLP) tools can scan, sort, and archive paperwork, dramatically reducing administrative lag.
    - Predictive Resource Allocation: AI can forecast demands on city services, enabling departments to allocate resources, be it manpower or material, more efficiently.
    - Financial Forecasting: By analyzing economic trends, spending patterns, and incoming revenue, AI provides accurate fiscal forecasts, aiding in budgetary decisions.

3. Policy Formulation & Decision Making

    - Data-Driven Policymaking: Using machine learning, city officials can analyze vast datasets, from crime rates to public health statistics, to inform and refine policies.
    - Scenario Simulations: Before implementing major decisions, AI models can simulate outcomes, ensuring officials make choices tested against various urban dynamics.
    - Feedback Analysis: Sentiment analysis tools can gauge public reactions to new policies or programs, offering city officials insights into areas of improvement or contention.

4. Enhancing Public Safety & Compliance

    - Real-time Surveillance: Advanced facial recognition and anomaly detection algorithms can identify potential security threats or public disturbances, allowing swift intervention.

- Regulation Compliance Checks: AI tools can monitor businesses or construction sites for compliance with local regulations, from noise limits to environmental standards.
- Emergency Response Optimization: In cases of emergencies, AI-driven systems can predict the fastest routes for first responders or identify areas in need of immediate attention.

5. Transparency & Accountability
    - Open Data Platforms: AI can curate and present vast amounts of public data in user-friendly formats, fostering transparency and allowing citizens to hold officials accountable.
    - Performance Metrics: City departments can employ AI to assess their performance against set metrics, ensuring continual improvement and adherence to service standards.
    - Anti-Corruption Mechanisms: Machine learning algorithms can detect anomalies in financial transactions or bidding processes, preventing potential corrupt practices.

Educate & Elevate: AI's Vision for Learning

The educational landscape is ripe for innovation in an era marked by rapid technological advancements. AI, with its potential for personalization and analysis, is progressively defining the contours of modern education, creating environments where learning is both individualized and maximized.

1. Personalized Learning Pathways
    - Adaptive Learning Systems: AI-driven platforms assess each student's strengths, weaknesses, and pace of learning, adjusting content delivery in real-time to best cater to individual needs.
    - Custom Curriculum: Algorithms analyze student feedback and performance metrics to create customized lesson plans, focusing on areas needing attention while capitalizing on a student's strengths.
    - Interactive Content: AI can suggest supplementary resources like videos, podcasts, or articles based on a student's interests, catering to diverse learning styles.
2. Real-time Feedback & Assessments

- Instant Grading: AI tools can grade objective assessments almost instantly, providing students with immediate feedback and allowing educators to spend more time on in-depth mentoring.
- Predictive Analysis: By studying patterns in student performance, AI can preemptively identify those at risk of falling behind, ensuring timely interventions.
- Skill Gap Identification: Advanced analytics can pinpoint specific skills or areas students struggle with, allowing for targeted teaching or additional resources.

3. Enhancing Teacher Efficiency
    - Automated Administrative Tasks: AI can automate various administrative responsibilities from attendance tracking to lesson planning, giving educators more time for actual instruction.
    - Professional Development: AI can suggest courses, workshops, or resources based on a teacher's unique teaching style and classroom dynamics, fostering continual professional growth.
    - Collaborative Platforms: AI-powered platforms can connect educators globally, promoting the exchange of teaching methodologies, resources, and experiences.
4. Inclusive Education
    - Assistive Tools: For students with disabilities, AI-driven tools like speech recognition, predictive text, or personalized learning assistants can level the playing field, ensuring every student has access to quality education.
    - Multilingual Platforms: AI can provide real-time translation tools, breaking down language barriers and making content accessible to students globally.
5. Data-Driven Decision-Making in Administration
    - Enrollment Predictions: AI algorithms can forecast enrollment numbers, aiding schools and universities in resource allocation, from classroom space to faculty hiring.
    - Curriculum Design: By analyzing global educational trends, student feedback, and job market requirements, AI can guide the design of forward-thinking curricula.
    - Safety and Well-being: Through sentiment analysis and behavioral patterns, AI can identify bullying, mental health issues, or other concerns, ensuring a safe and supportive learning environment.

Conclusion

While AI undeniably propels smart cities towards a more efficient and sustainable future, it's essential to remember that the human element remains crucial. AI systems are tools that city authorities and residents can leverage, but the ultimate decision-making lies with humans. The goal is not to create cities where AI rules but cities where AI aids human decisions and improves human lives.

The success of integrating AI in smart cities hinges on several factors, including data privacy, cybersecurity, and the digital divide. Ensuring that residents' data is protected and that AI systems are secure from cyber threats is critical. Furthermore, to prevent deepening socio-economic divisions, access to the benefits of AI and smart cities must be equitable. As AI technology evolves, so should the policies and regulations governing its use. A balanced approach is needed, one that encourages innovation while safeguarding against potential risks.

Sr. Consultant, India Water Foundation

Mapping Economic Feasibility of Managed Aquifer Recharge System

Dr. S.K. Sharma[1]&Lalit Gupta[2]

(ABSTRACT)

A multi-stage process is recommended to determine the economic feasibility of potential Managed Aquifer Recharge (MAR) projects. The various steps involved are as follows:

(i) Establishing the feasibility of suitable potential aquifers for recharge.
(ii) Assessing the quantity and quality of the source recharge water and its compatibility with the native groundwater aquifer under recharge.
(iii)Evaluating the demand for water and its usage for both potable and non-potable purposes.

The costs associated with MAR projects encompass capital costs, operation and maintenance (O&M) costs, and financial costs. The capital costs represent one-time fixed expenses incurred during the design and construction of MAR projects. They include costs related to land acquisition, feasibility studies, field testing, and the design and construction process. The O&M costs encompass expenses such as labor, energy, water quality testing, maintenance, pre and post-treatment, as well as the cost of raw water. The total value of recharge water incorporates its development and extraction value, as well as its inherent value within the aquifer. To assess the economic feasibility of MAR projects, a comprehensive approach should be adopted. This approach should include evaluating the suitability and availability of aquifer systems suitable for recharge, analyzing the characteristics of the recharging source water, and assessing the demand for source water for both potable and non-potable uses.

Introduction

Managed Aquifer Recharge (MAR) refers to the deliberate and purposeful practice of storing water in aquifer systems for future use, while also considering the environmental and ecological benefits. MAR is achieved through specific interventions tailored to each area's feasibility, including infiltration basins, pits, trenches, injection well-bores, lake and river bank filtration, in-stream modifications, modular rain-tank systems, and Aquifer Storage & Recovery Systems.

The economic benefits and efficiency of MAR systems primarily rely on the hydrogeological, morphodynamic, and technical characteristics of the area, which encompass factors such as hydraulic conductivity, groundwater gradient, constructional design, and operational maintenance of recharge structures.

[1]Dr. S.K. Sharma, Consultant (Ground Water) Wapcos Ltd. & Former Member, CGWB,Govt. of India
[2]Lalit Gupta, Engineer, WAPCOS Ltd.

Addressal of Issues

When assessing the relative efficiency of various artificial recharging measures and structures, the following criteria should be taken into consideration:

(i) Declining groundwater levels and the depletion of groundwater resources.
(ii) Insufficient groundwater availability during low-demand periods.
(iii) Available storage capacity within the aquifers.
(iv) The physical efficiency of water harvesting in relation to the storage capacity of aquifer systems.
(v) The quantity and quality of the source recharge water and its compatibility with the native groundwater quality.
(vi) The prevalence of indirect recharge in arid regions and direct recharge in humid areas.
(vii) Regions with high and low permeability soils.
(viii) Brackish Groundwater Aquifers (BGWAs).
(ix) Factors such as soil infiltration rates, aquifer storage capacity, and land-use/land-cover types.
(x) Aquifer recharge through recycled water and the associated health impacts.

Factors Influencing Cost of MAR Schemes

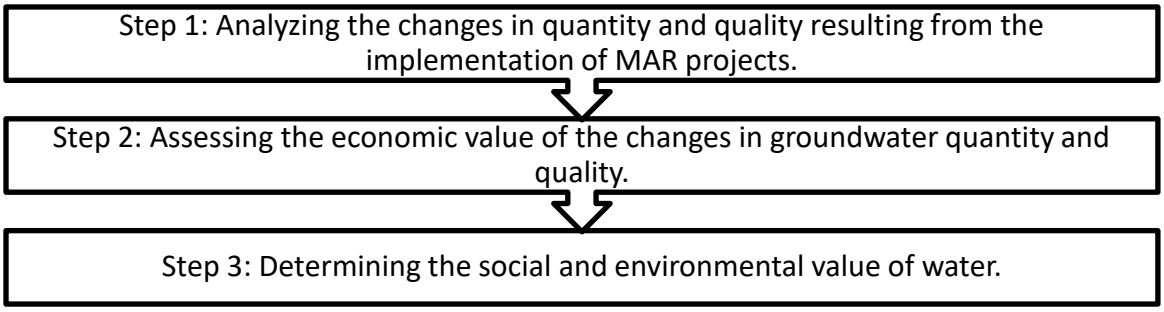
The following factors are crucial to consider when evaluating artificial recharging techniques, including infiltration, percolation, and injection well methods:

(i) Variability and availability of rainwater infiltration runoff.
(ii) Efficiency of Rainwater Harvesting (RWH) structures.
(iii) Land cost in identified Managed Aquifer Recharge (MAR) regions.
(iv) Design and operation & maintenance (O&M) considerations of MAR structures.
(v) Impact of MAR measures on the surrounding environment.
(vi) Pre and post-recharge treatment requirements.
(vii) Feasibility and construction of artificial recharge systems.
(viii) Availability of source recharge water and water transfer options.
(ix) Soil types, permeability, and infiltration rates.
(x) Aquifer types (unconfined/confined) and aquifer storage capacity.
(xi) Aquifer transmissivity and hydraulic gradient.
(xii) Infiltration and injection rates.
(xiii) Socio-economic, legal, technical, and regulatory factors.
(xiv) Energy pricing considerations.
(xv) Monitoring costs, including groundwater and recharge water quality monitoring, as well as field-kit-based lab analysis costs.

(xvi) Administrative and personnel management costs.

Procedures for Examining Economic Benefits of MAR Schemes

The step-wise procedures employed to evaluate the costs and overall benefits of Managed Aquifer Recharge (MAR) schemes include:



This paper focuses solely on MAR systems with storage objectives. Evaluating the benefits of MAR systems can be challenging to quantify. The increased storage capacity achieved through MAR enhances the volume of water available for future use. Additionally, the cost of pumping water is reduced due to the buildup of groundwater and the rise in the water-table.

Parametric Framework for EstimatingCost of MAR Schemes

The framework, presented in Table 1 below, outlines the engineering parameters and associated remarks for estimating the cost of Managed Aquifer Recharge (MAR) schemes.

Table 1: Framework for Estimating Cost of MAR Schemes

S.No.	Engineering Parameters	Remarks
1	Locating surface water sources and annual availability	Extraction time period from river or other water sources per year
2	Water transfer to place of recharge through pumping/gravity-flow(pipe diameter & heads)	Distance over which water is to be transported through a pre-determined size of pipe
3.	Water treatment prior to its recharge	As per need
4.	Water infiltration/water injections as per design of Recharging structures	Infiltration rate/injection well pressure
5.	Cost evaluation of MAR System	A case study from NCT Delhi

Cost Economics of MAR Schemes

The cost of Managed Aquifer Recharge (MAR) scheme projects is primarily influenced by various factors, including geo-hydrological, socio-economic, and regulatory considerations. However, a review of MAR schemes in India has revealed a lack of cost and financial data on managed aquifer recharge measures and tools. This paper focuses on outlining the procedure for assessing the costs of MAR schemes within the Indian context, with specific emphasis on NCT Delhi.

It is known that artificial recharge schemes for recharging unconfined aquifers using untreated natural water tend to be relatively cost-effective and economically viable compared to recharging deeper aquifers. The paper discusses the procedure for utilizing natural Yamuna River water, as well as recycled water (treated water), for recharging alluvial and hard rock aquifer areas. It also presents case studies for NCT Delhi, demonstrating the economic feasibility of these approaches.

