

# India Water Foundation

**CHRONICLE: 2**

May 2019 – October 2019

**#LabtoLand**  
**#JalMitras**  
**#ForEveryYouth**  
**#CatalystofChange**  
**#BeatAirPollution**  
**#Nooneleftbehind**  
**#SolveDifferent**  
**#GreeningtheBlue**  
**#PuttingPeopleFirst**

President: Dr. Arvind Kumar



Painting  
Vandana Singh  
Chitrakoot



**NO ONE**  
**LEFT BEHIND**



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## Editorial

### From 'No poverty' to 'No one left behind', \$5 trillion economy debate

By Dr. Arvind Kumar, President, India Water Foundation

***Starting from insights gained at UN Governing Council in 2009 served as a focal point to broaden our understanding through various experiences and expertise since it was also the year of economy meltdown and even today, global economies are in doldrums.***



Today, we are well acquainted with the fact that Environmental challenges



have now become more multifaceted and complex, intertwined with socioeconomic factors, sustainability issues, implementation bottlenecks etc. The time has come to think differently about the future, in particular with an understanding that India aims to reach \$5 trillion economy by 2024. As we all know Northern India is hit by "severe groundwater depletion" as a result of excessive extraction, indiscriminate agricultural practices, excess fertilizers, exploiting ground water in the process, witnessed post First

Green Revolution. The focus on water intensive crops like paddy and sugarcane influences cultivation choices in a significant way. As such, the ramifications of the over-reliance on these crops intersects with the water crisis and water quality that India is currently grappling with.

Viewed in a broad perspective, we have to understand the limits that define our reality. The main barriers that prevent developing countries from adopting green growth strategies are a lack of knowledge and skills to deal with these challenges; the absence of an adequate industry-support system to assist enterprises; fragmented and ineffective policy frameworks and difficulties in accessing finance.

Enabling Business of Agriculture aims at making agriculture as a driver of growth and a tool to alleviate poverty, the investments and performance of key players across agricultural value chains, i.e., from farmers to large and small agricultural businesses and to ensure the safety and quality of agricultural goods. We focused to preserve the 'Intrinsic value of water', propagating and employing Nature Based and Science Based Solutions which can sustainably manage and restore ecosystem and will provide environmental sustainability and improving resilience among the communities. The shift in this perspective was extraordinary.

#### ***Do you know?***

***Northern India is hit by "severe groundwater depletion" as a result of excessive extraction, indiscriminate agricultural practices, excess fertilizers, exploiting ground water in the process, witnessed post First Green Revolution***

## Does 'water' carry Economic, Environmental or Social perspective?

Water and jobs are inextricably linked on various levels, given that notably, the shift to a green economy in sectors such as agriculture, energy, manufacturing, and transport is changing the range of tasks and required expertise associated with various jobs, as a result of new technologies, processes and practices. Resource efficiency has a vital role towards mitigation of climate change, land degradation and biodiversity loss. It is thus, imperative to charter and take the path of economic development supported with efficient use of resources and minimum negative impacts on environment, ultimately leading to sustainable development. It has enormous potential for cost savings through 6Rs resulting in reduction in social conflicts due to migration and enhancing increased job opportunities, reduction in environmental degradation. Circular Economy lens has a large potential to change the Demand-Supply proposition of a green economy along with renewing the role of Water as Engaged & Effective Catalyst. Leveraging water as a natural capital away from Linear model of 'Take-Make-Dispose' model will surely serve as a cost-effective, long term and resilient approach.

*Leveraging water as a natural capital away from linear model of 'Take-Make-Dispose' model will surely serve as a cost-effective, long term and resilient approach.*

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and resilient approach.

Consistent, well-defined and efficient pro-resource efficiency and environmental regulations together with the existent support system for SMEs will enhance development of innovative business models which will foster resource efficiency. If skills are upgraded through vocational training, it shall provide impetus to India's GDP. Notably, green development can increase employment opportunities through green jobs, more labour intensive practices. It is essential to plan water investments in conjunction with relevant sectors, such as agriculture, energy and industry in order to maximize positive economic and employment result for MSMEs through 3Ps i.e 'Policy, Planning, and Partnerships'.

### What should "Inclusive green economy" entail?

An "inclusive green economy", must advance both sustainability and social equity as functions of a stable and prosperous country as the factors of economic growth and environmental responsibility are intertwined.

- Integrated River Basin Management (IRBM) like Barack-Meghna river basin encouraged knowledge sharing, community mobilization and active stakeholder participation for transparent and fact based decision making towards water cooperation and should be replicated in other parts of the country as well.
- The ancient traditional wisdom of baolis, sacred groves, tankas should be rejuvenated.
- To augment the prospects of Circular Economy, we must renew the role of Water as an Engaged & Effective Catalyst which can be done by way of harnessing water as scarce resource and leveraging water as a natural capital.

It is therefore essential to adopt a broad, trans-disciplinary perspective among the stakeholders to bring visible impacts. With a proper sustainable policy framework enclosing a twin approach of 'Economic Growth and Social inclusion', we should make collaborative partnerships to make a visible impact and envisage a 'responsible production and consumption' for the near future.

## Feature

### Cracking the menace of Air Pollution

By Shweta Tyagi, Chief Functionary, India Water Foundation

The June 5<sup>th</sup> offers a unique opportunity to draw attention and to create momentum that compels everyone to understand the importance of **Air Pollution**, the theme for this World Environment Day and its linkages with human health, environment and socio-economic development. This theme reminds countries to fulfill their pledges that can help combat air pollution with the underlying idea of Sustainable Development Agenda 2030. In saying so, Let's celebrate this day as '**People's Day for Environmental Action**'.



Few startling facts on **Air Pollution** as underlined by **UNEP**:

It is acknowledged that

\*92 percent of people worldwide do not breathe clean air

\*Ground-level ozone pollution is expected to reduce staple crop yields by 26 percent by 2030

The result which goes by saying 'Air pollution shall cost the global economy \$5 trillion every year in welfare costs'.

**We can't stop breathing, but we can do something about the quality of air that we breathe.**

It's heartening to discern that **Beijing, capital of the People's Republic of China** has recorded a marked improvement from its 2017-levels of pollution which was a result of the "**extensive monitoring networks**" and effective "**air pollution reduction policies**" rolled out by the Chinese authorities in recent years. What about India? Even our capital **New Delhi, home to more than 20 million people, is ranks at 11th place**, making it the world's most polluted capital, ahead of Dhaka and Kabul, according to the study published by Air Visual and Greenpeace. Air pollution steals our livelihoods and our futures. Seeing Beijing's plight few years back, we had written to Government of India on the menace of Air pollution and its potential impacts on health and humanity. We want to make people think about the air we breathe, because when we understand the impacts of air quality on our lives, we will act to protect what's most important.

*Even our capital New Delhi, home to more than 20 million people, is ranks at 11th place, making it the world's most polluted capital, ahead of Dhaka and Kabul, according to the study published by Air Visual and Greenpeace*

Excerpts of Dr Arvind Kumar addressing on the World Environment theme 2019 '**Beat Air Pollution**' as a Chair Person at the Synod College, Meghalaya. The programme was hosted in collaboration with P. A. Sangma Foundation and Meghalaya Basin Development Authority.

## Do you consider Air Pollution as the heart of the problem?

The **Intergovernmental Panel on Climate Change (IPCC) report 2018** reveals that human-induced activities have caused average global warming of 1°C above pre-industrial levels, which gives an understanding of deep linkages between Climate Change and Air pollution. High Climate



Change dynamics across the globe have replicating effect seen through global warming; raising carbon foot print, haphazard urbanization and culminating in enhanced levels of Air Pollution.

### Is **Qualitative Air** a misnomer?

The theme for World Environment Day 2018, hosted by India, was “Beat Plastic Pollution” by 2022 and now we are faced with new challenge of **#Beat Air Pollution**, yet another vexing issue

which gives a clarion call to action for all of us to come together to combat one of the great environmental challenges of our time. Addressing issues pertaining to sustainability requires wider dissemination of the idea among the people. Two questions can be considered under the umbrella of **Clean Air Sustainability**: firstly, as to how long Air pollution will last in the light of existing Production-Consumption patterns; secondly, as to how it should be managed so that future generations have access to **Qualitative Air**.

Do we realize that Air pollution has its inherent linkage with water pollution? More than two billion people are compelled to drink contaminated water. Without access to clean and safe air it is harder for women and girls to lead safe, dignified, productive, and healthy lives. It is now widely recognized that the primary determinant for addressing the issues of health with **UN Environment calling Air Pollution as a ‘Public Health Emergency’**. It wouldn't be too harsh to say that socio-economic security is also at risk due to lack of clean Air, requiring a "full emergency mode" response from local and national authorities. The **Human Right to safe Air** places obligation on States to ensure its commitment towards Clean air.

Everyone is impacted by Air Pollution. We witness that lot of households in South Asia rely on solid fuels, sometimes biomass, often coal, for their cooking and heating purpose and there are often cities with large-scale industries with poor emissions controls. The **World Health Organization** estimates seven million people are killed every year due to air pollution, while non-fatal effects of over-exposure to PM2.5 include irregular heartbeats, aggravated asthma and decreased lung function. The addition of nitrogen and Sulphur pollutants can further trigger a cascade of ecological effects. As a result, these pollutants are very harmful to both natural vegetation and agricultural crops and overall biodiversity. Hence, Acidification and eutrophication driven by atmospheric pollutants needs to be reversed through Green House emissions reduction policies. It is therefore imperative, especially in industrializing nations, to reduce emissions to protect the health of global ecosystems.

Over the last few decades or so, **Meghalaya** has started facing ‘serious problems’ of surface and groundwater pollution due to indiscriminate discharge of untreated municipal effluents, mining,

industries, agricultural runoff, As a result, smaller streams and rivers of the area are either dying or becoming seasonal. **Meghalaya has fresh air but water pollution is taking a heavy toll on the communities.** The colour of Lukhariver in East Jaintia Hills district and Myntdu river in West Jaintia Hills district has changed to a bright sky blue, which is alarming. Water of 28 out of 31 water bodies in six districts of the state was not fit for drinking” in Meghalaya. Such alarming scenario threatens valuable ecosystem services including crop yields, food security, climate regulation, recreation and tourism, nutrient cycle and degrading natural vistas.

