ANNUAL REPORT

2019-20

INDIA WATER FOUNDATION

About India Water Foundation

India Water Foundation (Special Consultative Status With UN-ECOSOC, Observer Status Governing Body of United Nations Environment Assembly (UNEA), Observer status UNFCCC, Observer status with UNCCD, CTCN membership for Southern Asia, Member IUCN, Member GPML) is a non-profit civil society, & think tank, is engaged in enhancing public awareness in Asia and the Pacific region regarding the vital role water and environment play in human lives, their impact on health, economic growth, livelihoods of the people and calamities that wreak havoc due to non-judicious harnessing of these natural resources. Generation of this awareness is facilitated through seminars, conferences, outreach and personal contact programs etc. As water is an essential component of power generation and food production, therefore is also engaged in ensuring environmental security, water security, energy security and food security which are essential for sustainable development.

Save Water - Save Environment

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Foreword

In the wake of four years of completion of coming into being of the implementation of the targets of Sustainable Development Goals (SDGs) along with over three years of coming into force of the Paris Agreement on Climate Change (PACC), the world is still awaiting with optimism the fruitful outcomes of the SDGs and PACC. Nevertheless, the warning signals emanating from the Report of the Secretary General on the implementation of the SDGs in 2019 as well as IPCC's Special Report on Global Warming in October 2018 are prone to betray this optimism in view of the slow pace of development in these directions. This warrants according priorities to issues related to climate change and implementation of the various SDGs in the regional and national policies so that the objectives of the 2030 Agenda are realized within the stipulated period. Remarkable developments occurring at global, regional and local levels in the realms of water, environment and sustainable development entail the potential of impacting the thinking and modus operandi of the civil society as well, hence India Water Foundation, as a leading civil society in the domains of water, environment and sustainable development, is also impacted by these developments.

With the release of Special Report on Climate Change and Land (SRCCL) released by the Intergovernmental Panel on Climate Change (IPCC) on 8 August 2019, the focus on land was emphasized because land is already under increasing human pressure and climate change is already adding to these pressures, and concurrently, the target of keeping global warming to well below 2º C can be achieved only by reducing greenhouse gas (GHG) emissions from all sectors including land and food. The IPCC released its another report entitled Special Report on the Ocean and Cryosphere in a Changing Climate (SROCCC) on 24 September 2019, and this Special Report highlighted the urgency of prioritizing timely, ambitious and coordinated action to address unprecedented and enduring changes in the ocean and cryosphere. 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.

Emissions Gap Report 2019 (EGR 2019), released by UNEP in November 2019, warns that unless global greenhouse gas emissions fall by 7.6 per cent each year between 2020 and 2030, the world will miss the opportunity to get on track towards the 1.5 °C temperature goal of the Paris Agreement. EGR 2019 says that even if all current unconditional commitments under the Paris Agreement are implemented, temperatures are expected to rise by 3.2°C, bringing even wider-ranging and more destructive climate impacts. Besides, amongst other global momentous

developments was the convening of Conference of Parties (COP-25) to the UNFCCC at Madrid Spain in the first half of December 2019 wherein the issues concluded, inter alia, included: the review of the WIM, gender, and some finance-related issues, such as guidance to the Global Environment Facility (GEF) and Green Climate Fund (GCF). Parties also adopted three decisions; each named the Chile/Madrid Time for Action. While the decision related to the Paris Agreement did not specifically call for greater ambition, there was a suggestion for parties to consider increasing their climate ambition. Release in early March 2020 a report by WMO entitled *The WMO Statement on the State of the Global Climate in 2019* focused on physical signs of climate change such as increasing land and ocean heat, accelerating sea level rise and melting ice. Noting that 2015 - 2019 are the five warmest years· on record, and 2010 - 2019 the warmest decade on record. Since the 1980s, the WMO report also documents impacts of weather and climate events on socio-economic development, human health, migration, migration and displacement, food security, land and marine ecosystems.

The other significant developments that profoundly influenced us at India Water Foundation and in an identical manner the activities conducted by India Water Foundation (IWF) during 2019-2020, inter alia, included identical themes of the 2020 World Water Day as well as 2020 World Water Development Report, which emphasized on interconnectedness between water and climate change. Noting that bulk of the impacts of climate change will be manifested in the tropical zones where most of the developing world can be found, the 2020 World Water Development Report informs that small island developing states are typically environmentally and socio-economically vulnerable to disasters and climate change, and many will experience increasing water stress. Across the planet, dry lands are expected to expand significantly. Besides, the release of 2019 Global Outlook of the Water Industry by a private company in mid-June 2019, while focusing on water stress and vagaries of climate change, emphasized on the urgency for economic infrastructure being the key drivers for global water and wastewater management.

At the domestic national level, major development that influenced the perspective and activities of India Water Foundation, inter alia included: Release of the compendium on Localizing SDGs: Early Lessons from India by Niti Aayog in early June 2019, celebration of the 46th edition World Environment Day with focus on air pollution, convening of UNCCD COP-14 at New Delhi on 2-13 September 2019 with the theme Restore Land – Sustain Future and organization of a Special Session by India Water Foundation at the India Pavilion on 13 September 2019. Convening of Fourth India Water Impact Summit in New Delhi on 5-7 December 2019. Major activities undertaken by India Water Foundation during 2019-2020 veered round major themes of water, climate change and SDGs, which inter alia, included: convening of a Special Session at the India Pavilion on the sidelines of UNCCD COP-14 Conference in New Delhi on 13 September, 2019, interactions with leading organizations, CSOs, international agencies and other organizations in water, environment and sustainable development areas, and generating

awareness among school children etc, along with other activities. However, with the promulgation of nationwide lockdown in the wake of COVID-19 pandemic on 24 March 2020, most of the activates came to a standstill.

It is gives me profound pleasure in presenting this annual report for 2019-2020 to our patrons, well-wishers, colleagues and the general public. We, at India Water Foundation, wish to convey our gratitude to all those who stood with us in accomplishing our tasks despite all odds and hope to continue to enjoy their trust and affection. I avail this occasion to reaffirm steadfast commitment of IWF to continue to render its yeoman services in the fields of water, climate change and sustainable development with renewed enthusiasm. In the ensuing period impacted by COVID-19 pandemic, I earnestly request everyone to observe guidelines issued by the government in this regard and wish good health to all.

(Dr Arvind Kumar)
President
India Water Foundation

Overview

At the cusp of entering fifth year of the coming into force of the 17 Sustainable Development Goals (SDGs) of the 2030 Agenda along with Paris Agreement on Climate Change (PACC), some targets both of some SDGs and some provisions of the PACC to be attained by 2020, the focus on land and ocean also garnered traction in 2019 in the wake of the release of two IPCC reports – Special Report on Climate Change and Land released in August 2019 and Special Report on the Ocean and Cryosphere and Climate Change. Along with these developments, the convening of UNCCD COP-14 in September 2019 emphasizing on interlinkages between land and climate change, release of the Emission Gap report for 2019 by the UNEP and State of the Global Climate 2019 released by WMO in 2019 brought focus on global warming, climate change, linkages between land and climate change as well as linkages between ocean and cryosphere and climate change. Consequently, these reports offered valuable insights and we at India Water Foundation, while focusing our attention on these insights, made endeavors to imbibe salient features of these insights into our activities undertaken during the period under review.

India Water Foundation (IWF), a non-profit civil society organization, Key Resource Centre with the Ministry of Drinking Water & Sanitation, Government of India since March 2015, which has been accorded Special Consultative Status by the UN Economic and Social Council (UN-ECOSOC), as well as Observer Status with the United Nations Environment Assembly (UNEA),and the UNFCCC, has been engaged in assimilation and dissemination of traditional wisdom, best practices and knowledge along with innovative techniques in water and environment sectors since its establishment in 2008. Like in the past, the activities of the IWF in 2019-2020 were amply influenced by developments occurring in international and national arenas in water and environment sectors to which it responded accordingly within meagre resources at its disposal, as described below.

Momentous Developments

With the completion of four years of coming into force of the SDGs and PACC and the and State ensuing year of 2020 having been designated to achieve certain set targets of some specific SDGs as well as certain provisions of the PACC, the year 2019 was characterized by flurry of hectic activity by the international community as well as individual nations being actively engaged in water, environment and sustainable development activities with added enthusiasm to

achieve the targets set for 2020. On 8 August 2019, IPCC released its Special Report on Climate Change and Land (SRCCL) focused on the linkages between land management and climate change, suggesting that scientific land management could help reduce greenhouse gas emissions. Another report released by the IPCC on 24 September 2019, entitled Special Report on the Ocean and Cryosphere in a Changing Climate (SROCCC) highlighted the urgency of prioritizing timely, ambitious and coordinated action to address unprecedented and enduring changes in the ocean and cryosphere. While revealing the benefits of ambitious and effective adaptation for sustainable development, the report also focused on the escalating costs and risks of delayed action.

The 14th edition of the Conference of Parties (COP-14) to the UN Convention to Combat Desertification (UNCCD) was hosted by India from 2 to 13 September 2019. This was for the first time that India hosted an edition of the UNCCD COP and COP-14 had the theme – Restore Land, Sustain Future. The COP adopted over 30 decisions on, among other topics: how to implement four thematic policy frameworks addressing drought, gender, sand and dust storms, and desertification, land degradation, and drought (DLDD) as a driver for migration. Release of the Emissions Gap Report 2019 (EGR 2019) by the UNEP in November 2019 sounded a warning signal that unless global greenhouse gas emissions fall by 7.6 per cent each year between 2020 and 2030, the world will miss the opportunity to get on track towards the 1.5 °C temperature goal of the Paris Agreement. Another momentous development was the organization of Conference of the Parties (COP-25) to the UNFCCC held in Madrid (Spain) on 2-13 December 2019. The issues that were concluded included the review of the WIM, gender, and some finance-related issues, such as guidance to the Global Environment Facility (GEF) and Green Climate Fund (GCF). Parties also adopted three decisions; each named the Chile/Madrid Time for Action.

Prevalent interlinkages and interconnectedness between water and climate change and their reciprocal impact on each other formed the major theme of the 2020 United Nations World Water Development Report While focusing on the challenges, opportunities and potential responses to climate change, in terms of adaptation, mitigation and improved resilience that can be· addressed through improving water· management, the 2020 WWDR also combines climate change adaptation and mitigation, via water, that is seen as a win-win proposal by the WWDR, for improving the provision of water supply and sanitation services and combating both the causes and consequences of climate change, including disaster risk reduction. All these developments proved instrumental in significantly impacting the thought and activities of India Water Foundation during 2019-2020.

World Water Day 2020

In order to focus on inextricable links between water and climate change and as to how one impacts the other, the theme of World Water Day for 2020 was chosen as "Water and Climate Change" – and that was observed on 22 March 2020, with the avowed objective of emphasizing on the significance of water as well as exploring linkages between water and climate change. In the wake of burgeoning global population, increased demand for water, which is already a finite source, is prone to lead to depletion of natural resources and the resultant damages to the environment in multiple places in different parts of the globe.

Figure 1Children carrying a water• container in Jowhar, Somalia (2013). UN/Tobin Jones (Photo Courtesy: UN).

On the eve of World Water Day 2020, UN-Water stated that adapting to the water effects of climate change will protect health and save lives, also emphasizing that more efficient use of water could reduce greenhouse gas (GHG) emissions. Unfortunately, by the time the World Water Day was being observed, COVID-19 pandemic had broken out and adversely affected many countries, including India, and accordingly due to the COVID-19 pandemic, there was an additional focus on hand washing and hygiene. The occasion was utilized by civil society organizations active in the wash sector, such as UNICEF, WaterAid and Water and Sanitation for the Urban Poor (WSUP) to raise public awareness and elicit media attention for water related issues. This occasion also coincided with End Water Poverty – a global civil society with 250 partner organizations – sponsoring Water Action Month and offering an event-planning guidebook.

The occasion also marked the release of World Water Development Report for 2020. Academic institutions, especially schools and universities, organized many programs in different parts of the globe to educate the people about the importance of water conservation and judiciously managing water resources. Water and climate scientists mulled solutions including protecting carbon sinks such as oceans and wetlands, adopting climate-smart agriculture techniques and increasing the safe reuse of wastewater. Emphasizing that water is our most precious resources, experts stressed upon the urgency of using this resource more responsibly, balancing all of society's water needs while ensuring the poor and marginalized sections are not left behind. Emphasis was focused on the following:

- We cannot afford to wait Climate policy makers must put water at the heart of action plans.
- Water can help fight climate change. There are sustainable affordable & scalable water and sanitation solutions.
- Everyone has a role to play in our daily lives; there are surprisingly easy steps we can all take to address climate change.

World Water Development Report 2020

Interestingly, release of the 2020 edition of the United Nations World Water Development Report (UN WWDR 2020) entitled 'Water and Climate Change' coincided with the celebration of World Water Day, an annual practice and ritual that has been in vogue for past many years. Report aims at assisting the water community in tackling the challenges emanating from the vagaries of climate change and informing the climate change community about the opportunities that improved water management offers in terms of adaptation and mitigation.

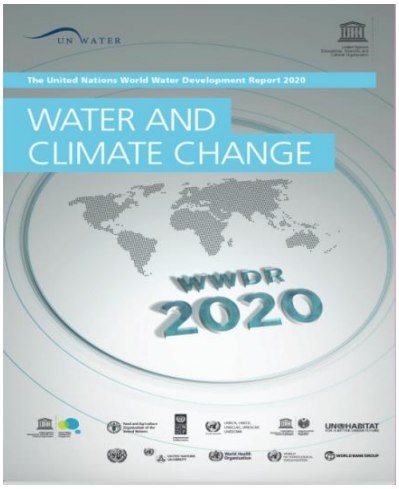


Figure 2Cover page of the 2020 edition of the World Water Development Report (WWDR 2020) entitled 'Water and Climate Change'.