Furthermore, the paper highlights the potential for future work in assessing the economics of recharging groundwater through methods such as Aquifer Storage and Recovery (ASR), Lake-Bank Filtration, and Modular Rain Tank systems (e.g. Atlantis system). These methods offer opportunities for recharging groundwater efficiently while considering the economic aspects of MAR schemes.

Goal

The water storage aims of Managed Aquifer Recharge (MAR) projects included the following:

(i) Storm Water Drains (SMDs)
(ii) Aquifer Storage and Recovery (ASR) systems, which could be implemented alongside Water Treatment Plant Complex areas of Delhi Jal Board in Delhi, where surplus water for recharge may be available.
(iii) In-stream modifications and the construction of check dams in Delhi Ridge areas.
(iv) Utilization of the Bhatti Abandoned Mines Area in South Delhi for recharge purposes.

Case Applications

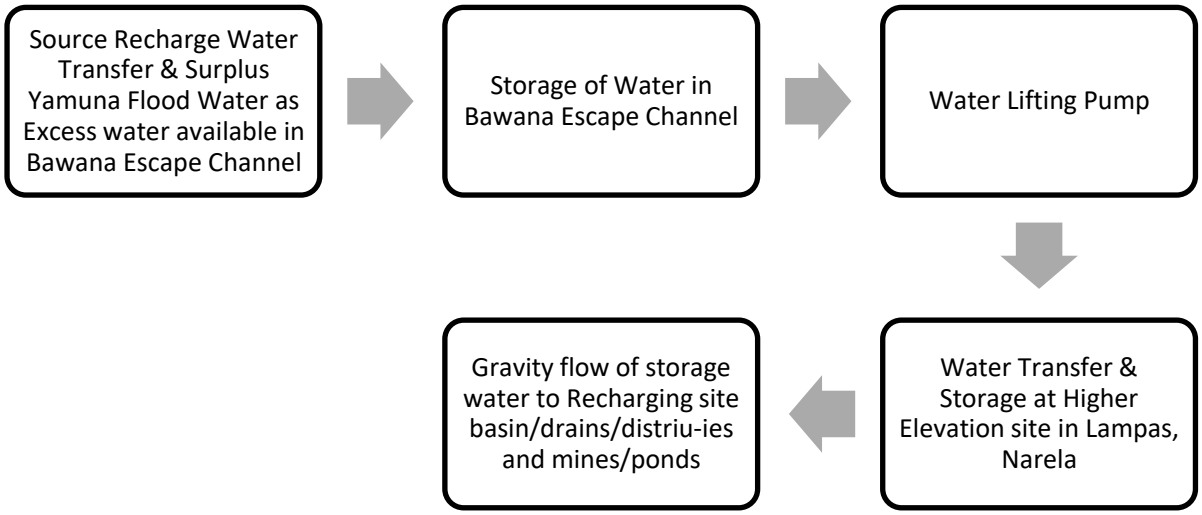
The projected cost estimates and expected outcomes of the projects are determined through the analysis of the following case studies:

(i) Case Study I: Storm Water Drains (SWDs) in Kanjhawla and Narela areas of NCT Delhi.
(ii) Case Study II: Aquifer Storage and Recovery (ASR) system integrated with Water Treatment Plants (WTPs).
(iii) Case Study III: In-stream modifications and the construction of check dams.

These case studies provide detailed information regarding the project-site areas in NCT Delhi, including the underlying study types, associated costs, and anticipated benefits and outcomes.

Case Study Area I:Storm Drains: Kanjhawda&Narela Areas, NW District Delhi

The framework flow diagram of the Managed Aquifer Recharge (MAR) design is presented below:



Computation of Artificial Recharge to Ground Water through proposed intervention & Estimated Cost in given table-2 below.

Table 2: Artificial Recharge to Ground Water (SWDs)

Sl. No.	Storm Water Drains (SWDs)	No. of Recharge Structure	Unit Cost (Cross)	Total Cost (Cross)	Recharge (m^3)	Type of Recharge Status
I	4 Major Storm Water Drains	307	0.05	15.35	18400	Recharge Shaft(RS) & Injection Well
II	Link Drains	354	0.04-0.05	16.25	-	Recharge Shaft(RS) & Injection Well
III	Select West Yamuna Canal Minors (5 Nos.)	85	0.05	4.25	-	Recharge Shaft(RS) & Injection Well
IV	Minor Canal Tail-	24	0.06		36600	Recharge Shaft(RS)

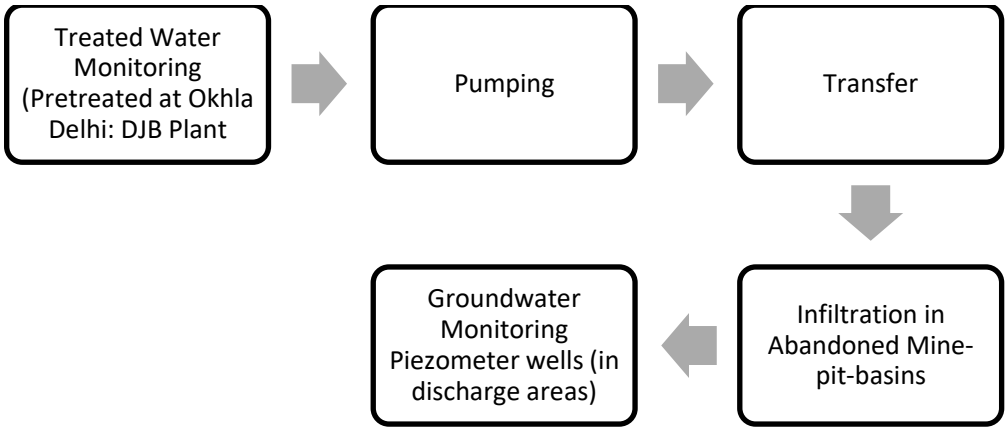
	end area					**&Injection Well**
V	**Depression as Infiltration Basin (6 Nos.)**	**24**	**0.06-1.44**	**1..44**	**36600**	**Recharge Shaft(RS) & Injection Well**
VI	**Select Village Ponds (34 locations & 103 Ponds)**	**103**	**0.005-0.515**	**0.515**	**-**	**Injection Bores**

City drains that are free from domestic sewage can be identified and utilized for recharging groundwater through stormwater management. Figure 1 presents a diagrammatic design, of the Chennai City model, illustrating the utilization of city drains and stormwater management for groundwater recharge.

Figure 1: Rainwater Collection Through Storm Water Drain

Case Study Areas II: Bhati-Abandoned Mine Area (South Delhi)

The flow diagram of the Managed Aquifer Recharge (MAR) design is presented below:



The study area map is depicted in Figure 2. The volume of mine pits (14 Nos.) is provided in Figure 3. The infiltration rates of the mine pits range from 2 to 28 mm/hr.

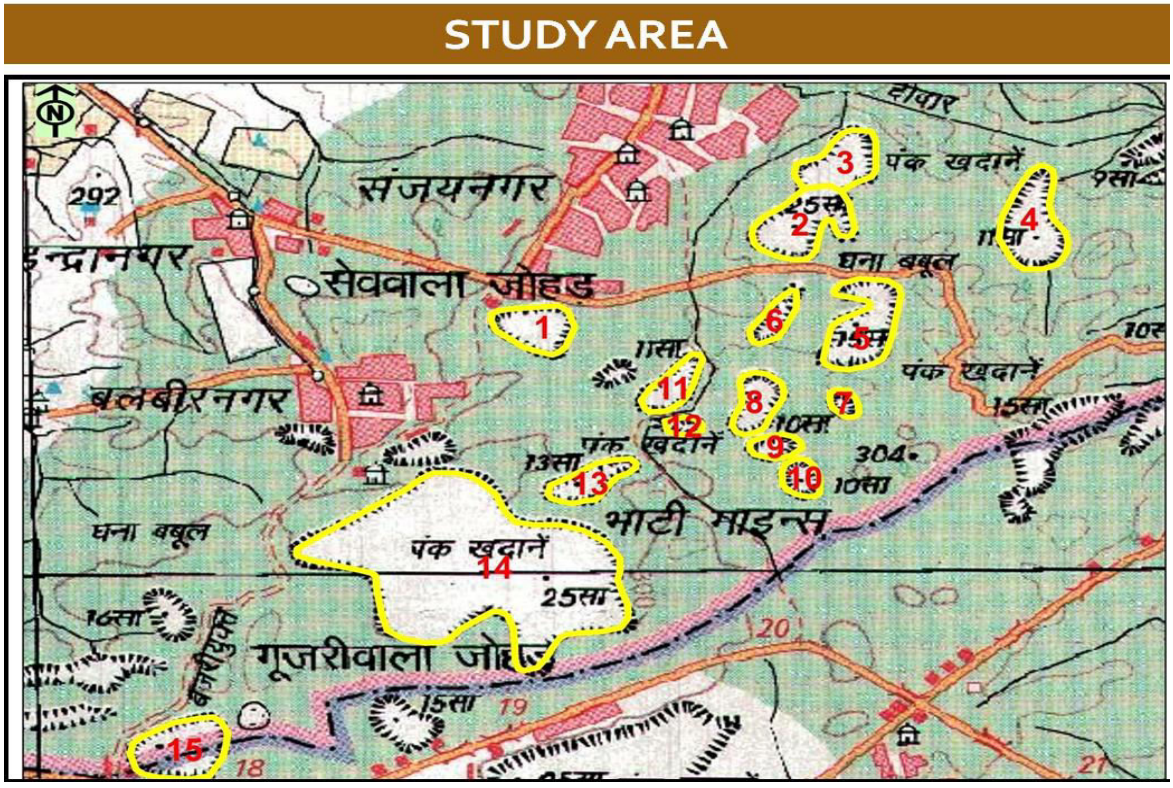


Figure 2: Bhatti Mine Pits, South Delhi

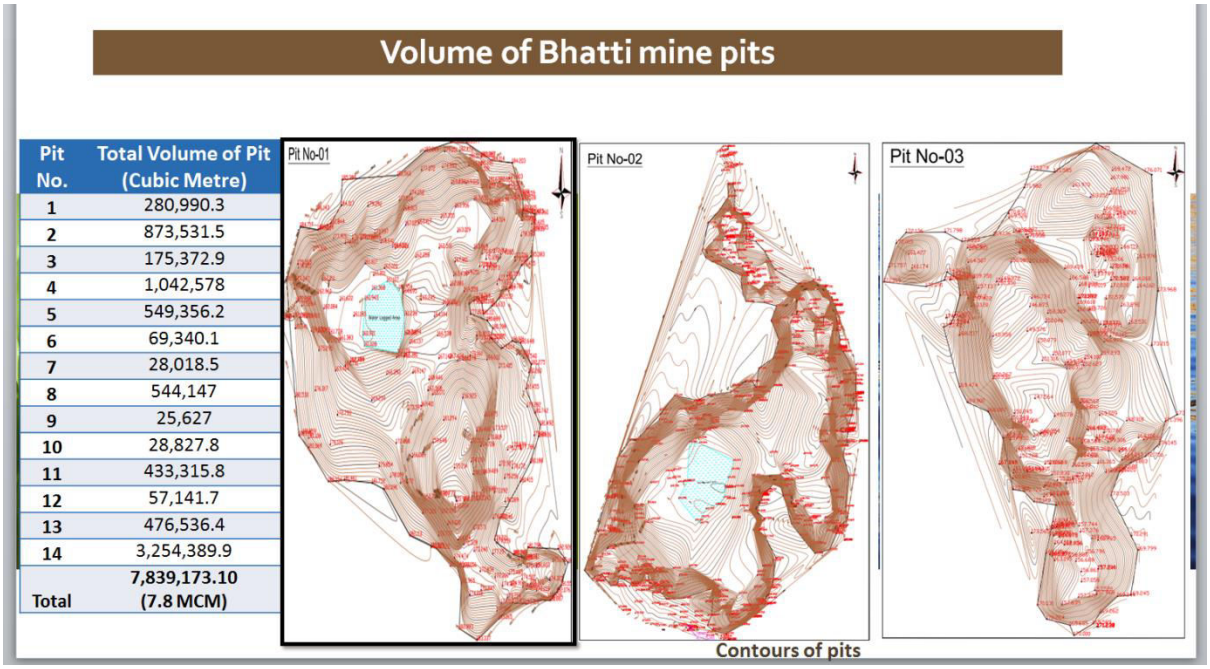


Figure 3: VolumeofBhatti Mine pits

Infrastructure

- Pit-basins under Artificial Recharge
- Distance between Source Recharge Water & Abandoned Pit basins.