Enlightening community through ‘Sensitizing, Incentivizing and Galvanizing” model through an Integrated, Impactful, Innovative and Inspirational approach towards Access to Clean Air, Water, Health along with Institutional support, is perhaps the best approach to collectively combat the risks of Air Pollution and secure Shillong as the ‘Environmental Capital’ of Meghalaya and reclaim its lost scenic beauty.

**We often take it for granted and therefore must begin with a new paradigm of moving towards Conscious & Collaborative’ efforts by prioritizing Air as a Valuable Resource to secure Clean Air.**

**We all know that Air is not an individual resource but a community resource. We have taken efforts, both at global and national level.** The **Climate and Clean Air Coalition** is a global effort uniting governments, civil society and private sector, committed to integrate air quality and climate action, 2015, while **Asia-Pacific Clean Air Partnership** is a platform for policy makers and stakeholders to share knowledge, tools and innovative solutions to tackle air pollution in the region. It brings together countries, networks and initiatives that focus on clean air in the region. You must be already aware of our **National Clean Air Program (NCAP) in India** which we started pro-actively and aggressively to improve air quality in 102 cities to contain Particulate Matter within desirable levels. It is strong commitment and proactive approach attempt to clean up India’s air. Further, Dust Mitigation plan, Solid Waste management and Green Good Deeds movement have been attempts towards Clean Air in India. What is important now is to have an assessment of the policies to be facilitated against three criteria: **effectiveness, efficiency and appropriateness** which shall be more rewarding.

Attainment of the targets of the SDGs within a stipulated period along with achieving the targets of Paris Agreement on Climate Change, with Air Pollution being at the core, can be facilitated by adopting new policies and programmes based on innovative techniques and technology along with new concepts of cooperation and partnership in tandem with existing concepts and approaches.

The three sectors, meanwhile, that have garnered the most public attention where air-pollutant emissions are concerned are **Energy generation, Waste and Transportation.** This being the case, the cleanup effort should principally focus on these three sectors. Conventional emission controls focusing on emissions that lead to the formation of fine particulate matter (PM2.5) which included activities like: increased emissions standards and controls on vehicles, power plants, and large- and small-scale industry. The need of the hour is to go circular by embracing the need to recover, recycle, repurpose, refurbish, repair, refuse, rethink, reduce, reuse and remanufacture.

But today, we need Innovative and Impactful air-quality measures for reducing emissions that lead to the formation of PM2.5 to reduce the burning of agricultural and municipal solid waste, preventing forest and peatland fires, and proper management of livestock manure.

This must further be supported by development, a priority goal, which includes measures like: providing clean energy for households, improving public transport and promoting the use of electric vehicles, using renewable energy for electricity generation. The need of the hour is supportive transformative actions, policies and regulations that lead to substantial reductions of these pollutants.

We all aspire for a Healthy planet to be inhabited by healthy people having access to resilient ecosystems, efficient resource use, clean air, sufficient clean water, sustainable management of chemicals and waste and sustainable cities. The need of the hour is the essentiality to attain **Policy Coherence for Sustainable access to Air**, which requires the individual goals to become interlinked. The **governance of Air and Climate Change** are the themes that are best connected to SDGs and should therefore be addressed by policymakers by adopting a multi-sectoral approach to policy integration.

## Cover Story

### Demystifying the Aspirational Indicators

The districts find its place in the aspirational list of NITI Aayog's TADA (Transformation of Aspirational Districts). It also assumes significance for being an important religious, spiritual and cultural place. However, in the previous phases of the ongoing project, these lacked in development indicators like health, education, water resources, clean environment, etc. But being less developed, it displayed immense potential to bring mainstream development through participatory governance.

Having covered wide range of districts from Chitrakoot, Fatehpur, Haridwar, Balrampur Siddharth Nagar, Shravasthi and Bahraich in the states of Uttar Pradesh & Uttarakhand, the entire experience deciphered understanding the real meaning of 'Aspirational Districts'



The "Eco Routes stakeholder consultation was organized by India Water Foundation, supported by NCSTC, Ministry of Science and Technology in the 'Aspirational Districts' of Uttar Pradesh & Uttarakhand. With 'deliberations, discussions and debates' among the stakeholders from Health, Child Welfare, Skill Development, Health, Education, Water Resources and so on the consultation was an interactive amalgamation of ideas and solutions. Communities and stakeholders from different arenas and sectors, the entire scenario was filled with brainstorming discussion on the 6 indicators i.e. Education, Health, Basic Infrastructure, Agriculture, Skill Development and Financial

Inclusion with ample outreach programme with activities like signature campaign, street plays, painting competition, dialogues and debates etc. The one to one talks and discussions with people at rural level gave us the cognizance of the problems and issues in the area. India Water Foundation motivated the communities to converge Development with sustainability factor in holistic terms with continuous collaborative efforts from individuals and departments'. We conveyed that Development also has a vicious cycle, even if one of the 6 indicators is misplaced or removed, the entire cycle breaks. Hence, it becomes important to focus on laying its focus on fulfilling the local aspirations of people and make their life better'.

Having discussed the 'Status-Problems-Challenges' as a follow up, among various stakeholders, practical suggestions were imparted to unleash the untapped prospects of the Aspirational districts. It was an interactive to bring communities, children, youth etc from various arenas to converge at various platforms to deliberate amicable suggestions having a long lasting impact. A reflection of 'Eco-consciousness' was visible among the communities towards environment' issues of sustainable development.

Water being an important socio-economic connector was the missing link amongst the focused areas. Problems of poor water quality, potability access, and abysmal state of river bodies viz

cleanliness & conservation. Hindered availability (quality) of water led to plethora of problems like ill-health, unclean WaSH practices, inadequate nutrition, disease prone and malnourished children. Drinking water from arsenic rich water pumps or excessive groundwater extraction without any scientific understanding of water conservation techniques was a failure of adequate IEC model.

The biggest success was that a positive socio-cultural change was raised while shedding the traditional mindset. Raising Capacity building & competence of people were encouraged, with entrepreneurship skills or awareness modules for instance, on women/child's health. India Water Foundation exemplified Eco learning through fun-filled & interactive modules like Human Chain Formation, interviews, in schools, colleges, community parks and other public places sending a strong message to act as Catalyst of Learners. This was supplemented by advocating collective efforts to sustain our fight against climate change and complement Government of India efforts of Water Conservation, Single Use Plastics and Swachh Bharath Abhiyan. It was indeed credible to raise the community's understanding to promote #Science as a necessary tool of Information, Education & Communication (IEC) in everyday lives.

It was indeed educative for everyone, including us to learn from their paintings that how students extended their niche to articulate positive outlook by combining pieces of environmental ideas and practicality. Overall, it can be said that every painting deciphered a thought of action to be pursued in reality

Communities realized their responsibility towards sustainable management of environment and its resources. They acted as Environmental stewards promoting the necessity of environmental awareness in their own different ways. Even the school children surprised us with a thinking way ahead than us towards environmental protection.

Moving beyond theoretical rhetoric, we could amalgamate different ideas, thoughts, perspectives, fused within the scientific ambience of learning and spearheaded new practical thinking among the 'Aspirational Communities'.

And most importantly, it is 'SCIENCE that acts as a key indicator to bridge different aspirations of the **'City of Doabs'**. The foundation while 'taking science at ground zero' made an effort to raise the scientific awareness and temper, capacity building of the people, disseminating good practices on health, education and hygiene. In short, we provided training to the trainers who would take the lead forward to diffuse their experience and learning to the communities. As per the water problems shared by the district administration, experts from our end also advised to find amicable solutions to address water scarcity, ground water depletion, and the prospects of river rejuvenation. To improve the socio-economic parameters of the place, it is necessary to amalgamate the fusion of 'innovation' entrepreneurship, science, social engineering and good governance'.

Overall, the response from the communities was overwhelming and we tried converging different aspirations of the district in a holistic manner. This project is spearheading the idea that 'Change is the need of the rightful need of the hour & it must come from within'. Every single individual acted as a 'Catalyst of Change'. IWF rightly acknowledged the role of 'active citizenry' which is an assertion of people's right to bring 'real Big Change' in the near future.

Through these powerful messages, we seized the golden opportunity to mobilize people, garner new dimensions and align our 'Eco Routes stakeholder dialogue along the same lines.

Since Eco Routes is an ongoing program, IWF is trying for Solve Different & Putting People First approach.

## Highlights

### 70<sup>th</sup> Board of Governors Meet of World Water Council at Cairo

World Water Council Governors 70<sup>th</sup> meet was organized during Cairo Water Week with the participation of President, Governors and Alternate Governors

World Water Council Governors 70<sup>th</sup> meeting with the participation of Minister of Water Resources and Irrigation of Egypt Mohamed AbdelAty, Mazen Ghoneim, Head of the Palestinian Water Authority opined various views during the Council's Board meeting on 22 October while the Minister of Water and Sanitation of Kenya Simon Chelegui announced the organization of the next regional conference "On the Road to Dakar" which will be held from 27-30 April 2020 in Nairobi. During a meeting with the President of Egypt, as part of the opening of the 2nd Cairo Water Week, World Water Council President Loic Fauchon warned of the multiple economic, financial, climate, and environmental crises that our planet is facing. World Water Council members were also mobilized during Cairo Water Week: African members organized a dedicated meeting to present the 9th World Water Forum, which will be held in Dakar in 2021.