The scientific evidence makes it explicitly clear that the climate is undergoing change at a faster pace and will continue to change, affecting societies mainly through water. Climate change is prone to impact the availability, quality and quantity of water for basic human needs, menacing the effective enjoyment of the human rights to water and sanitation for potentially billions of people. The change of the water cycle will also pose risks or energy production, food security, human health, economic development and poverty reduction, thereby, seriously endangering the attainment of the Sustainable Development Goals (SDGs).

The 2020 United Nations World Water Development Report While focusing on the challenges, opportunities and potential responses to climate· change, in terms of adaptation, mitigation and improved resilience that can be addressed through improving water management, the 2020 WWDR also combines climate change adaptation and mitigation, via water, that is seen as a win-win proposal by the WWDR, for improving the provision of water supply and sanitation services and combating both the causes and consequences of climate change, including disaster risk reduction.

The Report points out that climate change will affect the availability, quality and quantity of water for basic human needs, threatening the effective enjoyment of the human rights to water and sanitation for potentially billions of people. The hydrological changes induced by climate change will add challenges to the sustainable management of water resources, which are already under severe pressure in many regions of the world. It further reports that food security, human health, urban and rural settlements, energy production, industrial development, economic

growth, and ecosystems are all water-dependent and thus vulnerable to the impacts of climate change. It envisages that climate change adaptation and mitigation through water management is; therefore, critical to sustainable development, and essential to achieving the 2030 Agenda for Sustainable Development, the Paris Agreement on Climate Change and the Sendai Framework for Disaster Risk Reduction.

While pointing out that global water use has increased by a factor of six over the past 100 years and continues to grow steadily at a rate of about 1% per year as a result of increasing population, economic development and shifting consumption patterns, the 2020 WWDR laments that combined with a more erratic and uncertain supply, climate change will aggravate the situation of currently water-stressed regions, and generate water stress in regions where water resources are still abundant today. Physical water scarcity is often a seasonal phenomenon, rather than a chronic one, and climate change is likely to cause shifts in seasonal water availability throughout the year in several places.

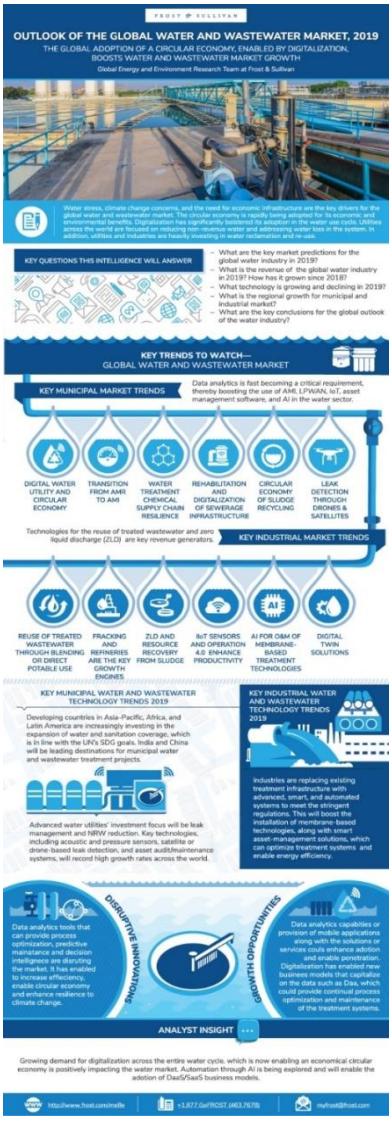
Stating that climate change manifests itself, amongst others, in the increasing frequency and magnitude of extreme events such as heatwaves, unprecedented rainfalls, thunderstorms and storm surge events, the Report warns that water quality will be adversely affected as a result of higher water temperatures, reduced dissolved oxygen and thus a reduced self-purifying capacity of freshwater bodies. There are further risks of water pollution and pathogenic contamination caused by flooding or by higher pollutant concentrations during drought. Cautioning that many ecosystems, particularly forests and wetlands, are also at risk, the Report states that the degradation of ecosystems will not only lead to biodiversity loss, but also affect the provision of water-related ecosystem services, such as water purification, carbon capture and storage, and natural flood protection, as well as the provision of water for agriculture, fisheries and recreation.

Noting that bulk of the impacts of climate change will be manifested in the tropical zones where most of the developing world can be found, the Report informs that small island developing states are typically environmentally and socio-economically vulnerable to disasters and climate change, and many will experience increasing water stress. Across the planet, drylands are expected to expand significantly. Accelerated melting of glaciers is expected to have a negative effect on the water resources of mountain regions and their adjacent lowlands. Despite the growing evidence that the changing climate will affect the availability and distribution of water resources, some uncertainties remain, especially at local and basin scales. While there is not much disagreement about the temperature increases, which have been simulated by different general circulation models (GCMs) under specific scenario conditions, more variability and ambiguity exist in projected precipitation trends. It is also stated that usually, trends in extremes (heavier precipitation, heat, prolonged droughts) show a clearer direction than trends in annual precipitation totals and seasonal patterns, as well as much of the impacts of climate change will be manifested in the tropical zones where most of the developing world can be found

Keeping in view the added emphasis on intricate linkages between water and climate change and their mutual reciprocity in impacting each other, we at IWF have already been emphasizing on some of these aspects; nonetheless, this Report has enabled us in widening our horizon and deep understanding in according priority to the linkages between water and climate change. during the period under review as well in times to come.

Global Outlook of the Water Industry in 2019

Emphasis on water stress, climate change, and the urgency for economic infrastructure being the key drivers for the global water and wastewater have been focused on in the report entitled Global Outlook for the Water and Wastewater Market for 2019, brought out by Frost and Sullivan in mid-June 2019. Asserting that circular economy is being rapidly adopted for the economic and environmental benefits, this report informs that digitalization has significantly bolstered its adoption in the water use cycle and utilities across the world are focusing on decreasing non-revenue water and addressing water loss in the system. Besides, this report also informs that utilities and industries are making huge investments in water reclamation and re-use. Interestingly, this report also states that zero-liquid-discharge (ZLD) and resource recovery from sledge are eliciting significant traction and are being widely adopted for their sustainable benefits, irrespective of the high costs. It is also reported that the end-users are augmenting infrastructure resilience to drought and flooding with the help of data analytics tools or software platforms and IIoT sensors that provide process optimization, water/energy/chemical efficiency, and predictive maintenance capabilities.



According to this report, the market size for water and wastewater for 2019 is estimated at $ 743.77 billion and this based on predictions that are made with 2018 as the base· year. While highlighting key market predictions for 2019 for the industrial and the municipal segments, this study points out that the total expenditure (ToTex) covers Design and Engineering, Operation and Maintenance, Water and Wastewater Technology, Process Control Management and Chemicals. The study also presents key regional hotspots along with the growth outlook of key technologies for water, wastewater, and sludge treatment. Total municipal and industrial expenditure forecast is presented by Frost and Sullivan for the regions of Asia-Pacific, North America, Europe, the Middle East and Africa and Latin America. While presenting key market predictions for the municipal and the industrial segments for each

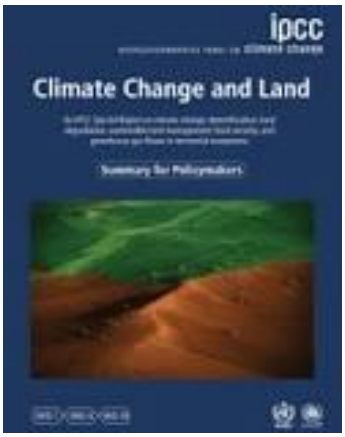
of these regions, along with revenues, the report also offers a municipal and industrial technology outlook along with revenue for the technologies employed in water treatment, wastewater treatment, sludge management and smart water management.

Key issues addressed in this report, inter alia, include: (a) What are the key· predictions for the global water and wastewater market in 2019? (b) What is the estimated revenue for 2019? How has revenue grown since 2018? (c) Which technologies are seeing growing/declining usage? (d) What are the regional trends/predictions and region-wise expenditure forecasts for the municipal and the industrial segments? (e) What the key growth opportunities and strategic imperatives for the market? and what are the key conclusions for the global water· and wastewater market?

We at India Water Foundation have been keenly keeping a tab on market trends in water and wastewater management trends and such reports, especially about water industry, water and wastewater related technologies and upcoming problems in managing municipal water. The information and good practices garnered through such studies and reports in tandem with in-practice experience gained on the ground helps us in according priority to recycling wastewater after treatment for reuse in industry and agriculture especially, because bulk of municipal and industrial wastewater is generated in urban areas that fails to attract appropriate attention for recycle and reuse.

IPCC Special Report on Climate Change and Land

That land is already under increasing human pressure and climate· change is adding to these pressures, and concurrently, keeping global warming to well below 2ºC can be achieved only by reducing greenhouse gas (GHG) emissions from all sectors including land and food, is the prime message being conveyed by the Special Report on Climate Change and Land (SRCCL) released by the Intergovernmental Panel on Climate Change (IPCC) on 8 August 2019 at Geneva, Switzerland. The release of the SRCCL by the IPCC, the global body for assessing the state of scientific knowledge related to climate change, its impacts and potential future risks, and possible· response· options, was seen as a key scientific input into forthcoming climate and environment negotiations like the Conference of the Parties of the UN Convention to Combat Desertification (COP 14) in New Delhi, India in September 2019 and the UN Framework Convention on Climate Change Conference (COP 25) in Santiago, Chile, in December 2020.



Tasked with the onus of taking the first ever comprehensive look at the whole land-climate system, the IPCC through contributions from experts and governments worldwide, came out with SRCCL that amply demonstrates that better land management can contribute to tackling climate change but is not the only solution. Noting that reducing greenhouse gas emissions from all sectors is essential if global warming is to be kept to well below 2 ºC, if not 1.5oC, the SRCCL emphasizes that land must remain productive to maintain food security as the population increases and the negative effects of climate change on vegetation increase. In other words, there are limits to the contribution of land to addressing climate change, for example, via the cultivation of energy crops and afforestation. Pointing out that it also takes time for trees and soils to store carbon effectively, this Report envisages that bio-energy is required to be carefully managed to avoid risks to food security, biodiversity and land degradation. However, it cautions that desirable outcomes are contingent upon locally appropriate policies and governance mechanisms.

Noting that the world is best placed to combat climate change when there is an overall focus on sustainability, the SRCCL designates land as a critical resource that plays a significant role in the climate system, especially in the light of the fact that agriculture, forestry and other types of land use account for 23% of human-induced GHG emissions. While pointing that natural land processes absorb carbon dioxide equivalent to almost a third of carbon oxide emissions from

fossil fuels and industry, the Report how managing land resources sustainably can be helpful in addressing climate change. Conceding that land already in use· could feed the world in a changing climate and provide biomass for renewable energy, the Report cautions that early far-reaching action across several areas is required also for the conservation and restoration of ecosystems and biodiversity.

Emphasizing on the inter-linkages between the land and climate change the SRCCL asserts that when land is degraded it becomes less productive restricting what can be grown and reducing the soils ability to absorb carbon and this turn exacerbates climate change while climate change in turn exacerbates land degradation in many different ways.

It informs that the choices made about sustainable land management can help reduce and, in some cases, reverse the adverse impacts of climate change. The Report suggests that in the wake of more intensive rainfall increasing the risk of soil erosion of croplands in future, sustainable land management is a way to protect vulnerable communities from the adverse impacts of this soil erosion and landslides.

While asserting that roughly 500 million people live in areas that experience desertification and that dry-lands and areas that experience desertification are also more vulnerable to climate· change and extreme events including drought, heat waves, and dust storms with an increasing global population providing further pressure, the report sets out options to tackle land degradation, and prevent or adapt to further climate change. It also examines potential impacts from different levels of global warming.

With regard to food security the SRCCL suggests that coordinated action to address climate change can simultaneously improve land, food security and nutrition and help to end hunger The report highlights that climate change is affecting all four pillars of food security: availability (Yield and production) access (prices and ability to obtain food) utilization (nutrition and cooking) and stability (disruptions to availability). Food security is likely to be increasingly affected by future climate change through yield declines, especially in the tropics, increased prices, reduced nutrient quality and supply chain disruptions. There will be different effects in different countries.

The report records that about one third of food produced is lost or wasted and causes of this food loss or waste differ substantially between developed and developing countries, as well as between regions. It is pointed out that reduction in this loss and waste would lead to reduction in GHG emissions and help improve food security.

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The report finds that there are ways to manage risks and reduce vulnerabilities in land and the food system, especially because risk management can enhance communities' resilience to extreme events, which has an impact on food systems, and this can be the result of dietary

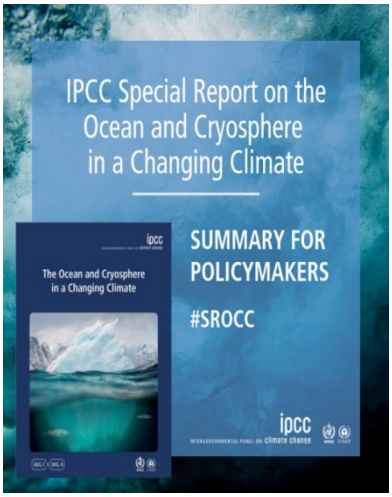
changes or ensuring a variety of crops to prevent further land degradation and enhance resilience to extreme or varying weather. Reducing inequalities, improving incomes, and ensuring equitable access to food so that some regions (where land cannot provide adequate food) are not disadvantaged, are other ways to adapt to the negative effects of climate change. There are also methods to manage and share risks, some of which are already available, such as early warning systems.