Cost Functions

- Altitude difference between Okhla Source Treated Water & Pit basin areas.
- Topographic contour map of a pit (as an example).

(a) Financial Cost: To include expenditure as account of

- Geological & Hydrogeological Investigation.
- Water transfer cost to recharge site depending on distance.
- Supply [pump line cost.
- Cost of land may be nil being Government Land.
- Infiltration basin area & infiltration test cost.
- Cost of Peizometer Monitoring Wells.

Operating &Maintennace Cost (O & M):

Main expenses to include are:

- Recharge water, pumping system at water in-take site (Okhla, Delhi)

- Energy consumption of pumping equipment system depending upon flow rate & cost price of energy to supply recharge water to recharge sites.
- Cost of periodic monitoring of recharge water quality via piezometer well.
- Difference is altitude between source water area &REcyclying well.

(b) Livelised Cost:

Overall capital O & M cost over each year divided by annual volumes of water infiltration in pit-basins.

Case Study Area III: In stream-modification & Check Dams

A recharge dam is a type of in-channel modification used in Managed Aquifer Recharge (MAR), where artificial recharge occurs through the base of a pond created by a bund. This method enhances infiltration through the stream bed, resulting in increased recharge downstream of the check dam structure. This, in turn, raises groundwater levels and improves the yield of wells used for irrigation and other allied purposes.

To delineate micro-catchments and capture runoff effectively, a GIS-based method is employed. The use of cascading structures and small check dam locations can be expected to range from 1 to 2 meters in height, with yields ranging from 1 to 3 liters per second.

A case study focusing on the location of check dam sites in the Aravalli Ridge Area of Delhi is presented, accompanied by a sample figure shown in Figure 4. The map index provides a comprehensive assessment of watershed data, aiding in the identification of runoff production areas in macro and micro-catchments within the Delhi Ridge area. The construction of small check dam structures in these locations is estimated to cost approximately Rs. 7-10 lakh.

Monitoring wells located downstream of the check dams can reveal the downstream area of influence, typically extending 1 to 2 kilometers from the dam site. Stable isotope studies can be conducted to determine the travel time of recharged water to the groundwater table in these wells.

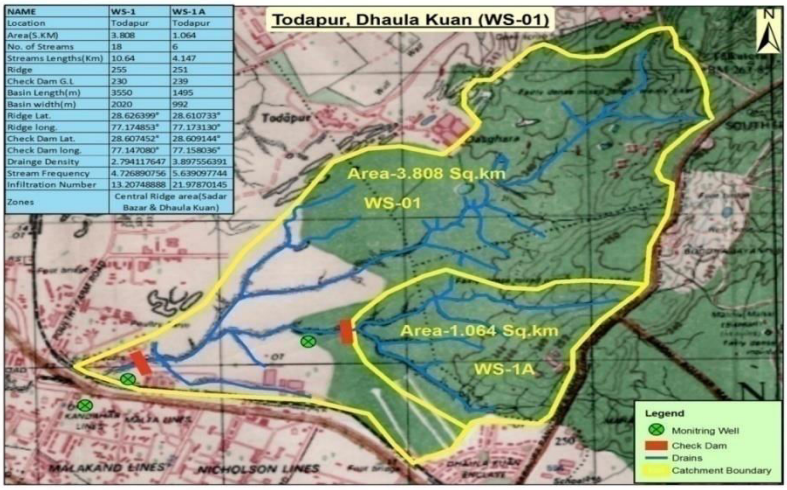


Figure 4: In-stream modification, Delhi Ridge Area, NCT Delhi

Case Study IV: ASR Projects

The Aquifer Storage and Recovery (ASR) projects are proposed to be implemented at the following eight water treatment plants, as shown in the table. Among these projects, the Okhla Water Treatment Plant has been given priority by the Delhi Jal Board (DJB). For this project, an injection well is proposed to be located opposite the pump house, across the road, along the boundary wall. This location minimizes piping lengths and allows for the potential utilization of the existing pumping facility for injecting water during periods of low demand.

Additionally, a pit surrounding the injection well is suggested to capture water during backwashing of the ASR well and cleaning of overhead tanks, as well as water from other structures within the treatment plant.

Table 3: Proposed ASR Projects

Sr. No.	WTP Sites Name	Annual Available Water at DJB WTP Sites	Number of Injection Wells Proposed in WTP Campus	Total Annual Estimated Recharge through proposed Injection wells	Total Annual Discharge through all Production Wells	Withdrawal against Recharge
		(MCM)	(Number)	/MCM	(MCM)	(%)
1	Sonia Vihar	8.286	10	2.58	1.08	41.76
2	Bhagirathi	5.8	10	4.09	1.08	26.34

3	Chandrawal	6.6	10	4.85	1.08	22.24
4	Okhla	3.3	10	2.58	1.08	41.76
5	Haidarpur	16.57	10	4.09	1.08	26.34
6	Nangloi	3.3	10	4.85	1.08	22.24
		(MCM)	(Number)	/MCM	(MCM)	(%)
7	Sonia Vihar	8.286	10	2.58	1.08	41.76
8	Bhagirathi	5.8	10	4.09	1.08	26.34

Source: DJB, NCT Delhi

Aquifer Storage & Recovery (ASR): Aquifer storage and recovery involve the storage of water in an aquifer through a well when water is available, such as urban stormwater, and the subsequent recovery of water from the same well during periods of water demand. It is an injection well system designed for seasonal water storage. In some cases, separate infiltration and extraction wells may be used, referred to as Aquifer Storage Transfer Recovery (ASTR) systems. The number of ASR wells required can vary depending on the availability of source stormwater for injection and storage. It can range from a single well to a well-field consisting of numerous wells, based on feasibility.

Figure 5 presents a schematic representation of an Aquifer Storage & Recovery well.

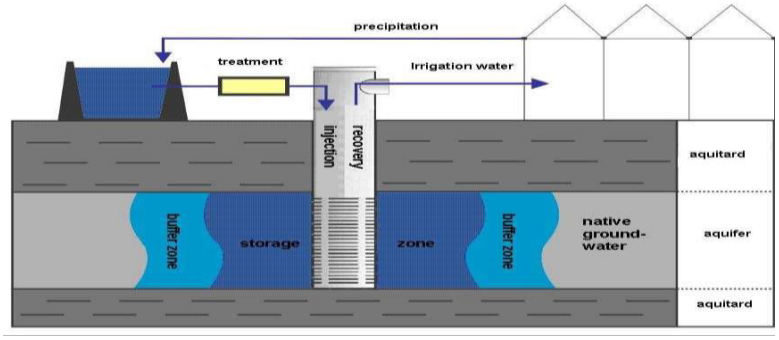


Figure 5: Aquifer Storage and Recovery Well

Estimating Cost of MAR Schemes

Briefly, the investment, operating, and life-cycle costs can be determined for proposed MAR projects as outlined below:

(i) Investment cost: This includes the following components:

- Cost of preliminary studies for the recharging area, including hydrological and hydrogeological studies.
- Cost of infrastructure for source water transfer, such as supply pipes.
- Cost of treated recharge water.
- Land cost for the construction of infiltration structures.
- Cost of design and construction of infiltration structures.
- Cost of monitoring structures, such as piezometric wells.

(ii) Operating cost: This includes annual and recurring costs, such as:

- Cost of water withdrawal from rivers, canals, etc.
- Maintenance cost for water intake structures.
- Pre-treatment and operational costs.
- Annual expenses, including administrative and personnel management expenses.

(iii) Levellised cost: This represents the annual cost divided by the annual volume of recharge and covers the cost over the expected life duration of the MAR project.

Economics of Various MAR Methods for Identified/Described Projects

The economic analysis of different MAR methods for the identified/described projects is presented in Table-4 below:

Table 3: economic analysis of different MAR methods

S. No.	MAR Structures Type	Likely Capital (1000 m^3 of Recharge (R))	Operational 1000^3/Yr (Rs)
1.	Recharge pit-basins	Rs. 40,000	5000
2.	Check Dam	Rs. 6,000	3000
3.	Injection Well (ASR System)	Rs. 50,000	5,000

Conclusion

Groundwater, in India, serves as major source of water supply both for rural and urban communities. Managed Aquifer Recharge(MAR) systemin India, have eight broad componenet types which include (i) Water spreading, (ii) Induced Recharge as Lake and River bank infiltration system(LBI & RBI),(iii) In-channel stream-modifications (iv) Aquifer Storage & Recovery Systems(ASR & ASTR wells),(v) Check dams and Sub-surface Dykes),(vi) Atlantis Modular Rain-

tank systems (vii) Pits, trenches and shafts driven with boreholes and (viii) Conventional Roof-top Rainwater Harvesting.A synoptic account of economic & feasible MAR system of NCT, Delhi are discussed.

The economic appraisal and assessment of MAR systems rely on various factors such as soil characteristics, aquifer storage capacity and empty space, the availability and quality of source water, and the land use and land cover details of the area targeted for water harvesting and recharging.

Water is not only a vital resource for life and the environment, but it also holds significant social and environmental value. When conducting an economic analysis of MAR systems, the capital and investment costs need to be taken into consideration. These costs may include:

(i) Inventory and study of the recharge site,
(ii) Costs associated with water abstraction,
(iii) Cost of source recharge water, including considerations of quantity, quality, and necessary treatment,
(iv) Operational and maintenance costs, and
(v) Costs associated with the chosen recharging method.

By considering these factors and costs, an accurate economic assessment of MAR systems can be conducted.

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**Principal Advisor, India Water Foundation*

Recent Water Crises and Issues

Mr. Mahendra Mehta*

Recent water crises are affecting about one fourth of Indian population. The situation is becoming more and worse as the summer is advancing. People are dying and even committing suicide. We are blaming the drought which is partially correct but we knew by the end of August that the rainfall is less but failed take measures till it has become critical. I am not sure whom to blame. Is it political or administrative or technical fault due to which common men is suffering? Why timely measures were not taken to ensure at least domestic water needs and now additional funds are being asked just to transport water. When we will change our mind set from construction to management mode. This can be done with the close cooperation of politicians, administrators, technologist, scientists and last but not the least with community participation.

Drought is very common in our country and some parts states like Rajasthan, Gujarat, Maharashtra are regularly suffering. In Maharashtra sugarcane is grown in Rain shadow zone which not suitable as per agro-climatic zones. In Vidherbha every year suicides are being committed by framers due non payment of loan only. In this context I wish to high light some issues as follows:

1. **Basin/watershed/micro watershed wise water resources planning:** This will help in future planning of water resources. The study will identify the areas having surplus/deficit water; both surface and GW. The net result will be how to cater the deficit areas and how to conserve surplus water, if any. Presently numerous water harvesting and TW are being constructed/drilled without assessing their impact. It might be possible that that due construction of new water harvesting structures, the existing structure are not filling to their capacity. Such situations can be avoided. This will also help in inter basin links and diversion of water for irrigation or drinking purposes for deficit areas.

2. **Bench Marking of Rural water and Urban water supply Schemes:** This is one of the most impotent aspects which is neglected so far. Rajasthan was the first state in the country to do this and by doing this realistic picture emerged for various issues. This will provide all the information about the sources of water for water supply, quality of water being supplied, details about the users, efficiency of water supply, O& M cost, suggestions of improvement etc. Presently this information is not available at one place and CHQ is always dependent on field units. By doing this at one click all the issues can be collected and remedial measures can be taken without delay.