*Dr Arvind Kumar, President India Water Foundation & Board of Governor, World Water Council highlighted that IWRM approach remains chiefly driven by the 'water sector', with other sectors*

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**'The earth is thirsty, and consequently,  
humans are hungry!'**  
-World Water Council President Loic Fauchon

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*consulted but not substantially involved. Also, Water-energy-food nexus approach focuses on exploring the vertical linkages between water, energy and environment. There's a need to integrate these linkages with horizontal linkages viz Education,*

*Health, Basic Infrastructure, Agriculture; Water Resources, Skill Development and Financial Inclusion during the Task Force on IWRM on 22nd October, 2019 during Cairo Water Week.*

In Cairo, Loic Fauchon and the World Water Council restate publicly their availability for hydro-diplomacy efforts and announce the creation of an International Observatory on Unconventional Water and Energy Resources, which is worthwhile initiative. He also highlighted that The World Water Council wishes to bring "dialogue, always dialogue and again more dialogue" to the discussions between neighboring States on a fair and equitable sharing of common resources, at a time when tensions are exacerbated by the filling phase of the Grand Renaissance Dam in the Ethiopian part of the Nile. The World Water Council wishes to bring "dialogue, always dialogue and again more dialogue" to the discussions between neighboring States on a fair and equitable sharing of common resources, at a time when tensions are exacerbated by the filling phase of the Grand Renaissance Dam in the Ethiopian part of the Nile.

The meet was substantial and brought water security at the forefront stakeholder discussions. A carpet of high hopes altogether witnessed intellectuals, decision makers, leaders across the globe sharing varied perspectives on water.

## **Notes:**

### **About the World Water Council**

The World Water Council (WWC) is an international multi-stakeholder platform organization, co-organizer of the World Water Forum, whose mission is to mobilize action on critical water issues at all levels, including the highest decision-making level, by engaging people in debate and challenging conventional thinking on water security. The Council focuses on the political dimensions of water security, sustainability, and resilience.

### **About the World Water Forum**

The World Water Forum is the world's largest event on water. Organized every three years with a host country, the Forum provides a unique platform where the water community and key decision makers can collaborate and make long-term progress on global water challenges. The Forum brings together participants from all levels and areas, including politics, multilateral institutions, academia, civil society and the private sector, among others. The 8th edition of the Forum was held in 2018 in Brazil and gathered more than 10,000 participants under the theme “Sharing Water”. The next edition will take place in Dakar, Senegal, in March 2021 under the theme of “Water for Peace and Development”.

## Insights

### Is 'The sooner, the better' option easy to tackle Water Crisis?

**Water is being considered as the heart of the every Environment problem?** I believe, to answer this question it is important to quote IPCC report necessary to understand deeply linkages between Climate Change and Water. The **Intergovernmental Panel on Climate Change (IPCC) report 2018** reveals that human-induced activities have caused average global warming of 1°C above pre-industrial levels. High Climate Change dynamics across the globe have replicating effect seen through global warming; raising carbon footprint and haphazard urbanization has culmination enhanced levels of Water Pollution.

Taking a look at the magnitude of Water crisis, we can see Imbalances between availability and demand, the degradation of groundwater and surface water quality, intersectoral competition, interregional and international conflicts, all bring water issues to the fore. Water quality degradation can be a major cause of water scarcity. Water conflicts can arise in water stressed areas among local communities and between countries because sharing a very limited and essential resource is extremely difficult. an alarming trend is witnessed everywhere too facing 'serious problems' of surface and groundwater pollution due to indiscriminate discharge of untreated municipal effluents, mining, industries, agricultural runoff, As a result, smaller streams and rivers of the area are either dying or becoming seasonal.

### **The crisis can also be related to the Mismanagement and unscientific utilization of water**

The extremes are attributed to Anthropogenic causes of water scarcity is rising as a result of twin



issues: Rapid population growth & Relative decrease of water supply. We all know that Water is a finite ubiquitous natural resource encompassing approximately three-quarters of the Earth's surface. In recent years, water availability has become a prominent global concern, particularly as demands for fresh water have grown beyond our capacity to meet them. In terms of water and ecology, over the past 100 years, the total area of

wetlands in the world has shrunk by nearly half, and 40% of the rivers on earth have suffered from various degrees of pollution. At present and for the foreseeable future, due to global population growth, economic development, and accelerated urbanization and industrialization, coupled with the intensifying impact of climate change, water security problems will become increasingly prominent, posing a major challenge to global sustainable development. More than 1.1 billion people lack access to safe drinking water and 2.6 billion people do not have access to sanitation facilities. 650,000 children die of water-borne diseases every year.

## Looking at the growing Global Demand, it reflects no good scenario either.

It is estimated that Between today and 2040, global demand for fresh water will increase, but the supply of fresh water will not keep pace with demand absent more effective management of water resources. A major international study finds that annual global water requirements will reach 6,900 billion cubic meters (bcm) in 2030, 40 percent above current sustainable water supplies. Water resources are shrinking at a fast pace thereby generating water crisis globally. Groundwater aquifers are depleting owing to over extraction of water for agriculture, industrial and domestic use. Besides, faster pace of melting of glaciers owing to climate change is further aggravating the water crisis.

**Climate Change is affecting us all.** Global warming is causing glaciers to melt and it is estimated that in the 21st century the melting of ice caps and glaciers combined with the thermal expansion of ocean water will cause an average increase of sea level and rising sea levels will be a critical issue in many other parts of the planet, adversely affecting billions of people.

Broadly speaking, water is climate change. Climate change manifests itself primarily through **changes in the water cycle**. As climate changes, droughts, floods, melting glaciers, sea-level rise and storms intensify or alter, often with severe consequences. Climate change impacts have direct consequences for water security and conflict. In order to achieve the Sustainable Development Goals, climate change adaptation will have to build climate resilience. Climate resilience is strengthened through healthy ecosystem services that rely on well-

*Understanding the already grim Water situation, What are we supposed to do? Wait for a 'Day Zero like in South Africa' or seize the opportunity to secure Water Availability for the present and the GeNEXT ????? The Choice is ours.*

functioning river basins.

Effective country-driven climate change adaptation should reflect the importance of water management in reducing vulnerability and building climate resilience.



*Excerpts of Dr. Arvind Kumar addressing the theme 'Understanding Water Crisis and finding a Way Forward' at the Synod College, Shillong, Meghalaya on 6-7 June 2019. The programme was hosted in collaboration with P.A Sangma Foundation and Meghalaya Basin Development Authority and was inaugurated by Hon'ble CM Meghalaya Sh. Conrad P Sangma.*

**We all know what SDG 6 is? But how far are we willing to Attain the same?**

Water and human development have clear linkages between the mand impact it has on people's lives and livelihood entails the potential of subsequently making a decisive contribution towards improved livelihoods. Such SDG measures that deal with climate variability and build upon existing land and water management practices have the potential to

create resilience to climate change, enhance water security and contribute to sustainable development. I believe SDG 6 is a gateway to fulfill the provisions of **Water, Food and Energy nexus and Ecosystem-Based Adaptation (EbA)**. The Sustainable Development Goal 6 Synthesis Report 2018 on Water and Sanitation reviews the global progress made towards achieving (SDG 6) of the 2030 Agenda for Sustainable Development and concluded that “the world is not on track” to achieve SDG 6 by 2030. This is a very real and astonishing reality which we need to take cognizance of. **The sooner, the better.**

EBA entails the use of biodiversity and ecosystem services as part of an overall adaptation strategy. EBA uses sustainable management, conservation and restoration of ecosystems, taking into account anticipated climate change impact trends, to reduce the vulnerability and improve the resilience of ecosystems and people to climate change impacts. There is growing recognition of the role ecosystems can play in helping urban people adapt to climate change, while working in tandem with nature, building with nature and green infrastructure to envisage healthy ecosystems to ensure resilience to natural disasters, such as floods, landslides or storm surges. EBA addresses the crucial links between climate change, biodiversity, ecosystem services and sustainable resource management. Meghalaya must seize such opportunity to enact such green practices and set a precedent for others to emulate.

Meghalaya is witnessing an upward trajectory growth after the success of its flagship program Integrated Basin Development Livelihood Programme (IBDLP). Harnessing water conservation and power generation through multi-purpose reservoirs through Integrated Water Shed Management has enabled Meghalaya to use both water and energy in a sustainable manner to ensure water-energy-food security. Signifying the importance of Water (SDG 6) as a socio-economic connector, Youth were trained and mainstreamed to understand Climate change coping strategies (mitigating and adaptive measures) like Community Water Jalkunds, Spring-sheds revival and restoring the water-land-biomass balance augmented appropriate natural resources planning and management. Community was prepared to understand the importance of nature based solutions and secure the water availability in the region. In saying so, Meghalaya definitely needs to be applauded. Meghalaya should further set a precedent for others to emulate.

But getting back to the theme, we all know that Water is affecting states. Meghalaya is impacted too by the alternate patterns of wet-dry rainfall patterns, water pollution. Could the scarcity of water halter Meghalaya's growth?

Meghalaya is also vulnerable to water-induced disasters, fragile geo-environmental setting and economic under-development. The abundant water resources flowing through the Brahmaputra and Barak rivers imposes severe distress and costs on the region through frequent flooding and erosive processes. There is lack of inter-state cooperation and coordination in dealing with water-induced challenges. What Meghalaya **needs is to translate its Ambitions to Actions**. Water as a socio economic connector, not merely a sector must be connected to climate change to understand the trends of climate change and also fulfill the promises of New India 2022, a vision of our honorable Prime Minister.

- **Prioritizing water saving and toughen management of water resources is the foremost thing which must be acknowledged.** There is a need for devising national water conservation strategy emphasizing on frequent water conservation actions, implementing this strategy requires the most stringent water resources management system, and that should adhere to the principle of determining water demand, urban development, and production output in line with water resources availability.
- Emphasis should be focused on formulating national medium- and long-term water resources development plans, as well as special planning relating to water utilization for different purposes. Steps are also required to be taken to develop water resources in a scientific manner, optimise the layout of water engineering projects, and boost support for water programmes in poverty-stricken regions.
- To improve efficiency and ensure long-term sustainable water security, there is need to go beyond the concept of integrated water resource management (IWRM), which is a vertical approach to the short water cycle. It needs to be combined with a horizontal approach, based on the fundamental links between water, energy, food, and environment nexus along with health, and education. Concurrently, it is equally significant to harness ecosystem-based adaptation (EbA) approach in managing water. These approaches entail the potential of enabling development policies to be implemented at national and local levels without segmentation or isolation, and without opposing any of the existing approaches, seeing them as implicitly interrelated, rather than conflicting.