While noting that an overall focus on sustainability coupled with early action offers the best chances to tackle climate change, entailing· low population growth· and reduced inequalities, improved nutrition and lower food waste, the SRCCL is hope that such a mechanism could enable a more resilient food system and make· more land available for bio-energy, while still protecting forests and natural ecosystems, and concurrently, it also cautions that without early action· in these areas, more land would be required for bio-energy, leading to challenging decisions about future land-use and food security. Taking cognizance of the things that are already being done in terms of use of technologies and good practices, the SRCCL emphasizes on the need to scale them up and make use of them in other suitable places that they not being used in at present.

IPCC Special Report on the Ocean & Cryosphere in a Changing Climate

On 24 September 2019, the IPCC released its report entitled Special Report on the Ocean and Cryosphere in a Changing Climate (SROCCC). This Special Report highlights the urgency of prioritizing timely, ambitious and coordinated action to address unprecedented and enduring changes in the ocean and cryosphere. 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.

The report informs that 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 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.



Data 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. Information available in this report is based on the assessment of the latest scientific literature related to the ocean and cryosphere in a changing climate, referencing about 7,000 scientific publications. The Special Report was said to

be a key scientific input for world leaders gathering in forthcoming climate and environment negotiations at the COP-25 to be held in Chile in December, 2019.

It is envisaged in the report 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. The world will only be able to keep global warming to well below 2°C above pre-industrial levels if we effect unprecedented transitions in all aspects of society, including energy, land and ecosystems, urban and infrastructure as well as industry. The ambitious climate policies and emissions reductions required to deliver the Paris Agreement will also protect the ocean and cryosphere – and ultimately sustain all life on Earth.

SROCC provides the best available scientific knowledge to empower governments and communities to take action, embedding that scientific knowledge on unavoidable change and plausible futures into their own context, to limit the scale of risks and climate impacts. The report gives evidence of the benefits of combining scientific with local and indigenous knowledge to develop suitable options to manage climate change risks and enhance resilience. This is the first IPCC report that highlights the importance of education to enhance climate change, ocean and cryosphere literacy

We at India Water Foundation have continued our efforts to disseminate the message of these two IPCC reports among the local communities and people throughout the period under review and have also reiterated to continue such efforts in the near future as well.

Emission Gap Report 2019

During the closing part of the month of November 2019, coinciding with the eve of a year in which nations are due to strengthen their Paris climate· pledges, UN Environment Programme (UNEP) released its Emissions Gap Report 2019 (EGR 2019). This report warns that unless global greenhouse· gas· emissions fall by 7.6 per cent each year between 2020 and 2030, the world will miss the opportunity to get on track towards the 1.5 °C temperature goal of the Paris Agreement EGR 2019 says that even if all current unconditional commitments under the Paris Agreement are implemented, temperatures are expected to rise by 3.2 °C, bringing even wider-ranging and more destructive climate impacts. Collective ambition must increase more than fivefold over current levels to deliver the cuts needed over the next decade for the 1.5 °C goal.

Lamenting at the collective failure of humankind to act early and hard on climate change, EGR 2019 insists that world must now deliver deep cuts to emissions – over 7% per annum, if it is broken down evenly over the next decade. In other words, this shows that countries simply cannot wait until the end of 2020, when new climate commitments are due, to step up action. They and every city, region, business and individual need to act now. The report emphasizes that there is need for quick wins to reduce emissions as much as possible in 2020, then stronger Nationally Determined Contributions (NDCs) to kick-start the major transformations of economies and societies. There is need to catch up on the years in which we procrastinated, and failure to do this would mean that the 1.5°C goal will be out of reach before 2030. The EGR 2019 reiterates IPCC warning that going beyond 1.5 °C will increase the frequency and intensity of climate impacts, such as the heatwaves and storms witnessed across the globe in the last few years.

According to EGR 2019, G-20 nations collectively account for 78 per cent of all emissions, but only five G 20 members have committed to a long-term zero emissions target. In the short-term, developed countries will have to reduce their emissions quicker than developing countries, for reasons of fairness and equity. Nevertheless, all countries will need to contribute more to collective effects. Developing countries can learn from successful efforts in developed countries; they can even leapfrog them and adopt cleaner technologies at a faster rate. The report emphasizes that all nations must substantially increase ambition in their Nationally Determined Contributions (NDCs), as the Paris commitments are known, in 2020 and follow up with policies and strategies to implement· them. Solutions are available to make meeting the Paris goals possible, but they are not being deployed fast enough or at a sufficiently large scale.

EGR 2019 finds that greenhouse gas emissions have risen 1.5 per cent per year over the last decade. Emissions in 2018, including from land-use changes such as deforestation, hit a new high of 55.3 gigatonnes of CO2 equivalent. The report suggests that to limit temperatures, annual emissions in 2030 need to be 15 gigatonnes of CO2 equivalent lower than current unconditional NDCs imply for the 2°C goal; they need to be 32 gigatonnes lower for the 1.5 °C goal. On an annual basis, this means cuts in emissions of 7.6 per cent per year from 2020 to 2030 to meet the 1.5 °C goal and 2.7 per cent per year for the 2 °C goal. Suggesting that in order to deliver on these cuts, the levels of ambition in the NDCs must increase at least fivefold for the 1.5 °C goal and threefold for the 2 °C, EGR 2019 notes that climate change can still be limited to 1.5 °C.

Noting that there is increased understanding of the additional benefits of climate action – such as clean air and a boost to the Sustainable Development Goals (SDGs), EGR 2019 says that there are many ambitious efforts from governments, cities, businesses and investors and that suggests that solutions, and the pressure and will to implement them, are abundant. The report focuses on the potential of selected sectors to deliver emissions cuts and in 2019 it looks at the energy transition and the potential of efficiency in the use of materials, which can go a long way to closing the emissions gap.

Chile/Madrid Climate Change Conference (COP-25)

The 25th Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC), also known as COP-25, was scheduled to be held in Santiago (Chile) from 2 to 13 December 2019; however, after a last-minute change, venue of the conference was shifted from Santiago to Madrid (Spain), and it came to be known as Chile/Madrid Conference on Climate Change. More than 26,700 people attended COP 25, including over 13,600 government delegates, nearly 10,000 observers, and over 3,000 members of the media. The Chile / Madrid Climate Change conference included the: 25th session of the COP to the UNFCCC (COP 25); 15th session of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP 15); 2nd session of the Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement (CMA 2); and 51st meetings of the Subsidiary Body for Implementation (SBI 51) and the Subsidiary Body for Scientific and Technological Advice (SBSTA 51).

Figure 3 COP-25 was held in Madrid, Spain, from 2 to 13 December 2019 under the presidency of the Chilean government. (Photo Courtesy; UN).

COP-25 commenced with expectations that delegates would finish negotiations on a few key issues, principally the guidance for Article 6 (market and non-market mechanisms). Other key issues discussed in the conference included the review of Warsaw International Mechanism on Loss and Damage associated with Climate Change Impacts (WIM) and finance. Nevertheless, this was not the case because the disconnects between the demands of people and science, and what the process could deliver, and between countries that want to look to the future, and those focused on the past, eventually dented the ability for the Chile/Madrid Climate Change Conference to deliver, despite running nearly 40 hours overtime.

In order to avoid stalemate, the president of the COP-25, Carolina Schmidt, Minister of Environment, Chile, made efforts to facilitate progress on the outstanding political and technical issues by convening high-level consultations. The issues were divided into two tracks in the aftermath of conduct of bilateral consultations by ministers and members of the COP Presidency.

One track was for Article 6 of the Paris Agreement and the second track was for the WIM, response measures and the overall outcome decisions. As per media reports, throughout the night of 14 December 2019, there were protracted ministerial-led discussions on these outstanding issues, which resulted in this COP becoming the longest in the history of the UNFCCC. On Sunday, 15 December, many delegates and observers, including UN Secretary-General António Guterres, expressed disappointment with the few decisions adopted, and the language related to ambition in the text titled "Chile-Madrid Time for Action."

Many countries also observed, and expressed regret, that Rule 16 of the draft rules of procedure will be applied to many agenda items. Rule 16 is applied when parties are unable to complete their consideration of the issue, often owing to a lack of consensus on the substance, or on the process moving forward. When applied, the issue is automatically included on the agenda for the next session. Countries were unable to reach agreement on Article 6. The texts will be forwarded to the subsidiary bodies meeting in June 2020. Several other issues were left unresolved, including common time frames, long-term finance, transparency issues for the Paris Agreement, report of the Adaptation Committee, and report of the Consultative Group of Experts.

The issues that were concluded included the review of the WIM, gender, and some finance-related issues, such as guidance to the Global Environment Facility (GEF) and Green Climate Fund (GCF). Parties also adopted three decisions; each named the Chile/Madrid Time for Action. While the decision related to the Paris Agreement does not specifically call for greater ambition, there is a suggestion for parties to consider increasing their climate ambition.

When the final gavel fell on the Chile/Madrid Climate Change Conference on the afternoon of 15 December 2019, it seemed incredible to deny the atmosphere of disappointment that followed delegates out of the half-empty plenary hall. Many could only point to the outcomes on loss and damage and gender as substantive "wins." Others asserted that no outcome on Article 6, which addresses market and non-market mechanisms for the mitigation of greenhouse gas emissions, was better than one with major loopholes, particularly on environmental integrity. But these were, by all standards, below the expectations set for this meeting of the Conference of the Parties (COP), and certainly highly troubling from a global signaling perspective. What exactly caused that disappointment is more difficult to unpack.

The COP had relatively modest ambitions in the continuum of the UNFCCC process: its main task was to finalize the Paris rulebook in anticipation of 2020, when the Paris Agreement comes into effect. At the same time, the conference was a time to reflect on progress made, and assess if there are the necessary mechanisms for all countries to enter into the post-2020 period. Despite some advances, its final outcomes were met with largely negative reactions, with UN Secretary-General António Gutteres himself declaring that "the international community lost an important opportunity to tackle the climate crisis."

According to some experts, there were two major gaps that the COP attempted to engulf. The first is the gap between the demands of science and civil society for an ambitious political response to "the climate emergency," on the one hand, and the limitations of multilateralism in the UNFCCC on the other. The second is a continuing gap between those looking ahead to the Paris Agreement era and those still focused on the past record of implementation and ambition. These gaps weakened the outcomes of this meeting and have implications for COP 26, which will meet in 2020 as the Paris Agreement comes into effect. The Expectations Gap Civil society summed up the meeting at its close: "The COP has failed the people and the planet." Their assessment aligns with the expectations set by the "outside world." But could COP 25 have ever lived up to these expectations? The general public's expectations towards the annual climate change negotiations have risen exponentially with increasing media coverage and even more so now that "the climate emergency" has entered the public discourse in many countries.

Figure 4 Delegates gather• for the presidency consultations on the outcome• of the negotiations (Photo Courtesy: UN).

With greenhouse gas (GHG) emissions reaching a record high in 2018, and UNFCCC reports informing that Annex I countries, excluding economies in transition, reduced their emissions by a mere 1.8% between 1990 and 2017, The 67 countries that announced their intentions to enhance their nationally determined contributions (NDCs) at the UN Secretary-General's Climate Action Summit in September 2019 still only represent 8% of global greenhouse gas emissions. More countries have come on board since September, but the silence of all major economies, except for the EU, is striking.

The year 2019 was also marked by the bleak messages from science, as the latest reports of the Intergovernmental Panel on Climate Change showed that climate change impacts will be more severe than previously anticipated and that current action does not put us on the track to limit the global average temperature increase to the collectively agreed level of well below 2°C. Informed and encouraged by this scientific consensus, calls from civil society for "changing pathways and increasing ambition," especially in terms of emission reductions, grew louder over the year. Youth activists succeeded in rallying other constituencies to join in on increasingly frequent "climate strikes."

Midway through the conference, half a million people took to the streets of Madrid, directly addressing their calls for more ambition to negotiators at COP 25. Yet the ambitions of the

world, or even of those engaged in the climate regime, cannot realistically be met by a single COP, particularly one constrained by the mandates written by parties. From the point of view of the UNFCCC process, COP 25 was largely expected to deliver a robust set of decisions that would inform COP 26, and very few of the items on its agenda related to mitigation. None addressed ambition.

According to some experts, just looking ahead without considering the limitations imposed by the past undermined progress on several issues. There was no consensus on long-term finance; the work under the Paris Agreement's enhanced transparency framework for national reporting, is likewise stalled. Transparency is an issue dear to developed countries, especially the US, which has long demanded similar reporting requirements for all. Since 2007, the issue of common reporting framework has moved from an idea to a set of detailed tables that all countries will complete, with flexibility for developing countries. Several developing countries, most vocally China and the African Group, pointed out the imbalance of progress on transparency in tandem with the limited political attention to, and advancement of, adaptation and finance issues. The question arose as to why should parties continue advancing developed countries' priorities, when they continue to stall progress on finance-related issues and block ongoing discussion of the global goal on adaptation?

Another problematic issue beyond 2020 was the imminent US withdrawal from the Paris Agreement that was to take effect in November 2020, less than a week before COP 26, the repercussions were already being felt. Many expressed anger that the future defector attempted to wield its influence in writing the rules for Article 6 and loss and damage—rules that the US will not be subject to unless it rejoins the Agreement. Delegates also wondered about the future credibility of the Paris Agreement. As with the Kyoto Protocol before it, there will again be a climate agreement, one designed around US demands, without the participation of the world's highest per capita emitter.

This raised questions of leadership, and serious concerns if the EU, hampered internally by some member states reluctant to engage on climate, or China, focused on its own development, can credibly lead the way to a more climate ambitious future. Bridging the Gaps before COP 26 The gaps that undermined progress at COP 25, and arguably harmed the reputation of the UNFCCC, are likely not to disappear anytime soon. A COP 25 intergovernmental outcome that merely achieves an "overall balance"—in the words of COP 25 President Schmidt—will not keep the world under 1.5, or even 2°C of warming. What most participants at COP 25 did agree on is that finding a way to prove that the intergovernmental process— despite its limitations and divisions among parties—has the ability to generate the needed ambition.