3. **Bench marking of Irrigation Schemes:** This required for improving the irrigation efficiency. Presently the irrigation efficiency is very poor and it is about 25-30%. Further the O&M cost is increasing day by day but why it is not worked out. This will help addressing all such issues. If the surface water irrigation efficiency is increased by 10 percent, we will have sufficient water for irrigating the present irrigable areas. However, the ground water irrigation efficiency which is about 70 percent can also be increased. To do this we have to stop flood irrigation shift to drip as the evaporation is also very high in sprinkler irrigation.

4. **Computerization of water supply TW data:** Basically, the Rural water supply is dependent on TW. The data of these tube wells is not available at one place and only either field units will have in their records or individual pump operator's keep in their memory. It is observed that most of time the Pumps are lowered either of higher capacity or lower. If all the data such as depth, diameter, safe yield water level, quality, pump details etc are computerized it will help in maintenance and assured supply.

5. **Aquifer Mapping:** In the most of states there is no separate organisation dealing with GW. Even the states which are rich in GW resources but over the years GW withdrawal will increase. Considering this fact that it is right time to prepare following based on available data and to be updated regularly:

    - Preparation of State Hydro-geological Atlas on GIS Platform
    - Preparation district Hydro-geological Atlas on GIS Platform
    - Preparation Basin wise Hydro-geological Atlas on GIS Platform
    - Developing the software for community to asses GW resources by just feeding the water levels for better community participation. This has already done first time India by Rajasthan and for which **National Geospatial Award was given.** This software can be put up on web site so that there is community participation for water management
    - **Optimisation of GW monitoring stations:** In order to asses GW resources, water levels are monitored in Key wells. Presently these are distributed without much scientific background. Statistical methods are available for optimisation along with the location so that resources can be better assed.

6. **Water Laws**: I have personally observed that huge volume of water daily wasted for car washing. Further there are no law for roof top rain water harvesting for big plots in urban areas. In most of states now such law is made. Further there may be other prevailing water laws which in the light of present scenario to be harmonized.

7. **Conversion abandoned mine pits as RWH structures:** The states which are rich in minerals and mining activity are also having numerous abandoned mine pits in which water fills and evaporates. These abandoned mine pits can be converted as RWH and Artificial recharge structures.

8. **RWH of storm water runoff from Roads:** Huge volume of runoff is generated during the rainy season from NH and state highways. This water can be harvested and either stored and/or recharged to GW.

9. **Evaporation suppression:** Evaporation from the surface water bodies in the state ranges from 1.5-2.5 m per annum out which about 80% is during summer which is huge loss. Techniques are available, which are echo friendly and the evaporation can reduced by 50-60%. This aspect to be taken care for better water management especially areas having less resource.

In order to avoid loan losses to farmers it is suggested that government with help of IMD and other water related departments should issue advisory to all banks about the water availability and with guidance of Reserve Bank of India, the loan should be given. It will not only help the banks but also to farmers who commit suicide.

Last but not the least each state should prepare **"Water Centric Policy"** for proper management water resources. I hope politician and administration will rise now and try to shift from construction mode to management mode with community participation.

Ground Water Management Expert, Former Commissioner, Ministry of Water Resources, Govt. of India

Affordable IoT-enabled Water Service Delivery Measurement and Monitoring Sensing System for Rural Deployment

Dr. Babankumar S. Bansod*

Due to increased water scarcity and contamination, smart water resource management is imperative for sustainable living and holistic development. The existing water resources (ground and surface) are severely polluted with organic, inorganic, biological contaminants, heavy metals, salts, etc., owing to urban, industrial, and anthropogenic activities. Water-Aid India's report (2017) indicates that waterborne diseases affect 37.7 million Indians, including 1.5 million children and 73 million working days.

According to the National Sample Survey, 40% to 50% of water is reportedly lost in the distribution system for various reasons. Of the 1.43 million villages in India, the water resources of 1,95,813 villages are chemically contaminated.

One of the major handicaps in India for sustained and safe drinking water delivery is the mismanagement of resources and lack of awareness about water quality. The situation is mainly attributed to the non-availability of low-cost real-time monitoring sensor systems, maintenance-free filters and treatment technologies.

Lately, the Ministry of Jal Shakti launched the Jal Jeevan Mission (JJM), "HarGhar Jal", to connect each household with functional taps and supply regular drinking water of prescribed quality at the rate of a minimum of 55 LPCD. The mission aims to measure water quality and quantity parameters of drinking water to help ensure service delivery to households. It also seeks to reduce physical and commercial losses in the water distribution system and improve the recovery of water charges.

Despite numerous technological advancements, from sensors to wireless networks and IoT devices to intelligent decision supportsystems, their potential has been under-utilised for water quality and quantity monitoring. These technological disconnects are mainly attributed to research gaps and innovations underpinning the key enabling components (smart sensors, IoT-enabled low-power networks), requiring urgent innovative research interventions and collaborations to develop smart water resource management systems.

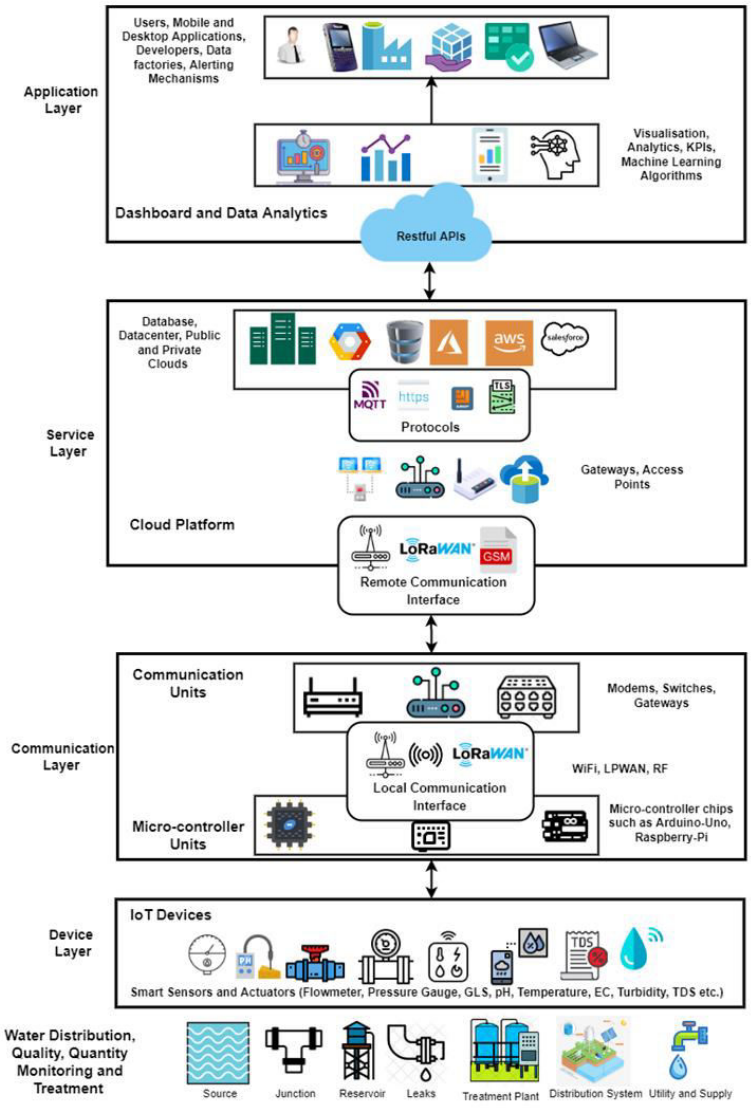


Figure 6: Proposed IoT Based Architecture of Smart Water Monitoring in rural areas

Given the above, the CSIR team and NJJM intend to implement IoT pilots across PAN India in 150 clusters in rural areas to ensure water service delivery. CSIR-consortium (CSIO-Nodal Lab, CSMCRI, CMERI, NEERI, CEERI) is working on "CSIR-HarGhar Jal" which aims to demonstrate and deploy innovative, cost-effective and smart technologies for measuring and monitoring water service delivery for safe and sustainable water resource management at the pilot location.

The project aims to deliver several research and innovations, including Indigenous IoTarchitecture (Figure 1), Data Integration and deployment of ETL Layer, Uniform Standards and Protocols for hardware and IoT, Onsite and automatic Calibration Methodology, Indigenous RISK-PiNET software for operation and maintenance of water distribution system.

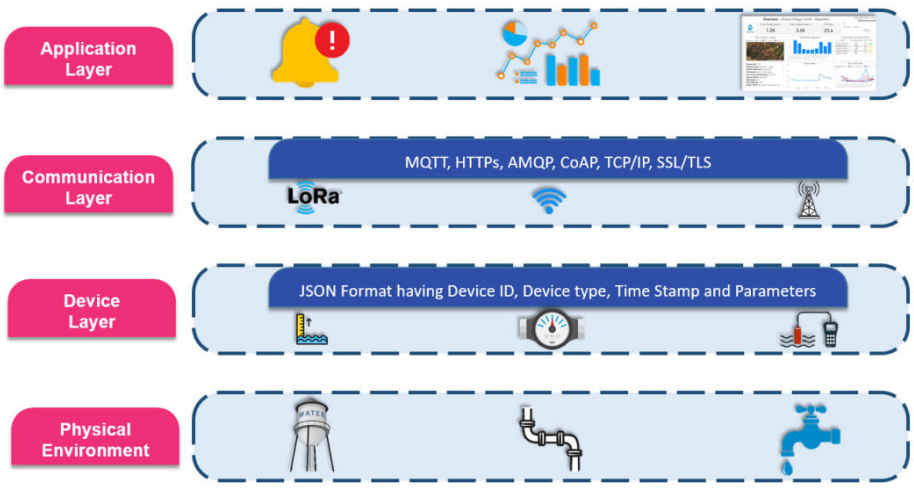
Under the thrust areas defined by JJM in the "Guidelines - Research & Development Projects", the proposed project targets monitoring the service delivery of the water supply system using smart technologies. The proposed IoT-enabled end-to-end solution for measuring water quantity, quality, and regularity offers both off-the-shelf-commercially available and CSIR's water technologies integrated with future-proof communication protocols and technologies for SMART water management.

Methodology

The major work packages involved in the project are Sensor-Systems, IoT, Cloud & Data Analytics, Dashboard &Visualisation for developing and demonstrating SMART water measuring and monitoring systems for rural settings of India.

The project implementation comprises of two phases, realised concurrently: the first phase involves integrating readily available off-the-shelf sensors with other key technology components such as the Communication modules/layer, Cloud & Data Analytics, and Dashboard visualisation/Application layer (Figure 2). The IoT architecture is then integrated/supported with a suitable Power system (battery and solar module) to make the network long-lived.

The second Phase/Part 2 emphasises the development of affordable in-house/indigenised sensors. Localising/indigenisation phase plays a vital role in demonstrating an integrated, indigenous IoT-enabled sensor station at the pilot location to monitor water service delivery. The indigenisation phase brings the cost down significantly and reduces system breakdown time by providing local service, repair, and replacement support. The project positioning includes incremental development of lab-scale technologies to land-based deployment under the guiding principles such as affordability and scalability, PAN-India basis.



Proposed Architecture of Smart Water Monitoring in rural areas

Innovations

- Indigenous **IoT architecture** (Sensors, GW, Cloud and Dashboard)
- Data Integration and Deployment of **ETL Layer**
- Standards and **protocols** for hardware and IoT established (JSON Format having Device ID, Device type, Time Stamp and Parameters, MQTT, HTTPs, AMQP, CoAP, TCP/IP, SSL/TLS)
- **Calibration:** On-site/auto (installation/periodic/predictive)
- Indigenous RISK-PiNET package for **Pipe Condition Assessment, Contamination Risk Assessment, Replacement planning of Water Distribution network with Cost estimation**
- **Vulnerability** assessment to fail - High, Medium, Low
- Performance index of the **network** and suggestions to improve service delivery
- Estimation of **Contamination** risk in each pipe - High, Medium, Low

Present Status

- The implementation of sensors and IoT modules have been successfully installed at the CSIO Field-Test-bed site, Chandigarh and CSIR Science Centre Site, New Delhi.