## Special Report:

### Can India endure to restore 50 lakh hectare of degraded land by 2030?

By Neha Ashok Ninawe, Assistant Project Officer, India Water Foundation

India Water Foundation had organized a Special session 'Can Integrated Approach combat Drought in the Region?' on COP14 on 11th and Expo, in the Greater which received positive stakeholders. Dr. Arvind Water Foundation chaired Singh, Secretary, Ministry 'Chief Guest' of the 15 eminent speakers views to address the The Special Session was from more than 70 experts



the sidelines of UNCCD September at the India Mart Noida area of New Delhi, response from Kumar, President, India the session while Mr. U.P of Jal Shakti presided as the Special Session. More than expressed their enriching overall menace of Drought. attended by representatives and organizations, officials

of the Central and State Government, CSOs, institutions and multi-lateral organizations etc. Water and Land security are closely interrelated. That is why the subject of our discussion today is so relevant. Climate change and deteriorating environment impact both biodiversity and land. It is widely accepted that the world is facing the negative impact of climate change. Which is rightly highlighted by our Hon'ble Prime Minister Shri Narendra Modi during the COP14 address. We assure to support the Government's efforts to combat Land degradation, Desertification and Drought in all respects.

The IPCC report has described farming, land degradation and desertification as critical frontlines in the battle to keep the global rise in temperatures below the benchmark figure of 2 degrees Celsius. As we all know that drought is a constant threat for dry lands, which presently covers 41% of the Earth's land surface and Land Degradation costs between US\$870-1,450 per person per year. Degraded lands offer little economic or biological productivity. As highlighted, applying sustainable land management techniques, restoring degraded landscapes and other natural solutions, through collective endeavors, it possible to promote Green India, which can set an advantageous precedent in the region.

During the curtain raiser event of the UNCCD COP14 Hon'ble Minister of Environment Forest and Climate change Shri Javadekarji expressed the target to restore 50 lakh hectares of land by 2030 and convert degraded land into fertile land,". Our collective and individual responsibility is to secure water availability.

Are we mindful of the opportunities that land gives and take action to feed the 1.2 billion people?



We need to customize solutions towards focusing on Adaptation measures than Mitigation. We need to be mindful of the opportunities that land gives and take action to feed the 1.2 billion people. We are fighting in different ways and levels, but in silos. There's a need to integrate and converge Ministries and Departmental efforts because Drought is an interlinking realm under various sectors. And all this, we must do while respecting bio-diversity and protecting our ecosystem services. By investing in the land, we can unlock opportunities Land is our lifeline for mankind and nature, the source of food, water and livelihood. And the success

towards combating Drought is based on three pillars built on governance, finance and knowledge. By investing in land, we can unlock opportunities for change, deliver hope, reap rich dividends and build a more sustainable path for the future.

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Land security will progressively be under the responsibility of everybody. This is our duty, this is our challenge today and after. We should be optimistic. Good land stewardship based on sound policies and Integrating various dimensions of Drought shall build resilience to climate change and prevent land loss and moreover accelerate the achievement of the Sustainable Development Goals as a part of National targets. Landscape restoration has come of age. We need actions to strengthen resilience to droughts looking at the frequency of weather-related disasters such as drought, desertification and soil loss, but we need to be mindful of the opportunities that innovation, technology and best practices offer us.

Today, we are focused on Ease of living –through Sustainable Livelihood and Cleaner Environment. This session is a reinforcement of our commitment to a sustainable planet, for us and for future generations and also India's commitment to attain Land Neutrality by 2030. Achieving land degradation neutrality, i.e. preventing land degradation and rehabilitating already degraded land, by scaling up sustainable land management and accelerating restoration initiatives is a pathway to greater resilience, prosperity and security for all. We are committed to complete this task sooner than anticipated.

However, we need to do all this in a cleaner and greener way. This is an indispensable gathering to discuss harmonious actions on Drought and especially today as it is the UN Drought Day.

## **Highlights & Key deliberations**

### **(Key Recommendations which are implementable and feasible)**

- As Drought is a creeping phenomenon and we need structural and policy changes especially to address the Demand Side Management of Drought towards achieving 'Land Degradation Neutrality' by 2030, a national target for action.
- Focus on Ease of living through Sustainable Livelihood and Cleaner Environment and addressing synergies between bio-diversity, climate change, rewilding and strengthen our Ecosystem services.
- Need for Integration and Convergence of Ministries, Departments, States and various stakeholders as Drought, Water and Land security are closely interlinked
- Secure Wetlands as our Natural resource base as a core element of Disaster Risk Reduction and Adaptation practices.
- Restore land and soil affected by land degradation, drought and floods, desertification through effective Land management strategies, Enactment of Land use policy and the Water use policy in place upto Panchayat level with commensurate responsibility and accountability
- All the sources of Water should be preserved and conserved for future generation through 'Water Management strategies' to convert the approximate 80% Grey Water to Blue Water'.
- Community participation & Capacity enhancement in all Drought related projects from planning to their completion through awareness by IEC (Information, Education & Communication) and raise a dedicated & skilled cadre of communities as India Water Foundation has been espousing Jal Mitra Campaigns on similar lines.
- Eco-System Approaches to Drought Management through Diversification of agricultural system; Revisiting crop-water allocations, Setting-up the Drought Resilience crops/Live stocks, Adoption of micro-irrigation (Drop/Spoken System) as against flood-irrigation in Drought prone & Drought affected areas
- Drought-Risk Assessment using RS-GIS Techniques (Remote-sensing based Land assessment) to evaluate environmental sensitivity through RS-GIS data in Agri-basin environments.

It was a successful endeavor with Quality Discussions by Multidisciplinary stakeholders on Drought Resilience, Drought-risk assessments, Drought management, Land Restoration strategies towards Climate Neutrality, Disaster linked Drought phenomenon, etc. to reach common consensus towards addressing the menace of Drought. The session also called for adaptation & mitigation developing measures towards management of Drought and Land Degradation (SDG 15.3).

This special session added another feather to the rich historical legacy of UNCCD COP14 in bringing Innovative outcomes and struck the right chord through diverse opportunity for dialogues.

## Critical Analysis

### Can we trigger a 'Win-Win' situation intertwining Water & MSMEs?

***As we all know, India has a strong ecosystem of MSMEs and is poised to become the third-largest world economy and one of the top three manufacturing destinations by 2030, as a result of which the demand for water for industrial use is also expected to increase significantly. However it remains largely unorganized in 'silos' witnessed through inadequate policies or right technologies or even unsustainable funding.***

Water demand is expected to be twice the available supply by 2030. It is realized that one-third of Development is water because climate change has the most impact on water. Creation of Water infrastructure is the key linking pin between environment & sustainability. When SDG 6 is achieved, the interlinking goals necessary for every development sector will be holistically implemented. It is noteworthy to mention that MSMEs contribute nearly 28% of the overall GDP of \$2.75 trillion making them worth nearly \$870 billion per annum. A total of 6.4 crore MSMEs in India, predominantly located in rural and semi-urban pockets provide prospects in scaling manufacturing capabilities, curtailing regional disparities, balancing the distribution of wealth, transforming the rural economy.

*We understand that there are Stumbling blocks that is preventing MSMEs to take a leap towards business model? Is it at policy or institutional or funding level?*

The main barriers that prevent developing countries from adopting green growth strategies are a lack of knowledge and skills to deal with these challenges; the absence of an adequate industry-support system to assist enterprises; fragmented and ineffective policy frameworks; and difficulties in accessing finance.

Since a fortnight, we are hearing that India is poised to reach \$5 trillion economy. How do we achieve this target by 2025? Water from Source to Tap is still a Chimera.

However, that is just one facet of the problem. With India expected to overtake China as the world's most populous nation by 2042, the demand for domestic water is set to outpace supply by a significant margin. How do we supplement Government's vision of making India a \$1 trillion economy as underlined in the Agenda 2.0?

It is widely recognized that the SMEs in the manufacturing sector are the spine of Government initiative the 'Make in India' and it is incumbent on the SME entrepreneurs to warm up for a big role. Current models of urban planning and water management are exceedingly proving insufficient from the perspective of cost effectiveness, technical performance, social equity, and environmental sustainability.

We need to understand the Growing Demand of water in Industrial sector in India has emerged as the second highest consumer of water after agriculture. Industries use 'Blue Water' and send 80% of water as 'Grey Water'. Further, the Menace of Water Pollution through groundwater and surface water resources has been on the increase with a slower pace of recycling and augmenting the 'already used water'. Lack of effective Ground water policy regulations and coordination among agencies leads to mismanagement of industrial water problem, which is further compounded by dearth of incentives provided to industry for efficient water use.

*Today it's elated to hear about Meghalaya being the first state to implement its own Water Policy which our Hon'ble Prime Minister has famously taken note of*

### **How do we realize the water availability needs of MSME?**

For that Industries will have to become more sustainable. Even our conventional wisdom allows us to consider water as a 'Usable Natural Resource' and not a 'Treasure' is a matter of concern which must be disposed off at the earliest. The Circular approach has a large potential to change the Demand-Supply proposition of an economy under consideration which is bound to change the dynamics of 'Production & Consumption' in long term as outlined in SDG Goal 12.

The immediate priority is to make a paradigm shift to the supply side management and address those challenges that make water usage more efficient and discourage wastefulness. Priority must be laid on the allocation of resources, efficiency in water use and ensuring rejuvenation of the available water bodies.

We need to undertake a fundamental strategic shift in the way our water bodies are managed. Water augmenting strategies such as harnessing water conservation and power generation through multi-purpose reservoirs through integrated water shed management must be enabled to use both water and energy in a sustainable manner and cohesively ensure water-energy-food security.