India at COP-25

India played a mixed role· at the COP-25 and Indian delegation was led by the then Union Minister of Environment, Forest and Climate Change Prakash Javadekar. On the question· of markets, India emphasized the changeover of the Clean Development Mechanism (CDM) credits earned under the Kyoto Protocol to the Paris Agreement. With regard to the untraded emissions reduction certificates held by India companies, which were estimated at 750 million Certified Emissions Reductions or CERs, which can be sold to generate funds, India effectively demanded the carryover of these CERs. According to one media report, in India's view the issue went beyond money to the very 'credibility of the UNFCCC process'; however, other countries pointed out that extremely cheap emission reductions enabled by the CDM along with the probability of double counting could corrupt the process.

With regard to the question· of 'loss and damage', India called upon developed countries to give· financial teeth to the Warsaw International Mechanism on Loss and Damage (WIM), which has been resisted by developed countries on the plea that the provision of finance would imply admission of legal liability. As per media reports, some of the developing countries adopted the stance that it would be difficult to get finance compensation for loss and damage; nonetheless, it could be to arrive at a compromise on obtaining finance to stop damage and loss. Moreover, some experts had apprehended that such a seemingly practical stand had only played into the finance to worst instincts of big polluters. Initially, the debate at COP-25 was expected to be focused on the finance part of the WIM, along with the Green Climate Fund. Nonetheless, what ultimately emerged in the final decision was a mere "Santiago Network of experts to catalyze the technical assistance of relevant organizations, bodies, networks and experts toward the implementation of relevant approaches."

India is said to have managed to protect its interests at the COP-25 and Indian negotiators pushed for carryover of millions of unsold carbon credits from clean development mechanism (CDM) under Kyoto Protocol to the new carbon markets to be developed after 2020 which can yield a benefit of nearly Rs 5,000 crore to industries holding these credits. In the wake of failure of climate talks at COP-25 to build consensus on key issues for meeting the Paris Agreement goal of keeping global mean temperature rise under 2 degree C the small and vulnerable countries and civil society organizations had largely labelled these talks to be "disappointing" and "unfortunate". In the absence of any agreement on how new carbon markets covered under Article 6 of the Paris Agreement on Climate Change would shape up, no progress on compensation for climate change induced loss and damage to vulnerable countries and most developed countries did not commit to increase their nationally determined contributions (NDCs)

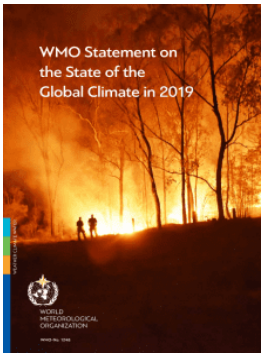
by 2020. Expressing his disappointment with the outcomes of COP-25 UN secretary general Antonio Guterres had tweeted: "I am disappointed with the results of COP-25. The international community lost an important opportunity to show increased ambition on mitigation, adaptation & finance to tackle the climate crisis. But we must not give up, and I will not give up."

Nevertheless, India is sanguine that there would be resolution on issues that matter to the country at the forthcoming 26th session of the Conference of the Parties (COP-26) to the UNFCCC. Some countries also pushed for not counting of credits once they are sold to another country, and also called for corresponding adjustments in climate negotiation terminology, which essentially denotes that when one country sells emissions reductions to another, it must adjust its own emissions data accordingly so that there is a real reduction in emissions. India has not agreed to the issue of corresponding adjustments and hopes that it will be discussed in the ensuing COP-26. India has been together with like-minded developing countries (LMDCs) and the Brazil, South Africa, India and China (BASIC) groups during the negotiations. New Delhi is expected to hold several meetings with these two· groups before deciding on what will its stand be at COP-26 when parties are expected to update their NDCs in line with the Paris Agreement.

Assessment of the gaps in commitments delivered by the developed countries in the pre-2020 period has been facilitated by COP-25 decisions and the developed countries have time till 2022 to deliver on these commitments. India has lamented that the developed world promised 1 trillion dollars in the last ten years and not even 2 % of that has materialized thus far and India is likely to continue to push for these commitments to be met.

The State of the Global Climate in 2019

The physical signs of climate· change· such as increasing land· and ocean heat, accelerating sea level· rise· and melting ice were highlights of a new report· compiled by the World Meteorological Organization (WMO) and an extensive network of partners that was released in Geneva and New York simultaneously in early March 2020. This report documents impacts of weather and climate events on socio-economic development, human health, migration, migration and displacement, food security, land and marine ecosystems. The WMO report entitled, The WMO Statement on the State of the Global Climate in 2019 includes input from national meteorological and hydrological services, leading international experts, scientific institutions and United Nations agencies. The flagship report provides authoritative information for policy makers on the need for Climate Action.



While confirming information in a provisional· statement issued at the UN Climate Change Conference in December that 2019 was the second warmest year in the instrumental record, the WMO report asserts that 2015 - 2019 are the five warmest years on record and 2010-19 the warmest decade on record. Since the 1980s, each successive decade has been warmer than any preceding decade since 1850. The Year 2019 ended with a global average temperature of 1.1°C above estimated pre-industrial levels, second only to the record set in 2016, when a very strong ElNiño event contributed to an increased global mean temperature atop the overall warming trend. United Nations Secretary-General Antonio Guterres in a foreword to this report said:"We are currently way off track to meeting either the 1.5°C or 2°C targets that the Paris Agreement calls for This report outlines the latest science and illustrates the urgency for far reaching climate action. It brings together data from across the fields of climate science and lists the potential future impacts of climate change from health and economic consequences to decreased food· security· and increased displacement."

According to WMO Secretary General, Taalas given that green house gas levels continue to increase the warming will continue. A recent decadal forecast indicates that a new annual global temperature record is likely in the next five years and that is a matter of time. Stating that recent winter was unseasonably mild in many parts of the northern hemisphere, Taalas further informed that smoke and pollutants from damaging fires in Australia circumnavigated the globe, causing a spike in CO2 emissions. Reported record temperatures in Antarctica were accompanied by large-scale ice melt and the fracturing of a glacier which will have repercussions for sea level rise Temperature is one indicator of ongoing climate change.

Changes in the global distribution of rainfall have had a major impact on several countries. Sea levels are rising at an increasing pace, largely due to the thermal expansion of sea water as well as melting of the largest glaciers, like in Greenland and Antarctica. This is exposing coastal areas and islands to a greater risk of flooding and the submersion of low-lying areas.

Developments in India

India's burgeoning population and ambitious goals of the Government of India to make India a $ 5 trillion economy through rapid industrialization, urbanization along with uplifting the poor from the morass of poverty, while meeting the targets of Paris Agreement on Climate Change as well as realizing the targets of Sustainable Development Goals (SDGs) require the country to accord priority to adaptation and mitigation of climate change and reduce GHG emissions and maintain a sort of semblance in sustainable management of resources. As such India is domestically also confronted with a vast array of issues being impacted by the vagaries originating from water-related and environment-induced activities. Accordingly, it is essential that global and regional negotiations on water and climate sectors along with targets of SDGs cannot be ignored while ascending the trajectory of growth. This makes imperative for India not only to adhere to appropriate measures at the domestic level; nevertheless, also actively participate in international negotiations pertaining to water, climate change and sustainable development. During the period under review, some momentous developments took place in India – release of the report entitled Localizing SDGs: Early Lessons from India (June 2019), Observance of World Environment Day (5 June 2019), 14th Conference of UNCCD COP-14 in New Delhi, India (2-13 September 2019), Fourth India Water Impact Summit (December 2019).These developments had directly or indirectly impacted the policy-making and decision-making processes during 2019-2020.

Localizing SDGs: Early Lessons from India2019

In early June 2019, India's NITI Aayog and the UN in India joined hands in preparing a compendium of early lessons in localization of SDGs in collaboration with States and UTs. The compendium entitled as Localizing SDGs: Early Lessons from India, draws upon the experiences of 36 States and UTs and presents an analysis of various initiatives pertaining to SDG localization, such as, institutional mechanisms to facilitate whole-of-government approaches, SDG-oriented budgeting, capacity building and advocacy, data and analytics for progress monitoring and approaches to promote inclusion. Interestingly, this compendium was brought just two months prior to the fourth anniversary of the adoption of the Sustainable Development Goals (SDGs) when the governments, multilateral development organizations, civil society, academia, and think tanks around the world were striving to adopt better, faster and more innovative ways to achieve the Goals. India, home to one-sixth of all humanity, is alive to its role and responsibility in advancing the SDGs and unsparing in efforts to deliver on them. Localization of SDGs has been at the core of India's SDG implementation strategy, and with the States and Union Territories playing a pivotal role in designing, executing, and monitoring development policies and interventions in the federal governance structure. Accordingly, State governments and Union Territories are the key drivers of the SDGs, while NITI Aayog and the central ministries support them in this endeavor.

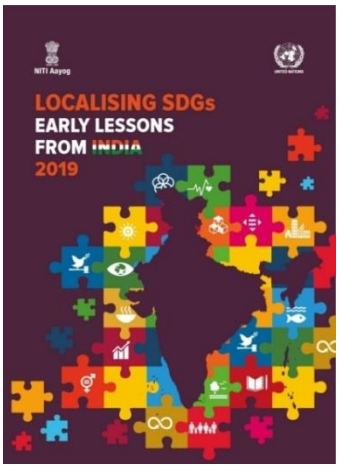


Figure 5Cover page of Localizing SDGs: Early Lessons from India 2019

Noting that it is an opportune moment for the global development community and other ardent stakeholders to note India's efforts in localizing the SDGs and integrate the learning in various SDG implementation plans, NITI Aayog is said to have offered this document as an input in that direction. Besides, the Government of India is equally focused and invested in the design and implementation of some of the large-scale programmes bridging critical development gaps on key SDGs. For instance; - Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana (PMJAY), is the largest government health protection scheme in the world, entitling 500 million Indians to an annual health protection coverage of approximately US$ 7,100. India is aiming to achieve the goal to eliminate tuberculosis (with poor people more at risk) by 2025, five years ahead of the global target of 2030.

Considering that in India over 60 million people fall below the poverty line on account of out-of-pocket health expenditures, these initiatives will go a long way in reducing inequality. To eliminate malnutrition by 2022, the government launched Posh an Abhiyan, a National Nutrition Mission for children and women. The program recognizes the interconnectedness of nutrition with other aspects such as water, sanitation, hygiene, mother's education, poverty, and thereby ensures that all the above services converge on a household for reducing under-nutrition in the country. India has also repeatedly emphasized the need for Climate Justice that involves taking concrete action to protect the poor from the impact of climate change and has taken several actions towards this goal. Further, India is also committed to eliminate single-use plastic by 2022. It has also initiated the International Solar Alliance (ISA), which is expected not only to contribute to India's ambitious solar energy goals but primarily to promote adoption of solar energy across the sun-rich developing countries with India's leadership. Further, to reduce marginalization of vulnerable groups, a number of key legislations were passed by Parliament. The Supreme Court ruled that privacy was a fundamental right, and in a boost to LGBTQI rights, same-sex relationships were decriminalized.

State governments and UTs are taking a range of initiatives to implement and localize the SDGs: (a) Preparing Vision Documents and action plans to guide their efforts on the SDGs; (b) Setting up the Implementation and coordination structures at different levels; (c) Mapping of all development Programmes implemented in the State on the SDGs and associated targets; (d) Identifying the State-specific indicators for monitoring of the SDGs; (e) Preparing capacity building resources and tools in local languages; and (f) Aligning the State budgets with the SDGs.

Celebrating World Environment Day 2019

The 46th World Environment Day was celebrated in India on June 5th, 2019, with the avowed objective of focusing on the air· pollution crisis· with its theme· Beat Air Pollution.

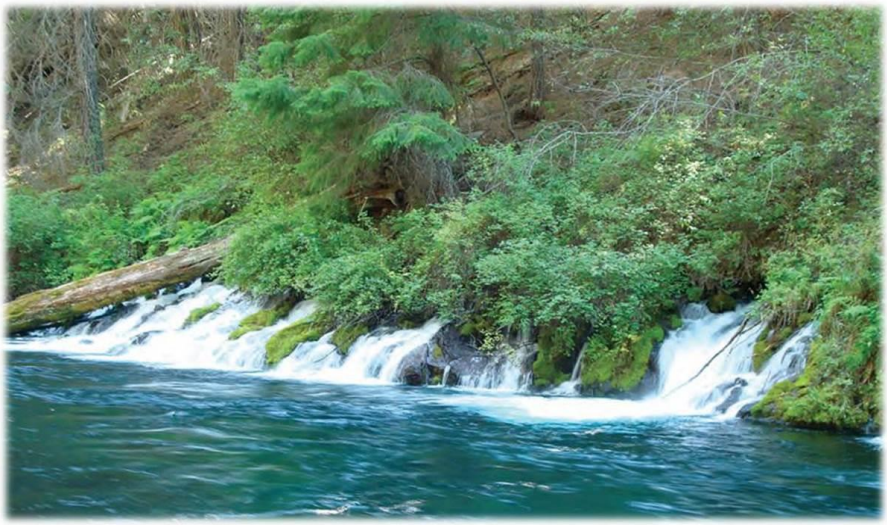
Padma Shri Awardee Sudarshan Patnaik Creates Sand Art to Spread the Message Of Beat Air Pollution: Showcasing the ill· effects of living in a polluted environment, sand artist Sudarshan Patnaik, created a sand sculpture· on Pura beach in Odisha, with two· human faces, one that has turned black· due to air· pollution and the other depicts a healthy· life· because of the greenery all around. (Representative image).