Deliverables

An integrated and indigenous **SMART water management system** (Sensor-nodes, Gateways, Cloud & Analytics, and Dashboard-visualization) for service delivery measurement and monitoring (quality, quantity and regularity).

JJM-CSIR-States/ UTs Interface: IoT Pilot Implementation Visit in different States

Conclusion& Future Scope

- The project is completely aligned with the NJJM, which talks about ensuring 55 LPCD for rural development.
- NJJM focuses on measuring and monitoring the benchmarking parameters for water service delivery, including quality, quantity and regularity.
- So, this project entitled -**Affordable IoT- enabled Water Service Delivery Measurement and Monitoring Sensing System for Rural Deployment** essentially takes care of these aspects of measuring and monitoring the water service delivery parameters in terms of quality(Ion sensors), quantity(flow-meter, pressure sensors, etc.) and regularity.

- Indigenously various components have been developed in this program, which **will give a boost to the NJJM** in terms of its upscaling efforts and growing the relevant ecosystem which is required to establish IoT enabled pilot system across the country PAN-India basis.

In future, the outputs and outcomes generated by the project can be deployed/employed/extended on various water platforms, such as rural/urban settings - water service delivery monitoring (for quality, quantity and regularity), by working with multiple public-private stakeholders/agencies/ NGOs

**Senior Principal Scientist& Project Leader*
CSIR-CSIO, Chandigarh

Advancing Gender in Public Health Through Liquid Gold Support System

Ms. Kavita Prasad*

Introduction

This article will provide you with the opportunity to think about breastfeeding (Liquid Gold) and its public health implications on Socio-Ecological Model (individual, interpersonal, community, organizational, and public policy) impacts breastfeeding practices globally.

The role of Gender in public health is a field that examines the impact of social, cultural, and economic factors on health outcomes, aiming to identify and address disparities and promote equitable access to healthcare for all genders. Breastfeeding, on the other hand, is a natural and fundamental practice that not only provides optimal nutrition to infants but also offers numerous health benefits to both mothers and babies. Combining the principles of gender public health with breastfeeding support can yield positive outcomes for individuals, families, and communities.

Understanding Gender Disparities in Breastfeeding

Breastfeeding is a profoundly gendered practice, with distinct societal expectations, roles, and responsibilities assigned to both mothers and fathers. Historically, the burden of breastfeeding has primarily fallen on mothers, often resulting in challenges related to maternal mental health, career progression, and societal pressures. Gender public health emphasizes the importance of recognizing and challenging these gender norms to ensure that breastfeeding is a shared responsibility and experience.

Challenging Gender Norms

To promote equitable breastfeeding practices, it is essential to challenge traditional gender norms and expectations. This can involve advocating for policies that support parental leave for all genders, creating breastfeeding-friendly workplaces, and providing accessible and inclusive lactation support services. By dismantling gender stereotypes and supporting a more equitable distribution of caregiving responsibilities, gender public health initiatives can empower all parents to make informed choices about infant feeding.

Inclusive Language and Education

Effective communication is crucial for promoting breastfeeding and gender equality. Gender-sensitive language should be used in educational materials and campaigns to acknowledge the diversity of families and caregivers. Moreover, breastfeeding education should encompass a wide

range of gender identities and expressions, ensuring that all individuals have access to accurate information and support tailored to their needs.

Healthcare Provider Training

Gender public health principles can enhance healthcare provider training programs to ensure culturally sensitive and inclusive care. Healthcare professionals should be educated about the unique challenges faced by individuals from diverse gender backgrounds concerning breastfeeding, and be equipped with the skills to provide respectful and supportive care. This can foster a safe and nonjudgmental environment, encouraging open dialogue and adequate breastfeeding support.

Promoting Mental Health and Well-being

Breastfeeding can have significant mental health implications for both parents. Gender public health recognizes the importance of addressing mental health challenges within a gender-sensitive framework. Support systems should be established to help individuals navigate the emotional complexities of breastfeeding, including postpartum depression and anxiety. By addressing these issues holistically, gender-sensitive breastfeeding support can contribute to improved mental well-being for parents and families.

Conclusion

The integration of gender public health principles into breastfeeding support initiatives represents a significant step toward achieving health equity and promoting well-being for all. By challenging traditional gender norms, promoting inclusive education, and providing culturally sensitive care, we can create an environment where breastfeeding is seen as a shared responsibility and a vital aspect of holistic health. Through collaborative efforts between healthcare providers, policymakers, and communities, we can pave the way for a future in which every individual has the opportunity to make informed choices about infant feeding, irrespective of gender, and contribute to a healthier and more equitable society.

**Sr. Consultant, India Water Foundation*

Zero-waste Green School –A quest for finding solution of urban squalor and climate change

Principal*

The summer of Delhi this year was unusual. It repeated a long-forgotten history of cool summer and the rain began in time. Year after year we are observing some or other unusual features of different seasons. The reason is said to be the rolling mill of climate change, gaining momentum with each passing year accelerating the changes in climatic features around the world not at all congenial for life on earth. The effect of climate change is affecting and will affect millions of human lives around the world. It is also a reason behind mass extinction of animal and plant life forms. Such extinction happened before also, but the chief engineer behind climate change is human being this time, that is the difference from the earlier extinctions and the present one which is happening and will happen at a more ominous scale in future decades. Apart from the disappearance of non-human life forms around us which will cripple human civilization inevitably, other changes on earth will make our life miserable before apocalyptic changes start knocking at our door. Depletion of ground water table, problem of terminal heat at the end of the busiest cropping season of India, the winter, reduces crop yield drastically; untimely rain and hail storm at harvesting seasons, wind erosion, unusual high temperature in temperate countries accompanied by forest fire, consecutive cyclones and super cyclones all are signs of the accelerating pace of climate change.

Global warming has been accepted worldwide as the key factor behind these changes. It is happening due to the arrest of solar energy within the limits of atmosphere due to change in composition of it. Anthropogenic activities can be held solely responsible, directly or indirectly, for this change in atmospheric composition if we compare it with other sources. Our civilization measures its success in terms of GDP growth, which takes growth in monetary terms. More income, more production in industries, more consumption, more spending, more trade etc. are the principal parameters which guide the estimation of prosperity of a country. In the process of chasing these numbers we forget the activities carried out and materials which literally 'fuel' the chasing process. Among the indicators of growth of a country's economy consumption of fossil fuel, number of fuel burning personal vehicles, rising power consumption which is mostly generated by burning fossil fuel are mentioned with pride. Increased production leads to increased job opportunity and thereby increased disposable income which again give rise to increased consumption of manufactured items, food items and increased luxury in life. All of these have their share in increase in generation of carbon di oxide, methane and many other solid, liquid and gaseous products in the form of waste or end product. The former two gases, commonly known as 'green-house gases and many other gases are the chief culprits in arresting heat energy radiating from earth's surface thereby increasing

global temperature steadily. Apart from destabilizing the natural wind and oceanic currents leading to erratic climatic events, increased temperature melts ice caps and glaciers of the polar regions and mountain ranges leading to rise in ocean level. Increased level of carbon di oxide turns ocean water acidic jeopardizing marine creatures that convert these green-house gases in elemental forms. Increased global temperature releases methane from melting permafrost layers of the arctic belt accelerating the process of global warming. Increased level of income enhances the consumption of processed foods and animal products leading to heightened level of commercial food production process e.g., dairy farming, farming of fine rice, factory farming of animals which again increase the levels of both principal green-house gases.Increase in global temperature makes agricultural activities risky and changes crop selection. The replacement of apple orchards of lower Himalayas with pomegranate orchards is one such example. Increased industrial and agricultural activities deplete the ground water table that has become alarming in many parts of the world. Increase in industrial production process leads to increase in production of plastic which are discarded all over the world mindlessly. Apart from the danger of incorporation of micro-plastic, generated by fragmentation of polymer chains, in food chain, discarded plastics and similar synthetic polymers are virtually choking the earth, her natural processes of living and breathing manifested through marine and terrestrial life forms. Economic prosperity leading to rapid urbanization is increasing the use of cements in construction works which are carried to the ocean floor to block the natural gas release and exchange process, destroying the marine creatures and poisoning the oceans. So, we see how our unsustainable processes of economy-centric activities are giving rise to vicious cycles of destruction of otherwise well balanced nature and how one activity is linked to the other through their products and by-products and the deleterious effect of them.

Common people are oblivious of the facts and figures and their consequences. That is usual. Big civilizations in their hay days become insensitive to serious, unpleasant facts and gradually slip towards sure path of destruction. Roman civilization, Mesopotamian civilization, Mayan civilization all tell the same story. Maya civilization, famous for the huge temples dried up due to over felling to supply tall supports for construction, when there was a 12-year long drought going on. Experts guess so. Today's vast desert of Iraq and Syria was once the birth place of agriculture. It was assumed that over irrigation with abundant water resources washed off the fertile soil surface. We are chocking ourselves with chemical wastes, solid, liquid or gaseous – and chocking the supporting environment with them. We are wasting precious resources every day. Even the semi- or illiterate poor people, who will face the worst wrath of scarcity of resources the most never pay heed to the warning preaches. Our sweet water resources are drying up. They are being polluted to the extreme level so much so that some of them could not support life any more. Take Yamuna River for example. In dry seasons, the rive stinks from miles away. Imagine how much poison we are consuming everyday by eating vegetables irrigated by Yamuna water. Precious ground water level is going down each year and this Haryana-Delhi-Rajasthan region will be one of the most

perched regions of the country if things go unchanged. Now ask your maid to use tap water judiciously while washing utensils!

Conscience can't always be kindled by preaching. One has to set an example before all to ponder, follow or call others to have a look. Seeing is believing. One has to place tangible products or results to sensitize the masses. Voluntary organizations are working for years devoted to the cause of clean and sustainable growth models to save our environment. Gyan Mandir Public School of Naraina, an organization with educational activities as its primary engagement, is in the forefront with its workforce and students to serve to the cause of saving environmentby re-using, re-cycling and conserving resources around our daily life generally treated as waste material. Innovative use of materials to create new items from them hardly imagined by common people, conservation of water, creating essential items at low cost with environment-friendly material, recycling waste material, thrown away as garbage are some of the focused areas in which the environmental action team of the school excels and have got recognition for them.

No doubt, there is a lot of learning involved at every level. Students get the opportunity to involve themselves in experiential learning which is skill based and the need of the hour. They also developed their oratory skills, public relations skills, their negotiation power and convincing abilities. Learning beyond books and classrooms helps a child learn more effectively. Gyan Mandir Public School, Naraina Vihar actively fosters environmental stewardship and sustainable development in its education, planning and practices. With a strong commitment to build a greener environment, the Eco Club of the school champions the sustainability of the world and its environment. When we develop a vision and mission that works in the benefit of the community, the steps in creating an action plan is very important,especially those first steps which are well grounded in community beliefs and values. Awareness of the important issues in the community is critical for the development of a strong, effective, and enduring action group. One of the first steps involved while undertaking any community welfare task is to define the issue(s) that matter most to the people there. When the localities realise that there are no immediate benefits involved in it and instead it requires patience before reaping the benefits, the task of convincing the masses becomes challenging.

Some of the products which are the outcomes of the sustained and focused activities of our school have been portrayed below:

Biodegradable spoons created from common edible materials: Plastic builds up in landfills much faster than it can degrade. From there, micro plastics dissolve into the groundwater and air, get attached with biomolecules, enter the food chain and ultimately end up in our vital systems. The edible and biodegradable spoons are a tasty way to cut down on single use plastic. The spoons come from wheat and barley and are a much healthier and fancy option. What a healthy way to tickle our taste buds!

Synthetic material-free bio-degradable Sanitary napkins: The universal reality of sanitary napkins cannot be undermined.One of the studies reveals that most women are oblivious that commonly available disposable sanitary napkins in market constitute around 90 per cent plastic and they are adding to the plastic pollution. Nearly, 113,000 tonnes of used sanitary pads are dumped in landfills in India every year, that adds to the already existing plastic pollution.