Today it's elated to hear about Meghalaya being the first state to implement its own Water Policy which our Hon'ble Prime Minister has famously taken note of. It's also worthwhile to share our experiences in the Aspirational Districts of Uttar Pradesh & Uttarakhand. Understanding to maintain a fine balance between Demand & Supply in the 6 indicators like Basic Infrastructure, Agriculture & Water Resources, Skill Development and Financial Inclusion, our insightful views focused on raising the competence & capacity building for entrepreneurs showcasing that MEs, as major drivers of indigenous growth engine. If skills are upgraded through vocational training, it shall provide impetus to India's GDP. We look forward to disseminate a water friendly model for MSMEs through 3Ps i.e 'Policy, Planning, and Partnerships'.

MSME sector shall play a pivot role because every SDG is linked right from 'No poverty' to 'No one left behind'. Securing SDG 9 which calls for 'Industry, Innovation & Infrastructure' will be realized.

Water, a key asset here. 'Water' being the common connector between sectors can serve help industries tap their own source of water through green technologies or best practices while simultaneously reducing its dependency on water.

Indian MSME sector is the backbone of the national economic structure and has unremittingly acted as the bulwark for the Indian economy. This has created 13.5 million to 14.9 million new jobs over the past four years.

### **Tapping the business for MSMEs!!**

Expanding the industrial sector is critical for poverty alleviation, delivery of goods and services, job creation, and improving standards of living;

especially in developing countries. However, in many countries industrial development goes hand in hand with environmental degradation and resource depletion, which threaten opportunities for sustainable economic growth.

Integrated approach incorporates a paradigm shift from passive to active partnership model, involving grass root participatory governance and calls for "Progressive restoration of water-land-biomass balance and improved livelihood for which Actors-Sector synergy is the key to integrate water resources management into their climate adaptation and mitigation strategies.

A paradigm shift is required at the system-wide level in the form of Integrated Urban Water Management (IUWM), which addresses tradeoffs among water users: agriculture, industry, household, and ecosystems. In the article, I had the recommended few principles like Involving all stakeholders, Assessing a portfolio of water sources, Maximizing the benefits from wastewater; Designing adaptive systems; Urban Water Catchment Management etc.

Industry, as the prime manufacturer of the goods and services that societies consume, has a critical role to play in creating more sustainable production and consumption patterns. Furthermore, the industry can play a leading role in making water practices more sustainable by addressing overexploitation and contamination and improving water infrastructure and management. UNIDO launched the Green Industry Initiative, which provides a sectoral approach for a global transition to green growth in the manufacturing and associated sectors. It is a two-pronged strategy for decoupling resource use and pollution from industrial development and promoting the growth of sustainable productive sectors and entrepreneurship.

A normative framework to encourage the growth of the recycling industry as well as the reduction of waste through improving production processes and product redesign. The solution lies in chalking out a comprehensive Industrial Water Policy, which should address industrial water related issues in a holistic manner and it should be followed by the establishment of a national nodal agency to coordinate with water related issues with other departments/agencies in a mode of convergence.

Water is a key component of sustainable development & ecosystems are inextricably linked with water. MSME must seize the opportunity to tap 'Water as an Environmental Capital'. To preserve the 'Intrinsic value of water', propagating 'Thinking Beyond' conventional methods and employing Nature Based and Science Based Solutions can sustainably manage and restore ecosystems which provide environmental sustainability and human well-being taking into account dynamic

inter-linkages between 'Climate Change and Water'. Water-related problems cannot be tackled through technological and engineering solutions alone but must include 'Soft Approach' of capacity building through sensitizing, incentivizing and galvanizing the people in water and environment sectors, like water conservation, judicious use of natural resources.

We also know Water is a key socio-economic factor which integrates SDGs Agenda 2030 and Paris Peace Agreement in parallel. To augment the prospects of Circular Economy, we must renew the role of Water as an Engaged & Effective Catalyst. This can be done by way of harnessing water as scarce resource and leveraging water as a natural capital to as to decipher the true value of the asset i.e. water. Climate-sensitive strategies focusing on waste-to-resource conversion, Clean & Efficient energy, transformation of Grey-to-Green Infrastructure, Rain water harvesting essentially revolve around circular economy.

*To preserve the 'Intrinsic value of water', propagating 'Thinking Beyond' conventional methods and employing Nature Based and Science Based Solutions can sustainably manage and restore ecosystems which provide environmental sustainability and human well-being taking into account dynamic inter-linkages between 'Climate Change and Water'*

### **'Securing New India @ 75, which precedes achieving the goal of 5 trillion economy'**

Indian MSME sector is the backbone of the national economic structure and has unremittingly acted as the bulwark for the Indian economy. This has created 13.5 million to 14.9 million new jobs over the past four years. Hence, a 'Win-Win' situation for all must be set as a precedent to integrate various stakeholders for future socio-economic developments of India. We already have a visionary leadership under our Prime Minister. To further complement his vision of achieving 5 trillion economy, a civil society like ours can well assimilate and Integrate Resources through 'Water Governance' which entails technological and engineering solutions, Knowledge support, Policy & Governance, capacity building to create an Eco Green business model for MSMEs which is visible & viable.

In view of industry's large contribution to global warming, air and water pollution and degradation of soil, the focus automatically shifts to industrial policy that emphasizes on decarbonizing the industry. Promotion of inclusive and sustainable industrialization warrants shifting to low emission and climate resilient pathways to ensure equitable economic growth compatible with resilient environment by switching over to green industrial policy. Civil society can cooperate, collaborate & converge in working out practical and scalable solution recycling of waste water, Access to training, knowledge and technology, Enhancement of technical and managerial knowledge and skills for MSMEs to develop a water-friendly industry.

Promotion of good practices around water for SMEs, Facilitating the collaboration of different public and private actors through knowledge generation, innovative solutions, encouraging green innovation, adaptation of cleaner process technologies, renewable-energy technologies, **Eco-industrial clusters will go long way to make MSMEs 'Business competent industries'**

## Scenario

### In a whirlwind of Drought, Desertification & Land Degradation!

#### *A tiara added to the wings of India Water Foundation*

*India Water Foundation has been granted the Observer status of the UNCCD by the recommendations of the UNCCD Secretariat. It is an opportunity for the Team to play a meaningful role towards working in implementation of the UNCCD's endeavors. With this, comes prospective opportunity to realize the goals and targets under the 'Delhi Declaration'.*

As our Union Minister of Environment, Forest and Climate Change Shri Prakash Javadekar highlighted 'the need to bring 26 million hectares under Land Restoration targets', it is important to address the global crises of climate and biodiversity loss'

The current trajectories based on '**sectoral or silo approach**' have failed to attain the goal of sustainable development in the region for want of capacity building of the stakeholders, convergence, cooperation and coordination between actor and the sector. Hence the need was felt for the active presence of a civil society that could synergize scattered efforts in a collective way to ensure water security, food security and energy security to facilitate sustainable development. To mitigate such consequences, it becomes imperative to fight Deforestation by giving a clarion call to **support India's efforts to achieve land degradation neutral status by 2030.**

As a signatory to the United Nations Convention to Combat Desertification (UNCCD), India is committed to reducing its land degradation and desertification. India Water Foundation, as a Catalyst supports such vision. To combat soil loss by water erosion, which is the largest process leading to land degradation in India, and to restore degraded lands, there is a need to initiate watershed interventions immediately.

It is appreciative of India's outstanding leadership at COP14 UNCCD, bringing more than 9000 participants at the multi-stakeholder forum. The multi-stakeholder international forum was applauded across the globe and highlighted India's commitment towards addressal of Drought, Land Degradation and Desertification. India has determined to bring 26 million hectares under land restoration targets and address the global crises of climate and biodiversity loss. Hence, it becomes imperative for India to set a precedent towards building long-term drought resilience.

*The Government of India has planned to create a 1400 km-long and 5 km wide 'Green Belt' from Gujarat to Delhi-Haryana border, it's a stepping stone to restore degraded land along the Aravalli hill range*

#### **What's inside the New Delhi Declaration: Investing in Land and Unlocking Opportunities**

**Expressing** our sincere appreciation to the Government of the Republic of India for its hospitality and to the UNCCD secretariat for the organization of the high-level segment,

**Recognizing** that desertification/land degradation and drought undermines health, development and prosperity in all regions and acknowledging that dryland ecosystems are areas of special focus.

*According to UNEP, Climate Change has a ripple effect causing chain reactions such as:*

*Loss of Biodiversity*

*Extreme weather*

*Rising Sea levels*

*Extreme Heat and Drought*

**Deeply concerned** that the impacts of desertification/land degradation and drought are felt most keenly by vulnerable people,

**Recalling** the 2030 Agenda for Sustainable Development and the UNCCD 2018–2030 Strategic Framework and looking forward to comprehensively reviewing and monitoring progress with the aim of accelerating the implementation of both,

**Recalling also** that striving to achieve land degradation neutrality has the potential to act as an accelerator for achieving a number of the Sustainable Development Goals and as a catalyst for attracting sustainable development financing to implement the Convention,

**Acknowledging** those practices which conserve and restore land and soil affected by desertification/land degradation, drought and floods, contribute towards achieving land degradation neutrality and can also have long-term multiple benefits for the health, well-being and socioeconomic development of the entire society, especially for the livelihoods of the rural poor,

**Noting** the link between the restoration and sustainable management of land and the creation of decent jobs, including green jobs initiatives and other employment generating opportunities, for vulnerable communities in degraded areas,

**Recalling** that the Sharm El-Sheikh Declaration, recognized by the Conference of the Parties to the Convention on Biological Diversity at its fourteenth session, called for synergies in addressing environmental degradation, biodiversity loss and climate change,

**Noting** the findings of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services Land Degradation and Restoration Assessment and its Global Assessment Report on Biodiversity and Ecosystem Services, as well as the Intergovernmental Panel on Climate Change Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems, which recognize the role of the land-use sector,

**Recognizing** the contribution of effective and responsible governance and stewardship of natural resources, especially land and water, for combating desertification/land degradation and drought and for the sustainable development of current and future generations,

**Convinced** that diverse multi-stakeholder participation, as appropriate, at local, subnational, national and regional levels and from all sectors of society, including civil society organizations, local government and the private sector, will be crucial to achieving the objectives of the UNCCD,

**Renewing** our commitment to concerted international cooperation for the effective implementation of the Convention,

Now that, the Indian government has planned to create a 1400 km-long and 5 km wide 'Green Belt' from Gujarat to Delhi-Haryana border, it's a stepping stone to restore degraded land along the Aravalli hill range. The desertification and land degradation atlas released by the ISRO in 2016 revealed that more than 50% of land is degraded in the states of Gujarat, Rajasthan and Delhi. With this move, visible outcomes is envisaged with the addressal of synergies between water, biodiversity and climate change, strengthening our momentum towards Drought Management on one hand and creation of Sustainable Livelihood and Cleaner Environment on the other. However, this must be enforced especially at grass root level to achieve holistic implementation of SDGs and will also bring the Delhi Declaration to fruition.