A suite of activities was launched by the government and civil society organizations in different parts of India to mark the occasion. With a view to promote tree plantation among the people, the Union Ministry of Environment, Forest and Climate Change launched Selfie With Sapling campaign and as part· of the same, Minister of Environment, Forest and Climate Change Prakash Javadekar, planted a sapling at Indira Paryavaran Bhawan in New Delhi. Along with him, Minister of State Babul Supriyo, actors Randeep Hooda and Jackie Shroff, cricketer Kapil Dev and folk· singer Malini Awasthi also joined the tree· plantation drive. Significance of tree plantation can be accessed from the mere fact that a mature canopy tree· absorbs enough carbon· and releases enough oxygen to sustain two human beings.

The celebrations to mark· World Environment Day witnessed various· ministers and celebrities planting trees. From actor· and United Nations Environment Programme (UNEP) Goodwill Ambassador - Dia Mirza, External Affairs Minister - Dr S Jaishankar, Minister of State for External Affairs & Parliamentary Affairs - V Muraleedharan to Minister of State (Independent Charge) of Youth Affairs & Sports and Minister of State for Minority Affairs - Kiren Rijiju, all planted a sapling.

Besides, clean-up drives were also launched from Gurugram to Mumbai to mark the occasion. Beach warriors organized a clean-up drive· at Dadar beach and Bandra beach in Mumbai and Kasavarvadavli lake in Thane. In Gurugram, children and officials participated in the clean-up drive· organized by the Municipal Corporation of Gurugram. Also, Ahmedabad Municipal Corporation launched a five-day Swachh Sabarmati Maha Abhiyan river clean-up campaign involving around 20, 000 people. The mangrove ecosystem serves as a buffer zone that prevents erosion of the shoreline and contaminants from freely flowing into the sea. Mangroves in Versova, Mumbai have· suffered from rampant dumping of waste and open burning of garbage. To protect this ecosystem, the state· forest department has created bio-fencing, which is essentially a frame with variety of plants on it that is placed in front of the mangroves to prevent any trash from being dumped into it. Along with the inauguration of the bio-fence, there was also a clean-up drive that saw beach warrior Afroz Shah, actor Karanvir Bohra, along with other Mumbaikars collect 20 tons of plastic from the mangroves.

During the closing part of the month of November 2019, coinciding with the eve of a year in which nations are due to strengthen· their Paris climate pledges, UN Environment Programme (UNEP) released its Emissions Gap Report 2019 (EGR 2019). This report· warns that unless global greenhouse gas emissions fall by 7.6 per cent each year between 2020 and 2030, the world will miss the opportunity to get on track towards the 1.5 °C temperature goal of the Paris Agreement. EGR 2019 says that even if all current unconditional commitments under the Paris Agreement are implemented, temperatures are expected to rise by 3.2 °C, bringing even wider-ranging and more destructive climate impacts. Collective ambition must increase more than fivefold over current levels to deliver the cuts needed over the next decade for the 1.5 °C goal.



UNCCD COP-14 Held in Delhi, 2-13 September 2019

The 14th edition of the Conference of Parties (COP-14) to the UN Convention to Combat Desertification (UNCCD) was hosted by India from 2 to 13 September 2019. This was for the first time that India hosted an edition of the UNCCD COP and COP-14 had the theme – Restore Land, Sustain Future. Being the global host for UNCCD COP-14, India took over the presidency of the COP from China, the past president of the COP-13, for the next two years till 2021. The COP-14 opened in New Delhi on 2nd September, 2019in the backdrop of the latest warnings pertaining to a looming drought crisis in Africa. According to some humanitarian reports, more than 45 million people across 14 countries were facing food shortages in 2019 and that was an indication of compounded impacts of land degradation, climate change, and loss of biodiversity that have adversely impact resilience of the people. In the wake of such developments, it is natural that public perceptions do occur, as could be seen from multiple media reports of that period, especially in Europe, where scepter has been raised about populations fleeing starvation and risking their lives to cross the Mediterranean, and whether that would happen or not was a question that needed solid answer.

The UNCCD-COP 14 opened on a note of heightened global awareness of the lasting linkages between land use and other environmental problems that impact all regions of the world. High profile scientific studies have also raised awareness about the linkages between land use, climate change, and biodiversity loss. The reports released by the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) during the second half of 2019, in particular engaged the media and the wider public in land's vital role as carbon sink or source. This cascading evidence—and hopes for substantive commitments—clearly raised ambitions for the UNCCD COP and its central questions: Can the Convention translate scientific findings into outputs policymakers can leverage? Can delegates find consensus around thematic priorities and enabling factors, such as drought, financing, capacity building, and land tenure? Can the international community recognize the urgency and ramp up commitments?

The COP also benefited from the release of two landmark reports: the IPBES Land Degradation and Restoration Assessment in May 2019 and the IPCC Special Report on Climate and Land in August 2019. Thus, the UNCCD set to embark on a new chapter with fresh leadership as well as a definitive scientific call for action. Clearly aware that it is time to show—not just talk about—impact, the UNCCD leadership focused on outreach and high-level engagements in what seems to point to a larger strategy to win hearts and minds on the land agenda. The interest displayed by Indian media (a reported 800 journalists registered to cover the conference) does suggest that this approach paid off and builds on the widespread coverage of the recent IPCC and IPBES reports in the mainstream media. The test for the UNCCD and its partners was whether public opinion can be galvanized to push for transformative change on the ground.

The fourteenth session UNCCD COP 14 that concluded on 13 September 2019, agreed to increase and further elaborate action on the ground to ensure that the Convention's goals for 2018-2030 are achieved. During the closing plenary, UNCCD Executive Secretary Ibrahim Thiaw highlighted four key messages from the meeting: (a) Land restoration is the cheapest solution to climate change and biodiversity loss; (b) Land restoration makes business sense if regulations and incentives to reward investment are in place; (c) Drought preparedness and response are critical in the face of climate change; and (d) To put people first is to ensure gender balance, engage youth, and secure land rights. One of the central themes of the COP 14 high-level segment on 9-10 September 2019, was how to build momentum towards a global movement on land restoration.

Six ministerial roundtables and high-level interactive dialogues took place over the two days, addressing, among others, land issues related to: climate and renewable energy, rural and urban communities, ecosystem restoration, health, and values-based approaches. The high-level segment also included dialogues with representatives of civil society organizations, youth, and private sector. The COP adopted over 30 decisions on, among other topics: how to implement four thematic policy frameworks addressing drought, gender, sand and dust storms, and desertification, land degradation, and drought (DLDD) as a driver for migration. The COP also agreed to include land tenure as a new thematic area under the Convention. After lengthy negotiations on drought, delegates agreed, subject to the availability of resources, to establish an intergovernmental working group to explore effective policy and implementation measures for addressing drought under the UNCCD.

India at the UNCCD COP-14

The 12th day long 14th Conference of Parties (COP14) to United Nations Convention to Combat Desertification (UNCCD) that had commenced in Delhi, India on 2nd September 2019 came to a close on 13th September 2019 with thought provoking discussions on land management, restoration of degraded land, drought, climate change, renewable energy, women empowerment, gender equality, water scarcity and various other issues. India was the proud host of UNCCD COP-14 that witnessed widespread participation from over 9000 participants from all across the globe at India Expo Centre & Mart, Greater Noida.

Speaking at the Press Conference the next day, on the outcomes of COP-14, India's Union Minister for Environment, Forest and Climate Change (MoEF&CC), Shri Prakash Javadekar exuded confidence that all three Rio conventions will work in synergy.

In the wake of ongoing unparalleled global campaign to save productive land along with determination of the parties to the COP-14 to make the Sustainable Development Goal target achieving land degradation neutrality by 2030 a national target for action, India too has reiterated its commitment of achieving land degradation neutrality by 2030.

India is also committed to provide effective leadership during its two-year tenure of presidency of the UNCCD. Parties to the COP-14 are expected to address insecurity of land tenure, including gender inequality in land tenure, promote land restoration to reduce land-related carbon emissions and mobilize innovative sources of finance from public and private sources to support the implementation of these decisions at country-level. It was also decided to improve the framework for reporting action to ensure that it captures key issues, such as gender equality, drought response and the influence of consumption and production patterns and flows on land degradation. Through the Delhi Declaration ministers expressed support for new initiatives or coalitions aiming to improve human health and well-being the health of ecosystems, and to advance peace and security. India's Environment Minister described Delhi Declaration as an ambitious statement of global action by each country on how to achieve Land Degradation Neutrality.

IWF at the UNCCD COP-14

India Water Foundation organized a Special Session on the theme of "Can Integrated Approach Combat Drought in the region?" on the sidelines of the ongoing COP-14, at the India Pavilion on 11th September 2020. Invitations to experts, water and climate related experts, researchers, scholars along with other civil society organizations and general public were sent to participate in the special session. Emphasizing that drought and land degradation are exacerbating the climate change dynamics and threatening agricultural productivity, water quality, biodiversity and the living conditions of humans, the invite noted that climate change has a ripple effect causing chain reactions through Land Degradation, Drought and Desertification, often referred to as a creeping phenomenon. Cautioning that the consequences are nonstructural, in contrast to floods, hurricanes, and most other natural hazards, and also emphasizing that our sustainable thinking to curb this menace calls for 'ACT NOW' principle, the invite articulated IWF's optimism that participation in the special session would be an enriching multi-stakeholder deliberation bringing together our panelists to share best practices, inputs, experiences along with innovative ideas to put forth a way forward for the addressal of Drought and its inter-linkages with Desertification and Land Degradation in the Indian scenario. The Special Session was to address the following issues: (a) Integrated approach to combat 'Drought' to realize the implementation of SDG-15.3 (Combat Desertification and Restore Degraded land); and (b) How can we leverage synergies among states in the realms of climate and biodiversity to combat drought?

In his opening remarks, Dr Arvind Kumar, President, India Water Foundation, while welcoming Hon'ble Minister of Jalshakti and delegates – whohad come from different arenas and parts of the country. Hoped that their benign presence on this occasion would stimulate the discussion and definitely infuse a fervor of fostering collaborative endeavors and exemplify sustainable stewardship in many respects towards addressing the menace of drought. Emphasizing the close interrelatedness and interdependence between water and land security and thereby the significance of the issues under deliberations at the Special Session, Dr Kumar added that during the curtain raiser event of the UNCCD COP-14, Hon'ble Minister of Environment Forest and Climate change Shri Javadekar expressed the target to restore 50 lakh hectares of land by 2030 and convert degraded land into fertile land, said, "It becomes our collective as well as individual bounden responsibility to secure water availability and safeguard land from degradation."

While alluding to the IPCC's Special Report on Climate Change and Land, released in 8 August 2019, that describes 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,

Dr Kumar lamented that drought is a constant threat for drylands, 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. Describing land as lifeline for humankind and nature, the source of food, water and livelihood, Dr Kumar explained that he success towards combating drought was based on three pillars built on governance, finance and knowledge, and "By investing in land, we can unlock opportunities for change, deliver hope, reap rich dividends and build a more sustainable path for the future." Hoping that land security will progressively be under the responsibility of everybody, IWF President said: "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."

While striking a note of optimism that this special session would add another feather to the rich historical legacy of UNCCD COP14 in bringing innovative outcomes that hopefully strike the right chord through diverse opportunity for dialogues, Dr Kumar concluded his remarks by quoting Madam Inger Anderson, Executive Director of the United Nations Environment Programme (UNEP): "It is clear that a huge step-up is required on all fronts if the world is to achieve sustainable development and reverse the climate and nature crises."

Following were the key highlights of the Special Session:

- 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 up to 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)

4th India Water Impact Summit 2019 in Delhi

- The fourth India Water Impact Summit was held in New Delhi on 5-7 December 2019 under the auspices of Ministry of Jal Shakti and the led by IIT-Kanpur to discuss water-related issues and steps taken to save the planet's most precious resource. The event was inaugurated by Jal Shakti Minister Gajendra Singh Shekhawat. Reports on 'Ambassadors' Meet', 'River Restoration and Conservation – A Concise Manual and Guide', as well as documents on 'Ganga Hubs' developed so far were released by the Ministry of Jal Shakti. While 'Valuing Water – Transforming Ganga' was the theme of this fourth summit, it also focused on integrated management of water resources in rural and urban areas, and experts from various fields discussed various water-related issues.

Figure 6Various reports were released during the summit in New Delhi (Photo courtesy ANI).

- An important objective of the summit was bringing together global financial investors and institutions to focus on water impact in smart cities. Apart from the member countries of European Union (EU), Israel, Ghana and other nations also participated in this summit. Ambassadors and diplomatic representatives of the EU member states also participated in the summit and they talked about the importance of water to their respective nations and discussed collaboration with India. As water security is a global issue, the NMCG has been taking a global call to action to invite countries from around the world to save the most precious resource on the planet. 10 MoUs related to technologies were also exchanged. The occasion was utilized to focus on the following major projects of cleaning in India that are currently underway:

- There has been a massive improvement in the Clean Ganga Mission during the last five years.

- Recently, a massive river rafting expedition called 'Ganga Aamantran Abhiyan' was launched from Devprayag on 10th October, 2019. The expedition covered around 2,500 KM length of the Ganga during its 34-day journey till Ganga Sagar in West Bengal.

- Quality of water in the Ganga has improved tremendously in the last five years. Five years earlier, only tens of Gangetic dolphins were sighted, but this time they have observed more than 2,000 dolphins and all other aquatic life has improved.

- The Union Cabinet chaired by the Prime Minister Narendra Modi has given its approval for establishment of the Clean Ganga Fund (CGF).

- The Jal Shakti Minister said the approach in Namami Gange for ensuring Aviral Dhara or improving flows is comprehensive.