According to one of the reports released by environmental group Toxics Link, improper disposal methods and non-segregation of menstrual waste from household waste, leads to germ-infested working conditions for waste workers, and causing the risk of infectious diseases among them. Improper burning of used sanitary pads in low cost, low-temperature incinerators can release harmful gases, causing more harm to the environment and our health. Gyan Mandir Public School has been bestowed with 'Green School Award' for its green initiatives. Keeping the legacy alive, students of Eco club decided to make eco-friendly sanitary pads.

These napkins are reusable pads. The layers of sanitary pads are made of polar fleece and lycra. The absorbing part is composed of cotton fibres. A team of 50 students are engaged in this project. The group has been sub-divided into teams of ten to twelve students. A team handles production, while another takes care of marketing and so on.

Leaving behind family, friends, vocational identity, familiar environment, and, in some cases, conveniences to cross traditional and cultural taboos act as big barriers and can be extremely challenging. For example, the ladies in the nearby slum area of Naraina Vihar were not at all ready to learn the skill of making reusable sanitary pads. They whispered amongst themselves and considered the school students 'bavli' (crazy) for taking up such subjects publicly.

Such initiatives help learning, acquire a different dimension and also helps accumulate quality knowledge in building a sensitised and ever evolving society. The school's initiative of teaching the women of the nearby slum how to make biodegradable sanitary napkins, proved to be a blessing

for them. The entire community learnt the importance and the need to preserve and conserve our self-sustaining planet.

Manure prepared by waste collected from students: Students of Gyan Mandir Public School have never shied away from taking up initiatives and partnering in responsibilities that aim at community development.

Preparing manure at their own level and then using it in growing healthy plants was a thoughtful step taken by the students and also taught them the methods of composting and the importance of segregating dry and wet waste.

Water and electricity bill control measures: Water and power are resources which seems to be cheap or inexhaustible. Water is considered cheap and free flowing when we get them in our urban household. The over-use of ground water for agriculture and industry have remained a matter of concern for environmentalists for long. In urban landscape the scope of recharging the ground water table is so low that very soon the usual free running water will be a matter of past for us. Similarly electricity use is becoming intensive day to day and though the burning of fossil fuel to produce it keeps the pollution localized near the power houses, the inevitable global carbon footprint is there. Wastage of both are to be considered as criminal offence. Strict auditing of their use is a definitive step towards stemming their wastage. The school already has water table re-charge pit at its premises for rain water harvesting.

Installation of water saving tap nozzles, water conserving flushing system along with the rain water harvesting pits are the parts of the three-step mechanism to execute and activate the value system of water saving among the students. Electricity wastage monitoring mechanisms are also installed in places to reduce the power bill thereby lighting places where it is needed through innovative low consumption technology have also been installed in appropriate places.

Creating decorative items from waste paper: The use and throw culture of western world is alien to us. Indians are ridiculed for recycling-re-using objects and materials, otherwise considered as waste items in rich countries.

Yet the pollution-enhancing practices of use and throw is catching up with opening up of economy. Try to purchase a refill of a ball point pen from your neighbourhood stationery shop and then you will realize. Refills of a very few models will be there and we are also insensitive to the volume of plastic that will end up in land fill by throwing away a full pen, which can be fitted with a thin refill otherwise. As a next door example of 'Waste to Wealth' the teachers and students take this up as a good habit in day to day life. Occasions such as 'Earth Day' and 'zero period competitions ' are organised with an intention to impart such useful and sustainable ways to reduce the throw away waste load of our already overloaded waste mountains.

Through all these activities with a tangible product or effect the following have been achieved by the school

- ✓ It has completely stopped single use plastics
- ✓ 100% of paper is recycled/reused in some way
- ✓ The school is promoting zero food waste policy wherein we motivate our students to bring organic waste from homes and same isfed into a decomposing machine.
- ✓ Solar lights have been installed inside the campus
- ✓ The school is an active participant of the campaign "Catch the Rain" of Hon'ble Prime Minister of India Shri Narendra Modi.
- ✓ Urja mela drive have been initiated.
- ✓ The school has a herbal and vertical garden

The school has already won the Earthian Award and is active in community practices like:

- ➢ Cleanliness related like cleaning the streets.
- ➢ Education related like educating underprivileged children
- ➢ People service like visiting old age home

Compassion for earth and the environment is a value that is fast eroding in societies inebriated with the mirth of consumer culture. Values cannot be taught, they should be 'caught'. Young souls are fertile ground for innovation and imbibing new ideas. They should be rounded up for holistic educational programmes as early as possible to channelize their nascent value learning process into realms of sensitivity towards mother nature and her well being, just as from very childhood our children at traditional homes learn compassion for the young and the old from the activities of elders and parents who take care of children and ailing aged members with compassion and respect. Schools are ideal places for creating the future foot soldiers of the earth who could effectively outpace the degradation process of the only inhabitable planet known to us. Our school has such a mission of developing value system and thought process among the students and spreading the sane messages of conscience around the society to save the souls of the planet earth.

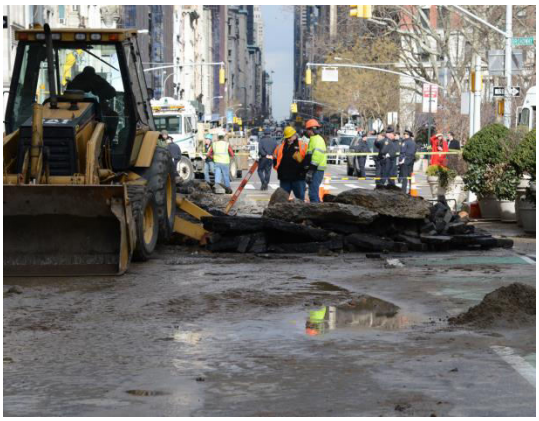
**Principal, Gyan Mandir Public School of Naraina Vihar*

Reflection of the USA's Water Situation through the Lens of the Youth

Aaditya Shah* & Raghav Paladugu*

Local Problems

Water problems can have far-reaching consequences, even in developed regions like Somerset, New Jersey. Recently, a local crisis emerged when parts of the county were placed under a mandatory boil water advisory due to a water main break, affecting communities in Bridgewater, Hillsborough, Raritan Borough, and Somerville. The precautionary measure was taken as the company recognized that standard home filtering devices might not offer sufficient protection. Disturbingly, some residents were informed that they might even have to endure temporary water shortages while repairs were underway. Although the situation only persisted for a few days, it sheds light on the unexpected challenges faced by seemingly well-equipped counties. While not on the scale of international water issues, this incident serves as a poignant reminder that water problems can affect anyone, anywhere, regardless of development status. To address such vulnerabilities, increased investments in water infrastructure and contingency planning are crucial to ensure the continued availability and safety of this vital resource.



With the effects of climate change becoming more evident over time, issues in other sectors such as water become more profound. As the climate changes, residents in New Jersey are definitely feeling its impact with how dry it has become. According to data from the US Drought Monitor for New Jersey, 74.4% of the state is experiencing abnormally dry conditions while 19.29% of the state is experiencing moderate drought conditions as of June 26, 2023. Keeping the statistics aside, it is clear from mere personal observation that residents are experiencing much drier conditions this year. Indicators such as dry, brown grass and lawns throughout much of the summer tell residents of the abnormal conditions this year. This issue exists against the backdrop of a more pressing issue, the less-than-usual rainfall in New Jersey. It is reported that there has been less than half of the normal rainfall over the last 30 days (in June 2023) in New Jersey. This summer, New Jersey has been receiving less rainfall than what it usually receives, raising several concerns about water availability and conservation. Given these concerns, the state government has provided advisories regarding the public water usage and urges the public to conserve water. The NJ Department of Environmental Protection has outlined 10 simple steps, such as collecting rainwater and water from

dehumidifiers for their plant/landscaping needs, which residents can follow to do their part in helping relieve this issue. This issue within New Jersey serves as a microcosm of what is occurring in a myriad of regions across the world. It is crucial to take necessary steps, even if they are small or simple, in order to combat such issues locally and globally.

Successful stories

The successful development of cleaner water in our society hinges on crucial factors, with the youth playing a vital role in achieving this goal. As the ones who will bear the largest impact on the environment in the future, they hold the key to shaping their own lives and the world they inherit. Among the youth, students, in particular, are well-positioned to effect significant change. An ideal example is the Environmental Club at Franklin High School, which organized an impressive Green Fair. This event educated students about sustainability and environmental care, enhancing their awareness of pressing issues. The commendable initiative these young individuals take underscores the potential for positive change when the youth actively engage in such endeavors. By spreading awareness and knowledge about environmental challenges, they become better equipped to address and mitigate these problems in the future. Encouraging more events like the Green Fair can nurture a generation that values and prioritizes the health of our planet, paving the way for a cleaner and more sustainable water future. Empowering and supporting the youth in their efforts will play a critical role in creating a brighter environmental outlook for generations to come.

Local places of worship are also taking part in spreading awareness and creating sustainable environments around them. The Maha Periyava Manimandapam of Flemington, New Jersey has created a sustainable environmental program for the temple, named Project Prakurti (transl. Project Nature). Partnering with several environmental organizations such as EarthDay.org, National Wildlife Federation, NJ Water Supply Authority, etc., the temple strives to protect and preserve the environment through devotee-run initiatives. Initiatives include saving and improving soil by composting organic waste in the temple, supporting a small garden that produces all necessary fruits and vegetables, planting trees, and many more. The temple encourages a lot of the youth to participate and volunteer in these initiatives, in order to create a more informed and proactive generation of people who can help create a greener future. Such programs require more encouragement and support. Also, they need to be implemented in more places of worship and other general institutions, such as schools, colleges,

universities, offices, etc. Creating and expanding these programs will help protect the environment for generations to come.

Water Governance

As important stakeholders, officials, and policy-makers collaborate to achieve Sustainable Development Goal (SDG) 6, an important aspect that comes into play in water governance. Legislation and policies are necessary in order to control, protect, allocate, distribute and use water resources. Water governance in New Jersey, as in other states across the United States, is a complex, multi-layered system, encompassing local, state, and federal regulations and agencies. In New Jersey, water management is primarily overseen by the Department of Environmental Protection (DEP), which is responsible for the implementation of state and federal laws concerning water quality and quantity, including the Clean Water Act and Safe Drinking Water Act. The DEP sets and enforces water standards, permits water withdrawals, and oversees wastewater treatment, storm water management, and protection of critical water supplies. At a more localized level, municipalities, water utilities, and watershed management organizations also play crucial roles in water governance, addressing issues such as water supply, sanitation, and infrastructure maintenance.

Water problem in California

The world is experiencing several water issues with the onset of climate change. In the USA, California is battling the worst water issues over a prolonged period of time. California is experiencing one of the worst droughts in its history for the past couple of decades. Rainfall has been below average throughout the years, causing water reservoirs to be at record low levels. The increasing climate heat in California has been melting the Sierra Nevada snowpack, a critical water source for the state. These pressing issues have forced the local and state governments to implement measures in order to reduce the water usage. Residents are advised to use little water for watering lawns and plants and saving water while showering. In total, the crisis is pushing California towards urgent water conservation measures and a reevaluation of its long-term water management strategies.

Understanding of SDG 6 in USA

In recent years, the USA has made significant progress towards fulfilling SDG 6, which focuses on ensuring universal access to clean water and sustainable sanitation. Notably, almost 97% of the country's population now enjoys access to clean drinking water, marking considerable advancements. Furthermore, close to 98% of domestic wastewater undergoes proper treatment, reflecting the nation's dedication to sustainable sanitation practices. Urban areas have particularly benefited from these efforts, witnessing improved access to clean water. The USA's commitment to clean water is evident through substantial investments in water infrastructure, showcasing a proactive approach to maintaining water quality. Moreover, the country's initiatives in water purification and management of water scarcity have yielded promising outcomes, underlining its determination toward environmental sustainability and public welfare. The progress towards SDG 6 underscores the USA's role as a leader in promoting clean water access and sanitation, setting a compelling example for global endeavors in achieving these essential goals.