## Dialogue in Depth

### Building India's resilience to adapt to the changing climate

[Our Sustainable thinking calls for 'ACT NOW' and move towards creating a Green Economy which calls for adopting green practices and technology, mechanisms of Adaptive Management, Carbon Offset, Resource efficiency, Rewilding, Circular Economy, Polluter pays principle.]

*"The present water crisis is because of rapid urbanization, rapid industrialization and migration. The system is disrupted", highlighted Dr. Arvind Kumar as an expert in the Panel Discussion on 'Climate Change and \$5 Trillion Economy' at the 60<sup>th</sup> SKOCH Summit at the Constitution Club of India on 29<sup>th</sup> August 2019.*

*Further, he said that Climate Change has a ripple effect causing chain reactions such as Loss of Biodiversity, Extreme weather, Rising Sea levels, Extreme Heat and Drought and that Indian climate policy-making should 'mainstream' adaptation strategies into development planning to better address climate change.*

**Indian climate policy-making should 'mainstream' adaptation strategies** into development planning to better address climate change for that we will need to focus on two pillars: **Building resilient livelihoods and Designing robust green economy** that takes into account the potential impacts of climate change. Besides demanding for sustainable finance and technology, needs need to be devised to promote local knowledge and innovation entrepreneurship to reap India's Demographic Dividend.



We are talking of envisaging a paradigm of 5 trillion economy. Approximately Rs 100 lakh crore allotted for infrastructure in next 5 years out of which Rs. 50 lakh crore investments needed for railways during 2018-2030, and various infrastructures investments required in aviation, transport sector. **How do we ensure growth, job creation and infrastructure to sustain a population of 130 billion?** Also, how do we envisage transforming such investments without having a socio-economic and environmental impact? Today, Meghalaya's economy has doubled, entrepreneurship prospects has multiplied and recently is the first state to own a water policy. Why cannot we translate such success to the mainstream states? Although we've had some wins, but there's still a lot more we need to do to protect our climate.

***Is India doing enough towards Climate Change? What specific plans and road map is needed for increasing the share of renewable energy in basket of energy sources up from present 20% to 40% by 2030?***

On one hand, India is projected to overtake the U.S. as the world's second-biggest emitter of carbon dioxide from the power sector before 2030 as per International Energy Agency and on the other, **Ministry of Environment estimates that India will need \$2.5 trillion to meet climate change targets, of which \$280 billion is needed in the next five years for green infrastructure alone.**

**India has projections of 175 GW target for 2022 but now the Government has eyes to scale it by 500GW renewable capacity by 2030.**

Realising this, India should improve its share in power generation through **synergy in a hybrid wind and solar, spring energy generation like how Meghalaya imbibed Sustainability Models of clean energy initiatives** by creating Energy Missions and Green Missions and investing in sustainable natural infrastructure. **India can also take learnings from Bhutan, being world's first carbon-negative country producing less carbon than its terrain absorbs.**



**India's Draft Policy on National Resource Efficiency** is indeed a right step focusing on sustainable use of natural resources commitment to new low-carbon technologies towards carbon offset, and ongoing efforts to accelerate development and deployment of renewable energy. **India can also envisage "a sustainable renewable energy hub for Asia setting a good precedent for Asian countries.**

***What can India do and what can it persuade other countries to do in this fight against climate change?***

Successive disasters have compelled us to turn our attention to the million-dollar question: Has climate crisis hit home? **Asia-Pacific related Disaster Report 2019' has designated 4 vulnerable 'hotspots' in the Asia Pacific** which includes transboundary river basins, Pacific Ring of Fire and the Pacific small island developing states and Lastly, sand and dust storm corridors.

Climate change is cross-border in nature and solutions also must be. To combat the impact of climate change and achieve the SDGs, all countries must formulate far-reaching and action-oriented policies. **Why wait till 2030 to realize SDGs? Instead we can't we 'Act Now'?** For this, we have to support each other and collaborate. We need more multilateralism. Sharing resources, experiences and information is key. **As World Water Council in March 2021 proposed theme of "Water Security for Peace and Development, India through Track 1.5 diplomacy can deliberate towards innovation, new partnerships, knowledge-sharing and scaling up of proven approaches.**

Ministry of Environment estimates that India will need \$2.5 trillion to meet climate change targets, of which \$280 billion is needed in the next five years for green infrastructure alone.

**South-South and Triangular cooperation is the backbone of regional integration.** It brings people closer together and facilitates political consensus processes **Meghalaya has already laid a precedent through**

**'Shared objective Shared prosperity' success among BBIN countries.** Also, **BIMSTEC economies have achieved impressive growth and trans-boundary action and collaboration.** Adaptation measures in the region must be scaled up to enhance adaptive capacity, strengthen resilience and reduce vulnerability to climate change, where Green technology and clean energy are crucial in meeting adaptation goals. India can play a more active role through a broad framework for promoting and supporting collaboration among countries of the South institutional strategies, legal framework, ecosystem services and binding laws. India has a potential and priority on national ownership and leadership, equality, sustainability, development of local capacity, and mutual benefits.

## Perspective

### The curious case of World's Third Pole

In the wake of the entire globe being subjected to the vagaries of climate change, the theme of the present Conference assumes added significance because the Tibetan Plateau, often referred to as 'The Water Tower of Asia', holds key to the lives and livelihoods of the one-sixth of the global population. Almost half of the world's population lives in the watersheds of the rivers whose sources lie on the Tibetan Plateau. Containing more than 45,000 glaciers, it feeds the largest rivers in Asia, including Brahmaputra, Yangtze, Yellow, Mekong, Ganges and Indus River.

*Water could be successfully be promoted as 'Socio-economic' connector to promote sustainable development in the region to Revamp the cradles of civilization through equity & judicious use. Adaptation to the inevitable environmental shift is necessary.*

Since many centuries, Tibetan Plateau has met the basic necessities to sustain life and flourish human civilizations thereby bringing life and joy to millions of people beyond its vast border. But today it is **extremely perilous to ignore the grim warning sounded** by the **IPCC's recent special report** saying 'at current rate of emissions, the world is set to breach the global warming limit of 1.5 degrees Celsius'. Understanding the grim situation, we visualize two scenarios-

Co-relating this scenario to preserve the sanctity of **perennial sources of water**, Are we doing enough for the sustainable management of **World's Third Pole** given an understanding that impact of these melting glaciers is bound to be catastrophic? And as asserted by many experts that 21st-century wars will be fought over WATER is becoming increasingly convincing.

Water is not only the key to climate change; it is also the key to sustainable development. Recent years have witnessed emergence of water as a key issue entailing the potential of impacting mutually beneficial cooperation or deleterious interstate competition. The location of Tibetan

*Are not the 'recent devastating floods in India, Nepal and Bangladesh a strong corroboration of the 'Climate Change dynamics' unleashing a strong ecological crisis? Have our current planning and management strategies proven insufficient to address such diverse challenges?*

Plateau influences the direction of water. South Asia which is already a water-deficient region, any further control of water supply by the upper riparian is likely to adversely impact lower riparian countries.

Considering the case of India – having a unique riparian status is the only regional country that falls in all three categories — upper, middle and lower riparian entailing a direct stake in all the important river basins of the region. India is potentially affected by water-related actions of upstream countries and the potential of hydro-diplomacy has scarcely been a major instrument of negotiation.

## Adverse changes to the Riparian ecotones

The deepening water woes in Hindu Kush Himalayas is exemplified by HIMAP (**Hindu Kush Himalayan Monitoring and Assessment Programme**) giving a mix of melting and rapid advance of some glaciers increasing the risk of GLOFs (Glacier Lake Overflow Floods). On the other hand,



in Lahaul Spiti, we have rapid glacier retreat and this destabilises the land from where the glaciers retreat. Further, combination of climate change and rising non-military threats like floods, avalanche, cloud bursts, desertification possess an existential threat to the survival of population living in climate risk zones leading to human migration which further transitions into Eco-social state of 'Environmental Refugees'.

*Dr. Arvind Kumar expressed his views at the 2<sup>nd</sup> Tibet Environment Conference, organized*

*by Tibet Policy Institute was held on 2nd August 2019 at India International Centre, New Delhi which is as follows:*

"We are quite aware that Climate-induced melting is beginning to converge with acute water management challenges. This has also accentuated **Wetland and ecosystem services deterioration causing a gradual decline in habitat quality due to "disturbances in environmental regime flows of the 15 Tibetan rivers flowing into India"** especially in terms of seasonality and hydrograph of the river system. Much of the environmental studies have not been put to use in these climate risk zones. The trans-boundary river basin management in the Himalayan region of South Asia is also mired with particular challenges pertaining to different national interests, power disparities between riparian states, differences in national institutional capacity, limited information exchange and lack of sufficient basin scale knowledge and institutional capacity to make decisions.

This further causes **Adverse changes to the Riparian ecotones where already dry season flows are struggling to meet demands in many downstream communities causing** changing of habitats of migratory birds, **impeded transportation and commerce, Upstream dams, water diversions, deforestation, and overuse on transboundary rivers like the Ganges and Brahmaputra make these dry-season-scarcities more pronounced.** Many experts are particularly concerned about the environmental impact of building dozens of hydroelectric dams on the Tibetan rivers and its tributaries to turn into "the battery of South Asia".