- The role of academic institutions including IITs, NITs, NEERI etc. from India and the European Union, Germany, Denmark, Israel, Japan and Canada for Technology Collaboration Agreements with c-Ganga (Centre for Ganga River Basin Management and Studies) in cleaning Ganga was lauded in the summit.

- Under the first draft of the Ganga River Basin Management Plan (GRBMP) submitted by a consortium of IITs in 2015, projects for liquid pollution abatement in Ganga river basin have already been sanctioned and are at various stages of implementation and more of such projects will come for the tributaries for the Ganga rivers as well.

- India holds only about 4% of global freshwater compared to around 18% of its population and an equivalent percentage of livestock population.

- It was mentioned that Jal Jeevan Mission (JJM), like the Swachh Bharat Mission (SBM), will be completed within the stipulated five-year period by 2024.

2019 – A year of Extreme Weather Events in India

India witnessed record extreme weather events triggered by climate change during 2019. Month of July in 2019 was the hottest month ever recorded. As per media reports and some reports published by indiaspend.com, the summer monsoon of 2019 was marked by 74% more extreme rainfall events along with forest fires being 113% more numerous year-on-year and seven cyclones hitting various parts of India. Approximately 2.17 million people were displaced in the first half of 2019 on account of extreme weather events. Number of displaced persons on account of seven cyclones and floods that took place in the second half of 2019 could further increase. The extreme weather events had reportedly wreaked a havoc in terms of loss of human lives, livelihoods and damage to infrastructure. Cumulative impacts of these developments have rendered India to considered as the fifth most vulnerable of 181 countries to the effects of climate change.

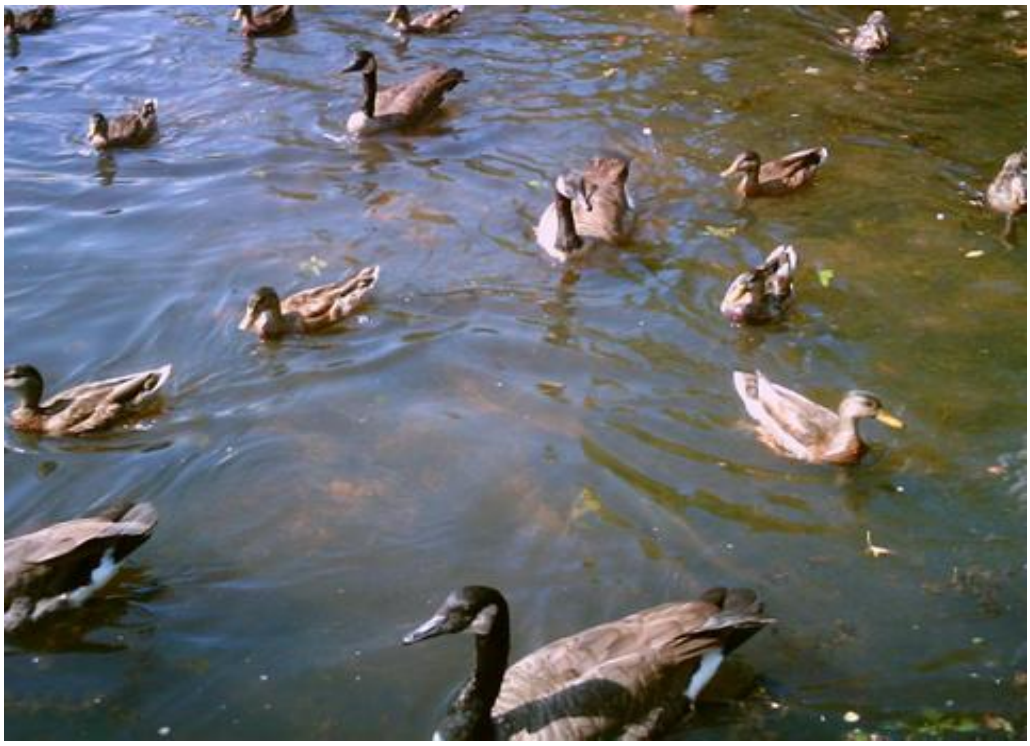
Figure 7Residents rescued from flood affected Rajendra Nagar area following heavy monsoon rain, in Patna, on September 30, 2019. (Photo Courtesy: PTI).

Among the extreme weather events that visited India during 2019, prominent were: heatwaves, heavy rainfalls and resultant floods, drought, thunderstorms, cyclones and forest fires etc. According to indiaspend.com, more than half population of India was in the grip of an intense heatwave in the months June and July in 2019, killing over 200 people. A heatwave is declared when temperatures reach at 4.5^0C above the normal temperature for an area for at least two days. Even WMO's State of Global Climate 2019 report, referred to in the present report, stated that on 10 June 2019 Delhi had reached its hottest day on record for the month, reaching 48^0 C, and July 2019was the hottest July ever in recorded Indian meteorological history.

According to media reports, there were 560 extreme weather events that took place during 2019, as compared to the 321 similar incidents in 2018, thereby recording an increase of 74%. More than 25 cm rainfall within 24 hours is categorized as 'extremely rainfall'. Extreme rainfall and floods claimed 1,685 lives across 14 states in the country during the season, claiming about 14deaths a day, on average, we reported. Rains and floods during the summer monsoon in 2019 affected more than 2.5 million people in 357 districts across 22 states in the country.

Besides, more than 100 people were killed by thunderstorms in the country in 2019 in the summer months of April and June 2019. In mid-April 2019, widespread severe thunderstorms, and associated dust storms affected northern and western India causing at least 50 deaths on April 16-17, 2019.Furthermore, 60 deaths were reported from further severe thunderstorms in northern India during the first half of June, 2019.

It can also be discerned from various media reports that there were 79,113 fire incidents across India in 2019 as of November 27, 2019, against 37,059 incidents reported in 2018. Over four years to 2019, the number of forest fire incidents in India increased by 396.41%. In 2015, India recorded 15,937 forest fires. Having witnessed occurrence of seven cyclones, 2019 became the second consecutive year to record seven cyclones. Before 2018, India had seen as many cyclones in a single year in 1985, 33 years ago. This is much higher than the annual long-period average (1961-2017) of 4.5.



Major Activities of IWF

Major activities undertaken by India Water Foundation during 2019-2020primarily focused on most important themes of water and climate change as well as SDGs, which interalia, included: fostering synergies between IWF and concerned organizations like World Water Council (WWC), UNCCD, UNEP, UNFCCC etc. This fostering of synergy was designed to exchange and sharing of views on water-related and environment-related issues, imbibe new ideas and practices that could be useful for us at India Water Foundation in managing water resources, climate change, meeting water shortages, enabling us to tackle water scarcity, prove helpful in getting integrated SDGs into development policies at provincial and national levels and engendering awareness among school children about the hazards of climate change..

Water Sector

Synergy with World Water Council

World Water Council Governors' 70thmeet was organized during Cairo Water Week with the participation of President, Governors and Alternate Governors on 22 October 2019. While participating in the meeting, 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 consulted but not substantially involved. Also, water-energy-food nexus approach focuses on exploring the vertical linkages between water, energy and environment. During the meeting of Task Force on IWRM on 22nd October 2019, Dr Kumar emphasized on the need to integrate these linkages with horizontal linkages viz., education, heath, basic infrastructure, agriculture; water resources, skill development and financial inclusion. 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".

Synergy With SKOCH

"BOOND Dialogue"

As a part of BOOND Dialogue, SKOCH and India Water Foundation organized a panel discussion on 'Integrated National Water Policy' on 11th January 2020, to revisit various facets of the policy as per contemporary perspectives at Casuarina Hall, India Habitat Centre, New Delhi. Around 150 delegates graced the occasion with their presence and the distinguished panelists presented nuanced perspectives. The welcome address was given by Mr. Rohan Kochhar, Director, Public Policy, SKOCH Group. Dr. M Ramachandran, Former Secretary, Government of India and Distinguished Fellow, SKOCH Development Foundation delivered the keynote address with focus on water &sanitation imperatives for India. The distinguished panelists for panel discussion were: Mr. Sunil Kumar, Director, Central Water Commission, Dr. Sanjay Bajpai, Head, Technology Mission (Energy, Water & Other), Department of Science and Technology, Mr. G. Asok Kumar, MD, National Water Mission, Dr. Ritesh Kumar, Director-South Asia, Wetlands International, and the panel discussion proved instrumental in bringing multi-disciplinary views and notable recommendations.

While participating in the Dialogue, Dr Kumar emphasized on the need for evolving an integrated approach incorporating 'Transversal' shift interlinking vertical linkages between water-food-energy nexus with horizontal indicators like heath, education, agriculture, entrepreneurship, gender etc. Dr Kumar also stressed that an Integrated National Water Policy must be weighed against efficiency, effectiveness and equity if India has to realize its 24x7 water vision and also sustainable development goals by 2030, the last 'Decade for Action'. These were the recommendations proposed by Dr Kumar for a holistic implementation of a National Water Policy'.

Other major activities undertaken by India Water Foundation in water sector during 2019-2020 were as follow:

Addressing the theme Understanding Water Crisis and Finding a Way Forward' at the Synod College, Shillong, Meghalaya on 6-7 June 2019, a programme hosted in collaboration with P.A Sangma Foundation and Meghalaya Basin Development Authority (MBDA), Dr Arvind Kumar, while focusing on the linkages between water and human development and the demand and impact it has on people's lives and livelihoods, also noted that these linkages entail the potential of subsequently making a decisive contribution towards improved livelihoods. He further added that 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. Describing SDG-6 dealing with water and sanitation as a gateway to fulfill the provisions of Water, Food and Energy nexus and Ecosystem Based Adaptation (EbA), Dr Kumar also alluded to the Sustainable Development Goal Synthesis Report 2018 on Water and Sanitation that 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."

While participating in the 69th Board of Governors meeting of World Water Council at Dakar and World Water Forum Kick off Meeting at Diamniadio, Senegal forum on 17-21 June 2019, Dr Arvind Kumar emphasized on harmonizing SDG-6 (clean water and sanitation) under a unified umbrella of an International Task force of WWC that could serve as a bridge to 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 natural resource governance. Describing water as a development connector between varied indicators like health, education, basic infrastructure and so on, Dr Kumar emphasized that there should be call for action on inclusive roadmap towards water security to be mandated with fostering cooperation among international agencies, regional programs and countries. He cited the example of India Water Foundation that had made efforts in its program of Aspirational Districts of India that proved instrumental in fostering balanced and mainstream development.

On 2 September 2019, Dr Arvind Kumar had a brief audience with Minister of Jalshakti at latter's office at Shram Shakti Bhavan, New Delhi. Apart from exchange of views on water related issues, Dr Kumar applauded the growing success of Jal Shakti Abhiyan and Jal Jeevan Mission. As a token of appreciation,Dr Kumar 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.

Dr Arvind Kumar was an expert panelist for the plenary session on 'Stakeholders' perspectives towards enhancing Water Use Efficiency in Industries' during a workshop organized on 'Increasing Water Use Efficiency in Industries' dated 5 March 2020 by National Water Mission, Ministry of Jal Shakti, Government of India. He brilliantly argued that in the wake of water scarcity, domestic, agriculture, and industry where water needs are pitted against each other. The conflicts are likely to grow not only between sectors, but also within sectors".

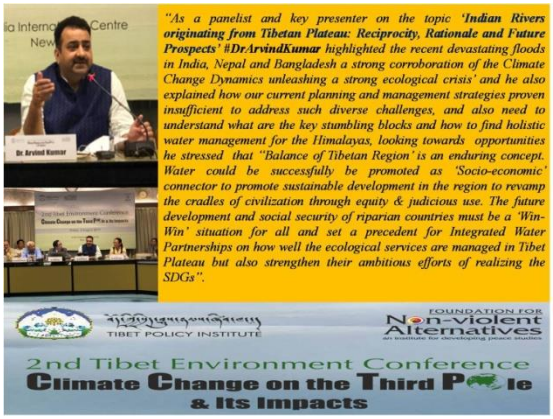
Environment

On 3rd April 2019, Dr Arvind Kumar, President India Water Foundation, attended the meeting of Technical Advisory Committee, under the aegis of the Ministry of Environment and Forests, in his capacity as member of this committee, that is constituted for India's Third National Communication and Biennial Update Reports to the United Nations Framework Convention on Climate Change (UNFCCC).

While addressing a meeting on the occasion of the World Environment Day on 5 June2019 with theme 'Beat Air Pollution', as a Chair Person at the Synod College, Meghalaya, Dr Arvind Kumar, President of India Water Foundation, asked the question as to whether there was a realization or not that air pollution had its inherent linkage with water pollution. Noting that more than two billion people are compelled to drink contaminated water, Dr Kumar said that. without access to clean and safe air, it is harder for women and girls to lead safe, dignified, productive, and healthy lives. While stating that it was now widely recognized that the primary determinant for addressing the issues of health with UN Environment calling 'Air Pollution' as a 'Public Health Emergency', Dr Kumar added that it wouldn't be too harsh to say that socioeconomic security is also at risk due to lack of clean air, requiring a "full emergency mode" response from local and national authorities. He emphasized that the Human Right to Safe Air places obligation on States to ensure its commitment towards Clean air.

India Water Foundation felicitated Shri Prakash Javadekar on the occasion of his taking over as Union Minister of Environment Forest andForest and Climate Change and Minister of Information and Broadcasting on 15 June 2019. The IWF appreciated Hon'ble Minister's positive gesture for taking out time from his busy schedule and talking to the visiting IWF team about latter's endeavors, seizing the momentum for exchange of ideas for future cooperation in the sector as well.