Despite significant progress towards SDG 6, the USA faces several challenges in achieving universal access to clean water and sustainable sanitation. Aging water infrastructure in different regions leads to leaks, contamination, and water loss, with limited funding causing delays in necessary upgrades. Marginalized and low-income communities still struggle with inadequate access to clean water and proper sanitation facilities, perpetuating disparities. Water pollution from industrial and urban runoff remains an ongoing concern, impacting water quality. Additionally, the effects of climate change exacerbate water-related issues, including more frequent and severe droughts and floods. To overcome these setbacks, the USA needs renewed dedication, collaboration, and innovative solutions. Prioritizing infrastructure investments, implementing targeted interventions for underserved communities, and effective pollution control measures can drive progress toward ensuring clean water and sustainable sanitation for all. Climate-resilient strategies are crucial to mitigate climate change impacts and build a more resilient water management system for a sustainable future.

**Intern, India Water Foundation*

FRIDAY BLOGS

Did India's G20 Presidency hit the bull's eye?

India's G20 presidency has been regarded by experts across the world as an exceptional and unprecedented opportunity with immense scope and potential. With the motto of 'Vasudhaiva Kutumbakam', it has embarked on the year-long journey of the G20 presidency. Indeed, there is an immense opportunity for steering international coordination towards economic stability and prosperity, which is in general over-arching goal of the G20 organisation. For the Presidency, the country's leadership has already committed itself to exploiting the linkages between economic growth, gender equality, peace, and security and the use……Click here https://www.focusglobalreporter.org/did-indias-g20-presidency-hit-the-bulls-eye/

Recalibrating a New World Order via BRICS?

One of the clearest trends the world witnessed in 2022 was the accelerating eastward shift in global economic power. For almost 80 years the conventional pathway for affecting change and progress in the international system was through the multilateral institutions themselves. Today, however, we are seeing a new wave of "minilateralism" — a style of diplomatic engagement that gives prominence to small- and medium-sized coalitions of like-minded states like the BRICS block. The leaders of the so-called BRICS (Brazil, Russia, India, China and South Africa) gathered in Johannesburg this week in a pivotal meeting for the bloc's trajectory. During his address, Prime Minister Modi called for a strengthened…….Click here https://www.focusglobalreporter.org/recalibrating-a-new-world-order-via-brics/

Water Water Everywhere: Who is Accountable?

Scorching heat gripped parts of Europe, Asia, and North America, bringing with it record-breaking temperatures, driving wildfires, and prompting health warnings and evacuations. It was almost impossible to escape the reports of Canada's wildfires in early June, with large parts of North America also being engulfed in smoke and air pollution as a result of the fires and now the wildfires in Spain. So far this monsoon season landslides and flash floods have claimed at least 91 lives in six north Indian states and disrupted millions more. The record monsoon rains led to massive water logging, road caves-in,…….Click here https://www.focusglobalreporter.org/water-water-everywhere-who-is-accountable/

Human Right to Climate Finance: A chimera or Reality?

There has been increased attention put on the financial resources needed to help developing countries mitigate and adapt to climate change (climate finance). The governance and distribution of climate finance have implications for the full range of human rights, including the rights to life, health, food, water, housing, and culture, among others. During the UN Climate Change Conference (COP27) in Egypt, participating countries reiterated their commitment to limit global temperature rise, enhance efforts to reduce emissions, address climate impacts, and provide support to developing nations. Climate change is a human rights issue for the…….Click here https://www.focusglobalreporter.org/human-right-to-climate-finance-a-chimera-or-reality/

Climate Justice: A privilege or Human Right?

Since systematic scientific assessments began in the 1970s, the influence of human activity on the warming of the climate system has evolved from theory to established fact', reports IPCC. The 2022 UN Emissions Gap Report says 'Equity is central to addressing lifestyles. The emissions of the richest 1 per cent of the global population account for more than twice the combined share of the poorest 50 per cent'. The UN High Commissioner for Refugees estimates that 21.5 million people are displaced by climate change related disasters every year- more then twice the number of those forced to flee conflict or violence. Today more than 2 billion people live in countries vulnerable to the climate crisis……..Click here https://www.focusglobalreporter.org/climate-justice-a-privilege-or-human-right/

Artificial Intelligence: Privilege or Plague?

Artificial Intelligence is rapidly shaping the future of humanity across nearly every industry. It is already the main driver of emerging technologies like big data, robotics and IoT — not to mention generative AI, with tools like Chat GPT and AI art generators garnering mainstream attention — and it will continue to act as a technological innovator for the foreseeable future. As per the World Economic Forum report AI expenditure in India is expected to reach $11.78 billion by 2025 and add $1 trillion to India's economy by 2035. Lots of industries go through the pattern of winter, winter, and then an eternal spring and we may be in the eternal spring of AI. It is impacting transportation, education, healthcare, manufacturing, customer care, media etc. Transparent processes of AI development are more important than ever……Click here https://www.focusglobalreporter.org/artificial-intelligence-privilege-or-plague/

Ecosystem Restoration: Trajectory to Achieving SDGs by 2030

The world is crying out for high-level political action. Actions to make the Sustainable Development Goals a reality for everyone, everywhere" said Antonio Guetress, Secretary General United Nations at the general debate of the High Level Political Forum 2023 in New York. The goals are self-consciously ambitious, and are at least partly intended to encourage extra effort beyond current levels. In today's age, climate change poses the single biggest threat to sustainable development everywhere and its widespread, unprecedented impacts disproportionately burden the poorest and the most vulnerable. During the discussions at HLPF that I have been attending in New York the discussions are unfolding on the stumbling blocks in the way to achieve the SDGs by 2030…….Click here https://www.focusglobalreporter.org/ecosystem-restoration-trajectory-to-achieving-sdgs-by-2030/

Water Governance: Need for Commitment in Convergence

The summer monsoon brings South Asia 70-80% of its annual rainfall, as well as death and destruction due to flooding and landslides. During monsoon, rivers tend to swell in their flood plains. Lakes and wetlands retain excess surface runoff, while forested lands help in soil retention and groundwater recharge. Urban areas are expanding and engulfing the open spaces which were major drainage points or forests in the past. The land use and land cover changes caused due to urbanisation occur at the cost of building on open spaces, green areas, and water bodies. Wetlands manage the runoff during the onset of monsoon, nurture a microclimate around them and help maintain ambient temperatures. Catchments of wetlands deserve more environmental protection than the water bodies themselves.……Click here https://www.focusglobalreporter.org/water-governance-need-for-commitment-in-convergence/

Will India achieve the SDG 2030 Agenda before Time?

The recent visit of Amina Mohammed UN Deputy Secretary General focused on a range of critical topics, including India's ongoing G20 presidency and its remarkable achievements in the Sustainable Development Goals and issues related to Climate Action in context of developmental priorities. This exchange of views becomes particularly significant in light of the upcoming SDG summit in September this year. India currently has the capacity to generate just over 40% of its power from renewable sources so the 50% target is achievable by 2030, according to the UN and Climate Action Tracker. India has highlighted many times that it wants to bring a third of its land area under forest cover, which can help absorb carbon from the atmosphere and plans to plant enough trees by 2030…..Click here https://www.focusglobalreporter.org/will-india-achieve-the-sdg-2030-agenda-before-time/

Ushering CSOs to be the Catalyst for Transformation

India is a diverse country with a large population that faces various challenges related to poverty, healthcare, education, infrastructure, and employment. The government of India has launched several policies and initiatives over the years to address these challenges and enable communities to achieve their full potential. These initiatives have led to increased financial inclusion, improved healthcare facilities, digital literacy, and entrepreneurship opportunities, and better employment prospects. The progress made so far in implementing these policies has been impressive. For instance, National Research Foundation (NRF) Bill, 2023 …..Click here https://www.focusglobalreporter.org/ushering-csos-to-be-the-catalyst-for-transformation/

Can Modi Yoga Recalibrate Soft Diplomacy for India's Permanent seat at UNSC?

We are left in an interesting — and concerning — place these past couple of years. The world's pandemic proved it was far from over, sickening millions and affecting economies. Global inflation hit 9% in 2022, its highest level since 2008. Russia's invasion of Ukraine displaced millions of people and sent ripple effects throughout food and energy systems. And the impacts of climate change — from deadly floods to withering heat to drought — acted as a threat multiplier. The poor felt the effects most acutely. Up to 95 million people were pushed into poverty. It wasn't all bad news: Renewable energy capacity jumped 8% last year, while all countries signed onto a landmark UN biodiversity agreement to conserve 30% of the world's land and water by 2030.....Click here https://www.focusglobalreporter.org/can-modi-yoga-recalibrate-soft-diplomacy-for-indias-permanent-seat-at-unsc/

Will SB 58 decipher Just transition and transformational adaptation enroute COP 28?

We are in a race against time in this climate emergency. Governments must use the time and opportunity to prepare for an ambitious outcome at COP28 that is in line with the scale of the climate crisis we face. This means a clear plan to end the dependence on fossil fuels – oil, gas and coal – and to deliver support to those impacted by climate disasters by delivering more adaptation finance and ensuring the operationalisation of the Loss and Damage fund. The Global Stock take must serve as a moment of accountability and lay out a roadmap for updated and enhanced national climate targets that will keep global warming below 1.5 degrees. Here at the Bonn Climate Change Conference 2023 (SB58), "transformational adaptation" and "Just trasition" is the phrase echoing around the corridors and assembly rooms. Everyone recognizes the challenges associated with planning and implementing these actions,…..Click here https://www.focusglobalreporter.org/will-sb-58-decipher-just-transition-and-transformational-adaptation-enroute-cop-28/

Commitment to Good Governance, Pro-Activism or anything else can change the world?

Everybody agrees that we are living through unprecedented times. The nature and scale of what the triple planetary crisis has led to is unparalleled. In such a scenario, solutions are unlikely to come from past experiences or best practices. The biggest source of strength now is the partnerships we have built over the years. The situation at hand calls for stakeholders to come together, work side by side and support each other. The state plays a significant role for bringing together aware and awakened citizens and organizations through provisions……Click here https://www.focusglobalreporter.org/commitment-to-good-governance-pro-activism-or-anything-else-can-change-the-world/

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Prospective expectations from the Global Plastic Treaty Negotiations

The triple planetary crisis of climate change, nature and biodiversity loss and pollution and waste is upon us and bearing down harder every year. If we do not act strongly, this crisis will crush our chances of delivering on the Sustainable Development Goals. We can forget about ending hunger and poverty, delivering peace and equity, and living in harmony with the natural world. Without a change in policy and management, plastic waste is modeled to triple by 2060 compared to 2019. Even with far-reaching actions, 710 million metric tons of plastic waste will enter environments from 2016 to 2040. Plastic, a currently indispensable manmade materi……Click herehttps://www.focusglobalreporter.org/prospective-expectations-from-the-global-plastic-treaty-negotiations/

Recalibrating India's Climate Solidarity with Global South

IPCC has warned that India—home to 20 percent of the world's population—could face multiple climate change-induced disasters in the next two decades. In the African continent, meanwhile, eight countries are among the ten most vulnerable in the world. Yet, climate is a global common, and therefore the mitigation of climate change is a global public good. This shared responsibility to combat global warming continues to shape international climate change diplomacy, paving the way for agreements that seek mitigation and adaptation measures, and the appropriate financing. Indeed, the evolution of climate diplomacy has been a logical consequence of long-lasting concerns about nature and human survival that have preceded the construction of the current climate action regime…….Click here https://www.focusglobalreporter.org/recalibrating-indias-climate-solidarity-with-global-south/

Can we shatter the shackles of Plastic Debris?

The choice for the first set of single-use plastic items for the ban was based on "difficulty of collection, and therefore recycling. While technology takes its leaps and bounds to help us live our life more comfortable, we must not forget that the earth should also be able to sustain this advancement. We use so much plastic in our day to day lives, at home and in the kitchen that even recycling one item you maybe wouldn't have done before can make a world of difference. Though the central government has issued the ban, the implementation lies with the respective state governments and their state pollution control……Click here https://www.focusglobalreporter.org/can-we-shatter-the-shackles-of-plastic-debris/

Building Back Biodiversity: A Prerequisite for One Health Approach

The loss of biodiversity can have significant impacts on human health if we do not guarantee that the ecosystem services it provides are protected. Recent diseases such as SARS, avian influenza, Ebola – and the enormous health, economic, and societal impacts of COVID-19 have not yet solicited global unity on the importance of preventing pandemics rather than responding to outbreaks as they emerge. COVID-19 sparked a global health, economic, and societal emergency unlike any other in recent history. It killed more than 6.3 million people as of June 2022, with true mortality being possibly three times higher and numbers continuing to rise. The IMF projected the cumulative output loss from the pandemic through to 2024 to be about $13.8 trillion. Recent studies point out that biodiversity……..Click herehttps://www.focusglobalreporter.org/building-back-biodiversity-a-prerequisite-for-one-health-approach/

Mann ki Baat: Rhetoric or Tool for Transformation?