Understanding the challenges, how do we address the situation because finding holistic water management for the Himalayas is no simple prospect. It requires coupling of **'Looking towards opportunities'**"

## Saving the 'battery of South Asia'

**For that it is significant to focus on the prospects of Hydro-Diplomacy and Shared Resilience Building for which Bangladesh, India, Nepal, China and Bhutan** - five countries of the Eastern Himalayan Region offer vast opportunities for optimal water resources development through improved data and information sharing, conducting joint baseline study of the basin, managing water resources, ensuring food security and mitigating climate change. It is worthwhile to mention here that India and Bhutan's cooperation over the construction of hydropower projects is the only example of cooperation in the Brahmaputra Basin. The representatives of 10 Hill states

of Indian Himalayan Region decided to work out strategies under 'Mussoorie Resolution 2019' for Sustainable Development of Mountain areas in a recently held Conclave of the Himalayan States.

Further, there exists an urgency to establish sharing and long-term Transboundary cooperation- Nepal, India and Bangladesh (NIB) and Bangladesh, India and Bhutan (BIB) have coagulated alliances in water management initiatives for the Ganga and Brahmaputra river basins and Barak-Meghna river basin in the Eastern Himalayan Region of Asia and that reflects a model of trust and mutual confidence. Africa shows the way with 90 percent of water in Africa falling within 63 international river basin catchments crossed by multiple borders, water management in the region is inherently an international and cooperative endeavor. Civil Society Organizations here can serve as important Track 3 conduits for reducing the diplomatic barriers and foster dialogue

It is worthwhile to mention that the avowed objective of managing trans-boundary river basins is to unlock the potential for healthy river basins to build climate resilience and to sustain ecosystems and livelihoods by the development of tools for financing, governance, empowerment, and hydrological information sharing. The twin approach of Natural Resources and Human Resource Management shall go a long way to alleviate poverty, securing livelihoods and support development efforts in a sustainable manner.

Contemporary times call for water rationality to prevail once again. To effectively address the impacts of climate change on the Tibetan plateau and trans-boundary water conflict, there is a need for a regionally integrated approach to water resources management that safeguards the health of rivers and addresses the needs of growing populations, hydroelectricity and irrigation demands on both sides of the river basin especially the entitlements of downstream riparian countries.

**In this regard, the perusal for 'Integrated Basin-Wise management' instead of Integrated Basin Management' can be acknowledged.** The nexus approach's equal priority to build water, energy and food security will strengthen energy efficiency, mainstream climate resilience in energy systems, improve regional knowledge sharing and capacity building and adopt green practices that will minimize climate change induced disasters.

## Conclusion

The Tibetan region is endowed with considerable natural resources that could be used to foster sustainable socio-economic development. 'Balance of Tibetan Region' is an enduring concept. Water could be successfully be promoted as 'Socio-economic' connector to promote sustainable development in the region to **Revamp the cradles of civilization** through equity & judicious use. Adaptation to the inevitable environmental shift is necessary. In addition to vital technology, Political adaptation at regional level is imperative to manage the political and security-oriented effects of sustainable development and enhancing its Resilience towards preservation of Unique landscape and biodiversity of Tibetan plateau.

The future developments and social security of riparian countries relies must be a 'Win-Win' situation for all and set a precedent for integrating water partnerships on how well the ecological services are managed in Tibet Plateau but also strengthen their ambitious efforts of realizing the sustainable development goals (SDGs).

## Overview:

### Curtain raised for 'Dakar 2021'

A substantial meet to raise the mandate of 'Water Security for Peace and Development'. A carpet of high hopes altogether witnessed with around 500 intellectuals, decision makers, leaders across the globe pouring their words of thoughts & wisdom.



Water as a Development Connector between varied indicators like Health, Education, Basic Infrastructure and so on, there should be call for action Inclusive road map towards water security, and is mandated with cooperation among international agencies, regional programs and countries like our efforts in the Aspirational Districts of India which fostered around balanced

and mainstream development 'said Dr. Arvind Kumar.

He further articulated 'Harmonizing SDG-6 (Clean Water And Sanitation) under a unified umbrella of an International Taskforce of WWC can serve as a bridge that could engulf the gap between the social, economic and environmental pillars of sustainable development and a potential nexus for water security, peace and development and good nature resource governance. Our work in North Eastern state of Meghalaya having geo-strategic location surrounded by neighboring countries like Bangladesh, Nepal, Myanmar, Bhutan under its flagship program Integrated Basin Development

Livelihood Program (IBDLP) is well known success story with tangible outcomes through Water & Hydro-electric power cooperation, south-south cooperation. A global effort to reach common understanding to explore the possibility of

Dr. Arvind Kumar articulated 'Harmonizing SDG-6 (clean water and sanitation) under a unified umbrella of an International Taskforce of WWC can serve as a bridge that could engulf the gap between the social, economic and environmental pillars of sustainable development and a potential nexus for water security, peace and development and good nature resource governance the 69 Board of Governors meeting of World Water Council's at Dakar and World Water Forum Kick off Meeting at Diamniadio, Senegal forum 17<sup>th</sup> to 21<sup>st</sup>, June 2019

establishing regional Water Hubs, built on synergies with water related agencies at national level to address water and river basin concerns were well acknowledged by Honorable colleagues'.

*'Discussions during this unique elite gathering have amply shed light on the synergy between Water Security for Peace and Development'.*

Broadly speaking, **Water is Climate Change.** Water is a growing source of global conflict. Water is not only a matter of sustainable development but a fundamental Human Right and an instrument of peace and security.

**Two questions must be considered under the umbrella of Water Security:**

- Firstly, as to how long our water resources will last in the light of existing consumption patterns;
- Secondly, as to how these resources should be managed so that future generations have access to the same quality of life as present generations.

**Our work** in North Eastern India, Meghalaya, having geo-strategic location surrounded by neighboring countries like Bangladesh, Nepal, Myanmar, Bhutan under its flagship program Integrated Basin Development Livelihood Programme (IBDLP) is well known success story with tangible outcomes through water & Hydro-electric power cooperation, south-south cooperation with countries like Nepal and Bhutan incorporating the learnings of Ecosystem based Adaption in their national policy. Our efforts in 'Aspirational Districts' is fostered around 'Balanced & Mainstream Development' keeping 'Water as a Developmental Connector' between varied indicators like Health, education, Basic Infrastructure and so on.

There should be a **call for action** to foster and adopt wise management of water resources for sustainable water security and peace.

- Harmonize the SDGs that pertain to water under a unified umbrella of an International Taskforce of WWC. **SDG 6 is a gateway** to fulfill the provisions of which can serve as a bridge that could engulf the gap between the social, economic and environmental pillars of sustainable development and a potential nexus for water security, peace and development and good nature resource governance.
- **Most water and ocean resources are trans-boundary** in nature. There's need for promising blue print towards climate change adaptation and building **climate resilience**. Climate resilience will be strengthened through healthy ecosystem services that rely on well-functioning river basins, effective water management in reducing vulnerability.



**Transboundary cooperation like Barack-Meghna river basin in Asia** has created opportunities for cooperation amongst nation, fostering cooperation on water issues. This model can be a replicating model of trust and mutual confidence amongst states which shall strengthen the prospects of socio-economic cooperation. Such shared benefits shall move towards shared prosperity beyond regional integration.

- India is promoting strong alliance with its neighborhood to underline the prospects of Blue Economy-partnerships viz water, hydro power, renewable energy under the umbrella **SAGAR (Security and Growth for All in the Region)**. Good lessons from this perspective can be tailor made.
- A road map to ensure sustainable management of water must be effectively planned and measured through a common thinking on water security between international agencies, regional programs and countries. **Assessment of policies must be facilitated against three criteria: effectiveness, efficiency and appropriateness**
- There is need to go beyond the concept of integrated water resource management (**IWRM**), which is a vertical approach to the short water cycle by adopting horizontal approaches fundamentally interlinking **water-energy-climate change nexus approach**, and Ecosystem- Based Adaptation (**EbA**)
- Emerging technologies and innovative tools can help in enhancing the prospects of provision of real time data to understand the enigma of climate change. **Utilize the Intergovernmental Panel on Climate Change (IPCC) data on water and climate change** to develop early-warning systems, mapping water risk, and generating greater understanding holistic view on water shortages.
- The profile of water security must be raised on the **political and developmental agendas of national governments in Asia and Africa** by setting policies on infrastructure and financial investments in support of water conservation and management
- A global effort is needed to reach a common understanding explore the **possibility of establishing Regional Water Hubs**, mechanism should build on synergies with water related agencies at the national level to address water and river basin concerns

### **Concluding Remarks:**

The closing remark was well said by Ministry of Water and sanitation of Senegal Serigne Mbaye Thiam equally stressed that ‘the well-being of the communities deserves our best energies’ which was well endorsed by Executive Secretary of World Water Forum Abdoulaye Sene.

A ‘**common agenda**’ for water management policies that follows the water security should include prioritizing management of water resources for peace and security is the foremost thing which must be acknowledged by devising national water conservation strategy and actions, adhering to the principle of determining water demand with water resources availability.

Majority of water-related problems plaguing water Security are solvable through environmentally and politically sustainable water management, and the technologies and policy tools that are required to make progress are well known. **What is needed now is Action.**

## Report

### Demystifying the Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC)

The report reveals the benefits of ambitious and effective adaptation for sustainable development and, conversely, the escalating costs and risks of delayed action.



The ocean and the cryosphere – the frozen parts of the planet – play a critical role for life on Earth. A total of 670 million people in high mountain regions and 680 million people in low-lying coastal zones depend directly on these systems. Four million people live permanently in the Arctic region, and small

island developing states are home to 65 million people. Global warming has already reached 1°C above the pre-industrial level, due to past and current greenhouse gas emissions. There is overwhelming evidence that this is resulting in profound consequences for ecosystems and people. The ocean is warmer, more acidic and less productive. Melting glaciers and ice sheets are causing sea level rise, and coastal extreme events are becoming more severe.