While expressing his views at the 2nd Tibet Environment Conference, organized by Tibet Policy Institute on 2nd August 2019 at India International Centre, New Delhi, Dr. Arvind Kumar world was quite aware that climate-induced melting was beginning to converge with acute water management challenges. Asserting that this had 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, Dr Kumar further added that much of the



environmental studies had not been put to use in these climate risk zones. According to Dr Kumar, the trans-boundary river basin management in the Himalayan region of South Asia was 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. Stating that this further causes adverse change 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,imped9ing transportation and commerce, Dr Kumar asserted that upstream dams, water diversions, deforestation, and overuse on transboundary rivers like the Ganges and Brahmaputra make these dry-season-scarcities more pronounced. According to him, 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".

Participating in 'Towards Inclusive Green Economies Consultative Workshop for Northern and Central States"at the consultative workshop organized jointly by the Partnership for Action on Green Economy (PAGE)-United Nations Environment Programme (UNEP) and The Energy and Resources Institute (TERI), at Gwal Pahari, Gurugram on 19th August 2019, Dr. Arvind Kumar highlighted 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 being faced by the people.

Taking part as an expert in the Panel Discussion on 'Climate Change and $5 Trillion Economy' at the 60th SKOCH Summit at the Constitution Club of India at New Delhi, on 29th August 2019, Dr. Arvind Kumar attributed the prevalent water crisis to the rapid pace of urbanization, industrialization and migration and added that cumulative impact of all these was disruption of

the system. He further added that climate change had a ripple effect causing chain reactions such as loss of biodiversity, extreme weather, rising Sea levels, extreme heatwaves and drought. He suggested that Indian climate policy-making should 'mainstream' adaptation strategies into development planning to better address climate change.

On 11th September 2019, India Water Foundation organized special session on 'Can Integrated Approach Combat Drought in the region?' at India Pavilion, NOIDA Expo Mart, on the sidelines of 14th edition of the Conference of Parties (COP) to United Nations Convention to Combat Desertification UNCCD), This session focused on integrating various dimensions of drought and desertification.

Dr. Arvind Kumar attended the 2nd meeting of the National Wetlands Committee on 5th November 2019, which was chaired by Sh. C. K. Mishra, Secretary in the Ministry of Environment, Forests and Climate Change at the Kaveri Hall. Prithvi wing, Ministry of Environment,Forest and Climate Change. The discussions were fruitful to the realization of the guidelines of wetland.

With a view to provide impetus to economy and speedy realization of SDGs of which MSMEs hold key to, Memorandum of Understanding on cooperation in convergence of social enterprise initiatives for Development of MSMEs between Product and Process Development Centre (PPDC) and India Water Foundation was signed on 27 November 2019 at Ministry of MSMEs, Nirman Bhavan, New Delhi by Mr. R. Panneerselvam, Principal Director MSME-PDPC and Dr. Arvind Kumar President, IWF in the presence of major dignitaries, Hon'ble Additional Secretary & Development Commissioner, MSME, Government of India, Sh. Ram Mohan Mishra, IAS Additional Development Commissioner Mr. Anand Sherkhane, Dy. Director General, DC (MSME) Mr. D. P. Srivastava.

Provided foundational inputs on the paper "Consensual elements for the theme for the fifth Session of the United Nations Environment Assembly" upholding the need for Nature based Solutions to realize Sustainable Development Goals in November 2019.

As a panelist on 'Regional Cooperation for Addressing Disaster Risks and Building Climate Resilience' at the Policy Dialogue on Regional Cooperation for Sustainable Development in South Asia organized by BIISS, Dhaka on December 10 2019, Dr. Arvind Kumar 're-emphasized that adaptation is a global challenge that requires local / regional solutions, especially at a time when we are transitioning from pre-Kyoto Protocol era to post-2020 Paris Agreement being ratified and Agenda for Sustainable Development 2030 on the roll. He added that enlightening communities and stakeholders of integrating SDGs towards Disaster Risk Reduction was the need of the hour and also suggested that India must build a credible deterrence towards managing risks and forge cooperation towards climate resilience through 'Putting People First' approach.

Dr Arvind Kumar attended COP-25 held under the aegis of the United Nations Framework Convention on Climate Change (UNFCCC) held at Madrid, Spain, from 2-13 December 2019, and the COP-25 focused on adaptation, mitigation and implementation pathways to realize climate neutrality by 2050.

On World Wetlands Day on 2nd February 2020, IWF initiated "public outreach-public awareness-public movement", to gauge key contemporary scenarios, challenges around wetlands visiting Siliserh lake (Alwar) Rajasthan, thereby sending a strong appeal to strengthen this public movement towards wetland conservation.

IWF & SDGS

Steadfast in its commitment to the realization of the 17 SDGs along with their related targets, India Water Foundation has been constantly according priorities to these goals in its activities and this norm was adhered to during the period under review as well by conducting following activities:

On 23rd June, 2019, Chief Functionary of India Water Foundation, Shweta Tyagi was 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 marked a significant milestone to share India Water Foundation's efforts towards realization of SDG's and also contribute to GCNI's mandate. Speaking on the occasion, Ms. Tyagi said that our collective strength could galvanize towards an 'Integrated approach towards water Security' a view which was also acknowledged by India's Prime Minister Shri NarendraModi'. Indeed, it was a well-begun opportunity for the team of IWF.

The Chief Functionary of IWF, Ms. Shweta Tyagi, attended the 5th 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 5th 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 9th Subir Raha Memorial Lecture, instituted in the honor of Late Mr. Subir Raha, the founder President of the Global Compact Network India and former CMD, ONGC, 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 organizations 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.

Dr. Arvind Kumar was invited as expert to the 'Review of progress and achievements in fiveyears of the adoption of the 2030 Agenda' session at Third South Asia Forum on the Sustainable Development Goals, jointly organized by UNESCAP and Government of Bangladesh on December 08-09, 2019. This platform discussed key challenges and opportunities

of the 2030 Agenda for Sustainable Development in South Asia, which indeed witnessed a remarkable aura. He met vibrant multi-stakeholders from Governments, think-tanks, civil society, academia etc. He argued that as countries of South Asian Least Developed Countries like Bhutan, Bangladesh and Nepal were graduating to Developing Country status, India could play a role of 'Key Facilitator' among the South Asian countries through expanded transversal economic cooperation, ICT, Environment, promote people-to people contacts and develop scientific and cultural exchange etc.

International Cooperation

Solemn endeavors were continued by India Water Foundation during 2019to foster close rapport and cooperation with UN Specialized Agencies, international agencies, organizations and institutions in SDGs and Climate Change with specific reference to Paris Agreement on Climate Change, especially in water, energy and environment sectors, in the aftermath of water having been accorded priority in negotiations on climate change.IWF continued to maintain its synergy with UNEP, ESCAP-SSWA office, WHO, UNICEF, FAO, UN-Habitat etc. Another notable development during the period under review was the fostering of close cooperation of IWF with World Water Council (WCC), United Nations Development Programme (UNDP), World Bank, CTCN etc. While keeping a tab on the process of implementation of the SDGS and the provisions of the Paris Agreement on Climate Change in different parts of the globe, IWF also monitored the progress and other developments in this regard and has been reflecting on them in the Indian context through the social media and other modes of communication.

Generating Awareness among School Children

With only ten years left to realize the Sustainable Development Goals (SDGs) along with their targets, as envisaged in the 2030 Agenda and escalation of climate-induced adverse impacts worldwide, focus is rapidly shifting to mobilize mass support for increased participation of all stakeholders. We at India Water Foundation have been alive to the indispensable role of school children and youth in carrying forward the message of sustainable development and for this purpose they have to be informed, and according galvanized to spread the message in their respective surroundings. Acknowledging the role of children, as flag-bearers of change as well as

future citizens, in transforming the society, focus on imparting training to them and building their capacity in SDGs and climate related issues needs to be prioritized.

Children, as harbingers of transformation, are brimming with energy, enthusiasm and exuberance; therefore, their talent, skills and dexterity is required to be adequately utilized to prepare them as potential agents of socio-economic transformation of the society; nevertheless, specious channelization of their potentials is prone to be misdirected by turning them into agents of societal decline for want of appropriate guidance and critical thinking. Hence, it is here that the role of the teachers, parents, and civil society organization assumes significance in providing guidance to the youth and children to tread on the right path and utilizing their vital energy and enthusiasm for the betterment of society. India Water Foundation has been according priority to capacity building programmes of youth and school children in water, climate change and sustainable development goals from time to time.

Like the previous years, India Water Foundation in the middle of March 2019,engaged the school children of Delhi-NCR through letters, telephonic conversations and interactions to become proactive catalyst for change and environmental stewards and we have embarked towards knowledge dissemination, awareness and capacity building on climate related issues. In the wake of the imposition of nation-wide lockdown declared by the Union Government in the context of COVID-19 on 24 March 2020, direct interaction with school children could not be established. Rather contacts through phone and e-mails with those children who had this facility was made to make them aware about water and climate related issues. They were also encouraged to make queries which were replied by our panel of experts. In the wake of promulgation of nationwide lockdown on account of COVID-19 pandemic and resultant closure of educational institutions throughout the country, including Delhi NCR region from 24 March 2019, physical interaction with school children had also come to a halt. Nevertheless, IWF welcomed children and youth to be in touch via Internet by mailing them requisite information and providing answers to their queries.

Miscellaneous Activities

- IWF was represented at the Policy Dialogue on Economic and Social Survey of Asia and the Pacific 2019: Ambitions beyond growth, held on 18 April 2019 at National Institute of Public Finance and Policy, Satsang Vihar Marg, Special Institutional Area, New Delhi.

- 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 29th and 30th 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.

- IWF contributed its inputs for the theme "Empowering people and ensuring inclusiveness and equality- United Nations Economic and Social Commission for Asia and the Pacific which was held on 16th -19th July 2019, United Nations Head Quarters, New York.

- President India Water Foundation Dr. Arvind Kumar had an audience on 1 November 2019 with Dr. Harsh Vardhan, Union Minister for Science and Technology, Health and Family Welfare and Earth Sciences. While apprising the Hon'ble Minister about the rational outcomes of the World Water Council Governors meet, Dr Kumaralso highlighted the creation of Taskforce on horizontal inter-linkage of water with education, health etc., which IWF is pursuing in its activities for past many years. Dr. Kumar also congratulated Dr. Harsh

Vardhan's endeavor of twenty-five years of pulse polio and also appreciated his ongoing proactive engagements, urging to undertake similar zeal for water & health, as they are interlinked for which he assured cooperation for our dedicated endeavors.

Meanwhile, Dr Arvind Kumar, President, India Water Foundation called on the Lt Governor and briefed him about their environment-friendly endeavours through knowledge exchange, technology intervention and capacity-building measures and also extended their support for integrated management towards water resources by creation and rejuvenation of water bodies, the revival of traditional surface and groundwater bodies.

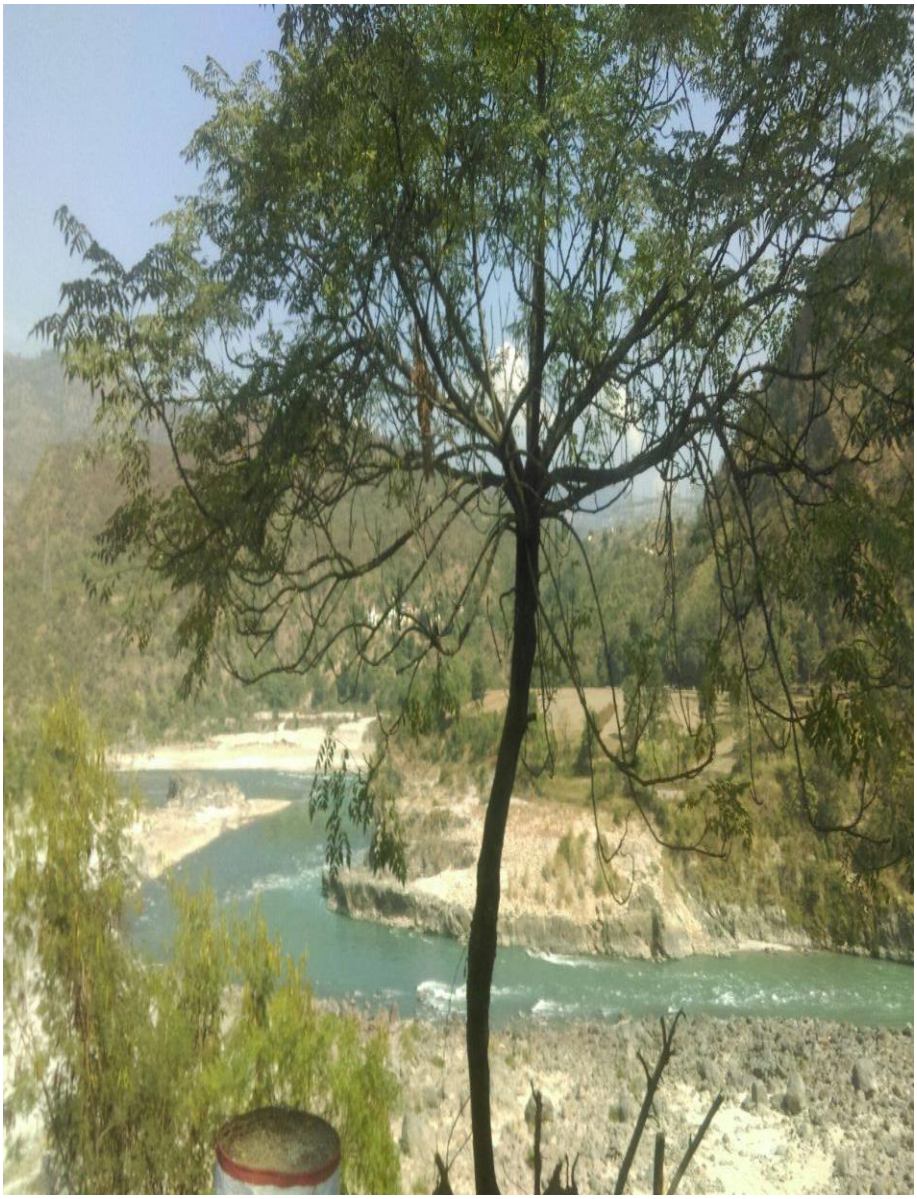
Lt Governor meeting Dr Arvind Kumar, President, India Water Foundation

- Dr. Arvind Kumar had a meeting with H.E Girish Chandra Murmu, Lieutenant Governor of Jammu and Kashmir along with his honorable colleague Ms. Shweta Tyagi at Raj Bhavan on 10 February 2020. It was equally nice to hear expanding horizons for the Union Territory of Jammu & Kashmir under his dynamic stewardship and Foundation also shared their endeavors on a good standing, which was well appreciated by the Governor.