The format of Mann ki Baat is a monologue by the Prime Minister, where he shares his thoughts, experiences, and ideas on a wide range of topics. It is a unique initiative that aims to establish a direct connection between him and the citizens of India. It serves as a platform for the Prime Minister to connect with the people, understand their aspirations, and share his vision for the nation's development. Mann ki Baat' has influenced people to the extent that they have expressed interest in working for nation building and feel their approach towards the government has become positive. Moreover they feel optimistic about the government's working and the country's progress…….Click herehttps://www.focusglobalreporter.org/mann-ki-baat-rhetoric-or-tool-for-transformation/

Decoding the conundrum around Water Security in India!

The overall human impact due to overpopulation on the environment is causing overconsumption, excessive pollution, and proliferation of technology has pushed the planet into a new geological epoch known as the Anthropocene. With the advancement of science and technology, the mortality rate among humans has reduced significantly and within the last two centuries the population has increased manifolds. India is surpassing China to become the world's most populous nation this April. According to the United Nations World Urbanisation Prospects, Delhi-NCR will become the most populous urban agglomeration surpassing Tokyo by 2030...Click herehttps://www.focusglobalreporter.org/decoding-the-conundrum-around-water-security-in-india/

India's SCO presidency: Thrust to regional diplomacy and resilient relations?

India's Presidency of the Shanghai Cooperation Organization (SCO) has come at a time when the global economy and landscape is facing significant challenges due to various prevailing issues. There are newer challenges such as the recovery from the Covid-19 pandemic, the Russia-Ukraine conflict, challenges of economic recovery, obstacles in global supply chains, and energy and food crises along with the changing geopolitical scenarios that are rapidly shifting in the region. By reinforcing mutually beneficial cooperation, preventing confrontation and conflict, and maintaining equal and indivisible security, SCO aims to build a just polycentric world order,……..Click here https://www.focusglobalreporter.org/indias-sco-presidency-thrust-to-regional-diplomacy-and-resilient-relations/

Marine litter and Microplastics: A pestiferous malady?

From the vehicle you ride to the television you watch; plastics are everywhere around us… quite literally! Most plastic items never fully disappear; they just get smaller and smaller (Microplastics). According to a recent report, plastic fragments have been found in the digestive tracts of animals in Mariana trench, the deepest part of the oceans. It is not just the accumulation of plastics that harms the environment – it is also the fragments and toxins released during decomposition…….read morehttps://www.focusglobalreporter.org/marine-litter-and-microplastics-a-pestiferous-malady/

Achieving the 2030 Agenda: Takeaways from 10th APFSD

The discussions all throughout the year from South Asia Forum on sustainable development to the Asia Pacific Forum for sustainable development and finally to High Level Political Forum in New York will be on the theme, "Accelerating the recovery from the coronavirus disease (COVID-19) pandemic and the full implementation of the 2030 Agenda for Sustainable Development" and the Sustainable Development…….Click here https://www.focusglobalreporter.org/achieving-the-2030-agenda-takeaways-from-10th-apfsd/

A game changer Paris moment for Water : UN 2023 Water Conference?

The UN 2023 Water Conference was convened from 22-24th March2023 in New York on the theme of water was after 44 years since 1977 and opened with energy and optimism for a true watershed moment and began with a clear diagnosis of the situation that progress has fallen severely short in achieving SDG 6 for universal access to WASH and actions that work, exist, but must be taken,…….Click herehttps://www.focusglobalreporter.org/a-game-changer-paris-moment-for-water-un-2023-water-conference/

Probability of Equity and Inclusion for Civil Society Actors: Via Civil 20 India 2023?

Civil20 not only represents the voice of civil society in the G20 countries, but also globally, including in the southern hemisphere. Given India's commitment to this year's G20 on collaboration and cooperation as the key to produce solutions to combat many of the world's problems, civil society representatives play a critical and diverse set of roles in societal…….Click herehttps://www.focusglobalreporter.org/probability-of-equity-and-inclusion-for-civil-society-actors-via-civil-20-india-2023/

APFSD a Road to HLPF: Reality or a Fallacy

While the world was grappling with the adverse socio-economic impacts caused by the triple planetary crisis of pollution, climate change and biodiversity loss it was burdened by another 2C of COVID, and Conflict challenging the ability of countries to focus on attaining the SDGs by 2030. The consequences of our recklessness are already apparent in human suffering, towering economic losses and the …….Click here https://www.focusglobalreporter.org/apfsd-a-road-to-hlpf-reality-or-a-fallacy/

UN 2023 Water Conference: Laying bedrock of transformation and action commitments?

The time is to #ACTNOW on water. Despite being an asset that permeates all aspect of our life providing us with sustenance, essential to our survival, and has the power to have a significant impact on geopolitics all too often, water has been undervalued as a resource, and its benefits for ecosystems services and human development grossly underestimated. When the true value of water in our society is not acknowledged,…….Click Herehttps://www.focusglobalreporter.org/un-2023-water-conference-laying-bedrock-of-transformation-and-action-commitments/

Millet: An environmentally sustainable super food?

The world is currently experiencing the disastrous effects of climate change, including storms, floods, heat waves, wildfires, cyclones, and sea level rise. Another issue that has arisen as a result of climatic disruptions and is demanding our immediate attention is global food security. World is facing agrarian as well as nutritional challenges. Agricultural lands with irrigation facilities have been exploited to maximum,…….Click herehttps://www.focusglobalreporter.org/millet-an-environmentally-sustainable-super-food/

India's G20 Presidency: Relevant or Rhetoric for the Global South?

The world faces multiple challenges of war, energy, food shortages, viruses, and recession therefore a global response is needed. The impacts of Covid and the ripple effects of the crisis in Ukraine foretell extreme economic stress and ecological disaster. The developing countries have to come together to redesign global political and financial governance that can remove inequalities and…….Click herehttps://www.focusglobalreporter.org/indias-g20-presidency-relevant-or-rhetoric-for-the-global-south/

UPCOMING MAJOR EVENTS

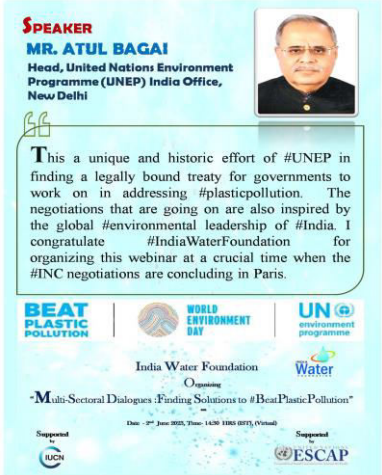
Official side event 'Safeguarding Human Right to Water and Sanitation in India amidst Climate Emergency' organized by India Water Foundation at the 54th Regular Session of the UNHRC:

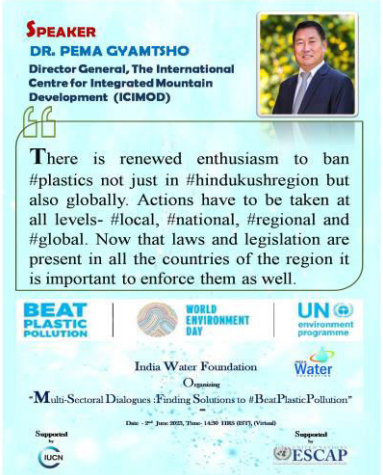
India Water Foundation as an human rights observer of UNHRC and accredited agency of UN ECOSOC has got the privilege to organize an official side event 'Safeguarding Human Right to Water and Sanitation in India amidst Climate Emergency' at the 54th Regular Session of the UN Human Rights Council in Geneva on 14th September 2023 from 17-18 HRS (Geneva time) at Palais des Nations, Geneva.

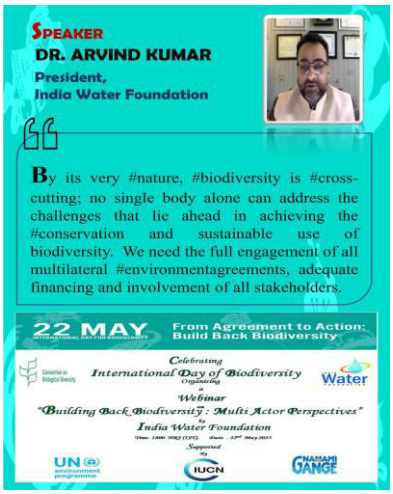
IWF's Water Transversality Global Awards and Conclave

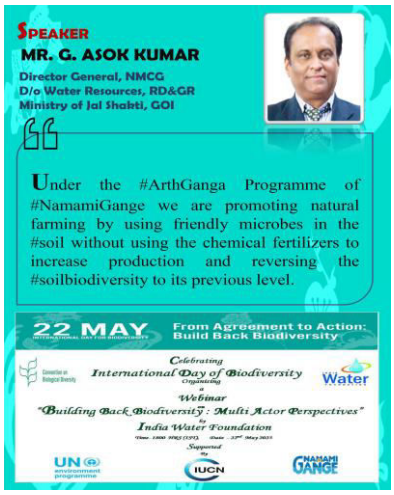
India Water Foundation's Water Transversality Global Awards and Conclave was announced in January supported by the Ministry of Jal Shakti, Department of Water Resources, RD & GR Govt. of India to be held on **2-3rd February 2024**. These awards are to felicitate leaders in transversality. Considering the fact that sustainable Environment is an integral part of the life's existence on earth, it was felt necessary to institute world's first of its kind globally the IWF's Water Transversality Global Awards and conclave is the first of its kind awards in the globe which celebrates the commitment to excellence in multisectors, encouraging all the actors in the water and related sectors, to adopt holistic approach, and to bring in synergy towards sustainability, environment conservation and management.Entries are open to become partners, sponsors and apply for the award. To apply click on - https://lnkd.in/djWvNtb3

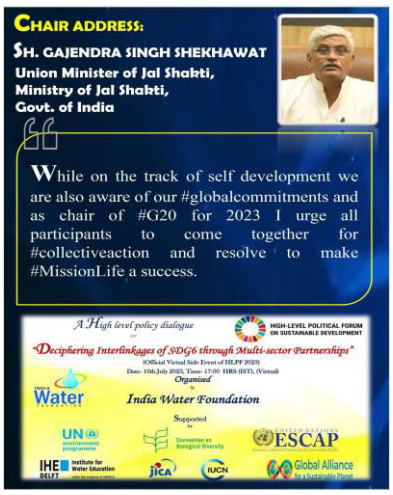
MAJOR EVENTS TWEET'S GALLERY











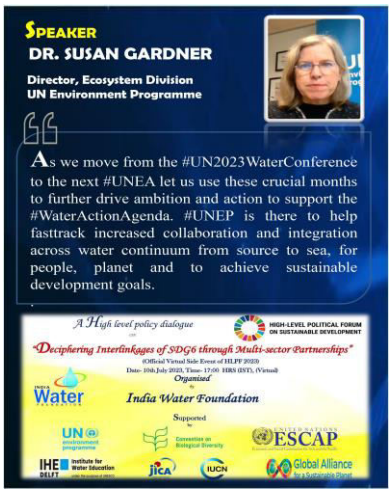


PHOTO GALLERY

NEW YORK - UN 2023 WATER CONFERENCE IMAGES

10TH ASIA PACIFIC FORUM ON SUSTAINABLE DEVELOPMENT IMAGES

For more information…….

www.indiawaterfoundation.org

Ms. Shweta Tyagi
Chief Functionary
India Water Foundation
TEL. NO. 91-11-26349533

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