The IPCC Special Report on the Ocean and Cryosphere in a Changing Climate, approved on 24 September 2019 by the 195 IPCC member governments, provides new evidence for the benefits of limiting global warming to the lowest possible level – in line with the goal that governments set themselves in the 2015 Paris Agreement. Urgently reducing greenhouse gas emissions limits the scale of ocean and cryosphere changes. Ecosystems and the livelihoods that depend on them can be preserved. If we reduce emissions sharply, consequences for people and their livelihoods will

*“The open sea, the Arctic, the Antarctic and the high mountains may seem far away to many people.” But we depend on them and are influenced by them directly and indirectly in many ways – for weather and climate, for food and water, for energy, trade, transport, recreation and tourism, for health and wellbeing, for culture and identity.”*

still be challenging, but potentially more manageable for those who are most vulnerable. We increase our ability to build resilience and there will be more benefits for sustainable development. Knowledge assessed in the report outlines climate-related risks and challenges that people around the world are exposed to today and that future generations will face. It presents options to adapt to changes that can no longer be avoided, manage related risks and build resilience for a sustainable future. The assessment shows that adaptation depends on the capacity of individuals and communities and the resources available to them.

## Repercussions on the downstream communities

People in mountain regions are increasingly exposed to hazards and changes in water availability, the report said. Glaciers, snow, ice and permafrost are declining and will continue to do so. This is projected to increase hazards for people, for example through landslides, avalanches, rockfalls and floods. Smaller glaciers found for example in Europe, eastern Africa, the tropical Andes and Indonesia are projected to lose more than 80% of their current ice mass by 2100 under high emission scenarios. The retreat of the high mountain cryosphere will continue to adversely affect recreational activities, tourism, and cultural assets.

As mountain glaciers retreat, they are also altering water availability and quality downstream, with implications for many sectors such as agriculture and hydropower. Melting ice, rising seas, Glaciers and ice sheets in polar and mountain regions are losing mass, contributing to an increasing rate of sea level rise, together with expansion of the warmer ocean.

While sea level has risen globally by around 15 cm during the 20th century, it is currently rising more than twice as fast – 3.6 mm per year – and accelerating, the report showed. Sea level will continue to rise for centuries. It could reach around 30-60 cm by 2100 even if greenhouse gas emissions are sharply reduced and global warming is limited to well below 2°C, but around 60-110 cm if greenhouse gas emissions continue to increase strongly.

Sea level rise will increase the frequency of extreme sea level events, which occur for example during high tides and intense storms. Indications are that with any degree of additional warming, events that occurred once per century in the past will occur every year by mid-century in many regions, increasing risks for many low-lying coastal cities and small islands. Without major investments in adaptation, they would be exposed to escalating flood risks, the report shows. Some island nations are likely to become uninhabitable due to climate-related ocean and cryosphere change, the report said, but habitability thresholds remain extremely difficult to assess.

Warming and changes in ocean chemistry are already disrupting species throughout the ocean food web, with impacts on marine ecosystems and people that depend on them, the report said. To date, the ocean has taken up more than 90% of the excess heat in the climate system. By 2100, the ocean will take up 2 to 4 times more heat than between 1970 and the present if global warming is limited to 2°C, and up to 5 to 7 times more at higher emissions. Ocean warming reduces mixing between water layers and, as a consequence, the supply of oxygen and nutrients for marine life.

*The report finds that strongly reducing greenhouse gas emissions, protecting and restoring ecosystems, and carefully managing the use of natural resources would make it possible to preserve the ocean and cryosphere as a source of opportunities that support adaptation to future changes, limit risks to livelihoods and offer multiple additional societal benefits.*

## Declining Arctic sea ice, thawing permafrost

The extent of Arctic sea ice is declining in every month of the year, and it is getting thinner. If global warming is stabilized at 1.5°C above pre-industrial levels, the Arctic ocean would only be ice-free in September – the month with the least ice – once in every hundred years. For global warming of 2°C, this would occur up to one year in three.

The IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC) is the third in a series of Special Reports produced in the IPCC's Sixth Assessment Cycle. The report was prepared under the joint scientific leadership of IPCC Working Groups I and II, with support from the Working Group II Technical Support Unit.

The word “cryosphere” – from the Greek kryos, meaning cold or ice – describes the frozen components of the Earth system, including snow, glaciers, ice sheets and ice shelves, icebergs and sea ice, ice on lakes and rivers as well as permafrost and seasonally frozen ground.

### Way ahead

- Limiting warming would help them adapt to changes in water supplies in mountain regions and beyond, and limit risks related to mountain hazards
- Integrated water management and transboundary cooperation provides opportunities to address impacts of these changes in water resources.
- Arctic and boreal permafrost hold large amounts of organic carbon, almost twice the carbon in the atmosphere, and have the potential to significantly increase the concentration of greenhouse gases in the atmosphere if they thaw. In the future, increased plant growth can increase the storage of carbon in soils and offset carbon release from permafrost thaw, but not at the scale of large changes on the long term.
- Policy frameworks, for example for fisheries management and marine-protected areas, offer opportunities for communities to adapt to changes and minimize risks for our livelihoods.
- Cutting greenhouse gas emissions will limit impacts on ocean ecosystems that provide us with food, support our health and shape our cultures & Reducing other pressures such as pollution will further help marine life deal with changes in their environment, while enabling a more resilient ocean.

### Notes:

#### About the IPCC

The Intergovernmental Panel on Climate Change (IPCC) is the UN body for assessing the science related to climate change. It was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) in 1988 to provide policymakers with regular scientific assessments concerning climate change, its implications and potential future risks, and to put forward adaptation and mitigation strategies.

IPCC assessments provide governments, at all levels, with scientific information that they can use to develop climate policies. IPCC assessments are a key input into the international negotiations to tackle climate change. IPCC reports are drafted and reviewed in several stages, thus guaranteeing objectivity and transparency.

## Miscellaneous Events

**29<sup>th</sup> and 30<sup>th</sup> May, 2019**

India Water Foundation, as the 'Key Resource Hub of Networking' by NCSTC, Ministry of Science and Technology, Government of India organized its Annual 'Advisory Committee Meet' on 29<sup>th</sup> and 30<sup>th</sup> May 2019 at its office in Nehru place, New Delhi. It was an incredible platform to forge consensus on the essence of Science, Knowledge and Innovations focusing on bringing science from labs to land in our everyday lives. It was an incredible platform for IWF to share its accomplishments and activities. Overall, it was indeed an 'Informative, Innovative and an Inspirational meet.



**15<sup>th</sup> June, 2019**

During a brief audience with Mr Prakash Javadekar, we felicitated him for taking over as Minister of Environment Forest and Climate Change and Minister of Information and Broadcasting. We appreciate his positive gesture for taking out time from his busy schedule and talked about IndiaWaterFoundation's endeavors, seizing the momentum, we exchanged ideas for future cooperation in the sector.



**23<sup>rd</sup> June, 2019**

It's a moment of pride to share that our Chief Functionary Shweta Tyagi is elected as the Executive Member to the Governing Council (GC), of Global Compact network India (GCNI) for the term 2019-21 with a winning mandate. This marks a significant milestone to share India Water Foundation's efforts towards realization of SDG's and also contribute to GCNI's mandate. We believe that our collective strength can galvanize towards an 'Integrated approach towards water Security' a view which is also acknowledged by our Prime Minister Shri NarendraModiji'. Indeed a well begun opportunity for the team of IWF.

**24<sup>th</sup> June, 2019**

Ms. Shweta Tyagi, Chief Functionary, India Water Foundation on the occasion of the 70<sup>th</sup> anniversary celebrations of International Commission on Irrigation and Drainage attended the half day seminar on the topic "Leveraging Water Security for Sustainable Agricultural Water Management" organized at Shangri-La's Eros Hotel on 24 June 2019, New Delhi. The seminar was attended by Ambassadors, Representatives from member countries and delegates who viewed this session to be 'Illuminating & Impactful' as it highlighted the much needed vision of 'Water Sustainability'.



**5<sup>th</sup> July, 2019**

The Chief Functionary Ms. Shweta Tyagi attended the 5<sup>th</sup> annual general meet and first meet of the newly elected governing council as executive member of the governing council of Global compact network India on 5<sup>th</sup> July 2019, at ONGC, Vasant Kunj, Nelson Mandela Marg, New Delhi . She took note of the annual meet and complemented GCNI's commendable efforts towards the organization mandate and further committed to scale the efforts of the esteemed organization in her personal capacity.

Following the meet, the 9<sup>th</sup> Subir Raha Memorial Lecture honored Late Mr. Subir Raha, the founder President of the Global Compact Network India and former CMD, ONGC and highlighted his pioneering contribution towards the organization. The speaker of the event Padma Bhushan awardee Dr Kirit Parikh made a pitch on the keynote theme 'How can corporate organisations help achieve Sustainable Development Goals', strengthening the stellar role of corporates to envisage the #SDGs. It was an interactive session with a plethora of intellectual minds and wise discussions.



### 18-19<sup>th</sup> August, 2019

Dr. Arvind Kumar highlighted that 'the importance of Eco System Service approaches through promotion of capacity building, knowledge dissemination and sustainable management of ecosystem services to address the multifaceted and complex Environmental challenges we are facing today' as an Expert to the consultative workshop 'Towards Inclusive Green Economies: Northern Regional Consultative Workshop' on the topic of 'Water and Ecosystems' organized by TERI along with support from PAGE and UNEP on 18-19th August 2019 at the TERI Gram, Gwal Pahari, Gurugram, (India) .



**2<sup>nd</sup> September, 2019**

It was a positive gesture of Hon'ble Minister of Jalshakti Sh. Gajendra Singh Shekhawat for exchanging words of wisdom and thoughtfulness with us in a brief audience at his office (Shram Shakti Bhawan) where we applauded the growing success of Jal Shakti Abhiyan and Jal Jeevan Mission. As a token of appreciation we presented the hon'ble minister the painting made by Bushra, a student of aspirational district Chitrakut. The enriching discussion ranged from the initiatives of the ministry and the endeavors of India Water Foundation.



[www.indiawaterfoundation.org](http://www.indiawaterfoundation.org)