- Dr. Jawed Ahmed, Assistant Professor, Jamia Hamdard and his team members Dr. Parul Agarwal, Dr. Harleen Kaur and Dr Bhavya Alankar paid a visit to IWF office on 19 February 2020 and held brief discussions on environmental issues and these discussions were presided over by Dr. Arvind Kumar, President, IWF and Shweta Tyagi, Chief Functionary, IWF. Apart from exchange of views of mutual interests, profound discussions culminated in overall productive interaction.

- At the Social Enterprise Conclave - 2020 at Pravasi Bhartiya Kendra, Chanakyapuri, New Delhi on 26th February, 2020, along with dignitaries, Dr. Arvind Kumar, President, India Water Foundation ignited the lamp of knowledge and wisdom. Opening remarks were given by Sh. Ram Mohan Mishra, IAS, Special Secretary & Development Commissioner, MSME, Government of India. Keynote address was delivered by Sh. Anil K Gupta, social entrepreneur professor and inaugural note by Sh. Uday Kumar Varma, Retd. Former Secretary, M/o MSME, GoI. Conclave was a rich amalgamation of around 300 participants and various presentations laid focus on human and social capital, innovation infrastructure, credit and market access, etc.

- Dr. Arvind Kumar and Ms. Shweta Tyagi met Ms. Payden, Deputy Representative of WHO India along with her colleague Environment and Health focal point of WHO India, Mr. Manjeet Saluja at WHO office on 3rd March, 2020. It was remarkable to hear various enriching endeavors of WHO and Dr Kumar also shared our activities and programs of IWF.



About India Water Foundation

India Water Foundation (IWF), a non-profit civil society and think tank, is engaged in enhancing public awareness about Sustainable Development Goals (SDGs) and major components of the Paris Agreement on Climate Change, with specific emphasis on SDG-1 on About Ending Poverty, SDG-2 about Food Security, SDG-6 about Water & Sanitation, SDG-7 about Energy and SDG-13 about combating Climate Change, in Asia-Pacific region in general and India in particular. It also emphasizes on familiarizing the people regarding the vital role water, energy and environment play in human lives, their impact on health, economic growth, livelihoods of the people and calamities that wreak havoc due to non-judicious harnessing of these natural resources. Generation of this awareness is facilitated through seminars, conferences, symposia, outreach and personal contact programs etc. As water is an essential component of power generation and food production, therefore, IWF is also engaged in ensuring environmental security, water security, energy security and food security which are essential for sustainable development.

Vision

IWF envisions attainment of the 17 SDGs along with targets and the objectives of the Paris Agreement on Climate Change within the stipulated period. It also nurtures its vision to visualize Asia-Pacific region as a water-surplus region sans environmental hazards by 2050 by integrating IWRM, Nexus and EbA approaches as key components of sustainable development goals into national policy at local, provincial, national and regional levels by harnessing water-energy-climate-food nexus approach, assimilation and dissemination of wit and wisdom from local to global level and *vice versa*, promotion of inter-sectoral convergence in water, energy and environment sectors, capacity-building of all stakeholders in water, energy and environment sectors, equal emphasis on Soft and Hard Solutions to water and environment related problems and to change the mind-set of the stakeholders by sensitizing, incentivizing and galvanizing the people about water-energy-environment related issues.

Mission

The IWF works amongst the people at the grassroots level, especially amongst the marginalized and weaker sections, women, tribals and the poorest communities in India and the Asia-Pacific region, in cooperation with local, state and national governments, and with other like-minded civil society organizations (CSOs), to help them develop water, sanitation, hygiene and climate

change adaptation services that are not temporary, but lasting forever. The IWF identifies the roadblocks to sustainable development and helps overcome them. It helps the people to make the change from short-term gains to long-lasting services that could transform their lives and their futures.

Partnership, Accreditation and Rapport of IWF

India Water Foundation has been empaneled as Key Resource Centre (KRC) under Ministry of Drinking Water & Sanitation GOI, and has Direct Membership with ICID, New Delhi. It has partnership, rapport and accreditation with many national and internationally reputed organisations, NGOs and CSOs etc., especially rapport with UNEP, UN-ESCAP and other UN/International Organisations. Since 2012, India Water Foundation has been aknowledge partner of Meghalaya Basin Development Authority (MBDA) Government of Meghalaya, and Meghalaya Water Foundation as well as member of Meghalaya State Water Resources Council.The Govt. of Meghalaya vide its official notification dated 29 November 2017,further renewed the appointment of India Water Foundation as member of the State Water Resources Council of Meghalaya as the member of the State Council for Climate Change and Sustainable Development.

IWF has been granted accreditation on 2 August 2017 as an observer to the Governing Body of United Nations Environment Programme (UN Environment) the United Nations.

On 21 September 2017, the Niti Aayog, (WR & LR Division) of Govt. of India appointed IWF as member of Working Group on Water Resources Development, Management and Efficient utilization to seek inputs for development agenda for New India @75 under the Chairmanship of Prof. Ramesh Chand, Member NITI Aayog, GOI.

In early February 2019, India Water Foundation was granted membership of the Climate Technology Centre and Network (CTCN) for playing a meaningful role in information sharing and capacity building, providing technical assistance in response to country requests, and participate in outreach and networking activities.

On 20 December 2018, the United Nations Framework Convention on Climate Change (UNFCCC) granted “Observer Organization” status to India Water Foundation to sessions of the Conference of the Parties (COP).

A memorandum of understanding between India Water Foundation and the Government of Sikkim was signed on 11 December 2017 for cooperating with government of Sikkim in the field of water resources, environment, sustainable development, and recently launched “Sikkim Comprehensive Water Resources Plan”.

On 30 January 2018, India Water Foundation was appointed as a Member of the Technical Advisory Committee for India's Third National Communication and Biennial Update Reports to UNFCCC, constituted by the Ministry of Environment, Forest and Climate Change (Climate Change Division), GOI, New Delhi.

The IWF has worked as a Civil Society Organization (CSO) to provide its services to carry out social development and Public Awareness and Public Participation (PAPP) activities under the JICA- assisted Ganga Action Plan project for a period of three years in Varanasi.

IWF's Thought Leadership

India Water Foundation has amassed a plethora of knowledge wealth through its exposure and participation in leading national and international deliberations in water, energy and environment sectors and on the basis of this accumulated knowledge it has pioneered non-engineering and non-technical solutions which are of equal significance in tackling water and environment related problems by encompassing PPT (People – Process – Technology). The gives the IWF advantage of thought leadership in many areas like policy formulation, facilitating conferences, seminars, symposia, workshops etc., capacity-building and sustenance, eco-sustainability, facilitating technology intervention, nexus approach, assimilation &dissemination of Water, Environment and Sanitation related knowledge, Inter-Sectoral Convergence, emphasis on Soft Approach, collective approach on Water and other related sectors etc. These are briefly described below: --

Catalyst for Policy Formulation

India Water Foundation has highly qualified, experienced and dedicated experts inthe field of water management and governance, climate change mitigation and adaptation. These experts have immense exposure to national and international leading practices and innovative techniques and as such their expertise can be utilized in the formulation of critical policies. This expertise can be extremely effective in policies creation that will support inter-sectoral 3Cs – Cooperation, Coordination & Convergence - enabling effective impact as a result of optimized implementation of the policies. The IWF is capable of contributing to a great extent in designing, planning and monitoring of highly specialized programmes which can be helpful in improving the water management system in a sustainable manner, especially at the grassroots level.

Facilitating Conference/Workshop/Seminars

Prolonged vast exposure to national and international conferences, seminars, symposia, workshops and round-tables has enabled India Water Foundation to amass a very rich experience

in organizing conferences/seminars/workshops etc. at regional, national and international levels. Owing to its close partnership and rapport with various leading national and international organizations /agencies/institutes, the IWF can elicit the cooperation and participation of technical experts. The IWF is equally well placed to interact with private sector companies engaged in water, energy and environment sectors. Thus, the IWF is privileged to extend wide variety of facilities which are essential for making conferences/seminars/symposia a gala success.

Key speakers constitute the spine of the conference/seminar/workshop and their pronouncements cast a wide-ranging impact on the audience and provide news material for the media. Owing to its good relations with the leading national and international agencies, the IWF can facilitate the availability of senior advisors/experts for the designated conference/seminar. Besides, it can also elicit the cooperation of experts from leading academic and technological institutions for the same purpose.

Concomitantly, the IWF maintains very cordial relationship with media, both print as well as electronic. Media wields tremendous impact on global politics and society owing to its vast reach. Media coverage provides opportunity to disseminate the message and helps in boosting the image. The IWF can facilitate interaction with print and electronic media.

The IWF can be instrumental in providing a platform for the regional and international stakeholders to encourage greater coordination and collaboration among policy makers, authorities, professionals, researchers, civil society representatives, private sector as well as operators of water, energy and environmental facilities. It can be helpful in bringing together the public and private sector players, and central and local authorities, thus offering most up-to-date solutions.

Capacity Building and Sustenance

Capacity building enables the stakeholders to efficiently deploy their resources for the sustainable development of natural resources, especially water and energy. Capacity building programs for resources at ground level and especially Engineers and Hydrogeologists of all the water-user state agencies as well as for ULBs and community are essential for the better management of water resources.

In Capacity building exercises, India Water Foundation involves all stakeholders and includes local traditional knowledge and wisdom to ensure better adaptability and acceptance. The Capacity Building programs organized by IWF in water sector generally include areas like Groundwater and Hydro-geology, Water Harvesting including Urban Storm Water harvesting,

Drinking Water Quality Monitoring and surveillance including establishing Brackish Ground Water (BGW) Desalination plants to reducing pressure on fresh water resources, sustainability activities - Designing and implementation, improving community participation involvement in management of Urban Drinking Water, supply schemes - establishing water project groups made up of community leaders who are trained by experts on how to monitor, maintain and repair water systems and training of trainers for District and Subdivision level trainers for the states on technical capacity building of the community etc.

Nexus Approach

India Water Foundation envisions integrating sustainable development into national policy at national, regional and global level. Sustainable development is a new paradigm for economic growth, social equality and environmental sustainability. Water is a key component of sustainable development and all ecosystems are inextricably linked with water. Keeping in view the close nexus between water, environment, energy and food, solution to water related problems can better be facilitated through this 'nexus approach', which seeks to find solutions based on convergence between various sectors or disciplines and is being widely regarded along with resilience to attain sustainable development. The nexus approach can serve as a bridge that could engulf the gap between the social, economic and environmental pillars of sustainable development. In pursuance of this 'nexus approach', the IWF focuses on Environmental Security, Water Security, Energy Security and Food Security.

Assimilation and Dissemination of Water Knowledge

India Water Foundation is engaged in assimilation and dissemination of plethora of wit and wisdom generated locally, regionally and globally in water sector and making it accessible to all stakeholders in water sector in their vernacular language so that the concerned stakeholders are benefited by it. Water related knowledge is generated through innovation experimentation and techniques, seminars, conferences and workshops etc. However, the knowledge thus generated remains confined to printed reports in different languages that adorn the shelves of the archives and it seldom reaches the masses which are main stakeholders of water sector. The IWF plans to make efforts in this regard to assimilate such knowledge and get it translated into local languages for further dissemination amongst the people. However, it is gigantic task requiring collective support of national, regional and international agencies.

Inter-Sectoral Convergence

There are about eleven ministries of the Government of India which deal with water related issues in one way or the other. These ministries inter alia include Ministry of Water Resources, Ministry of Urban Development, Ministry of Rural Development, Ministry of Health, Ministry of Drinking Water and Sanitation, Ministry of Environment & Forests, Ministry of Agriculture etc. Besides, water being a state subject is being looked after by each state according to its requirements. Thus, there exists a sectoral approach to water related issues and there is lack of coordination, cooperation and convergence in water sector between and amongst various Central ministries on the one hand and between the Central Government and states on the other. This results in duplication of work and extra expenditure without achieving tangible outcome of significance.

It is in this backdrop that the IWF has been making efforts to promote inter-sectoral and intergovernmental convergence in water sector and it has succeeded to some extent as well. India Water Foundation has been espousing the case for establishing **India Water Hub** as an apex body where all stakeholders in water sector share their knowledge and get their water-related grievances redressed at national and local levels.

Emphasis on Soft Approach

India Water Foundation has taken up the initiative of laying equal emphasis on 'Soft Approach" along with 'Hard Approach' to tackle water related problems. Thus far the major emphasis has been on finding engineering and technological solutions to water related issues and policy making, it simple mentation and feedback process from the stakeholders has generally not received due emphasis which it deserves. The Soft Approach entails capacity building of the people and as such India Water Foundation is affirmative about the need for capacity-building of the people and institutions in water sector. This task of **capacity-building** of the people can be accomplished by sensitizing, incentivizing and galvanizing the people about water-related issues.

Sectoral to Collective Approach

Adverse impact of the ongoing process of climate change, fast depletion of global surface and ground water resources and rapid melting of glaciers coupled with mounting problem of pollution of water resources cumulatively add to the already grim problem of acute shortage of drinking water in almost all parts of the globe. Various UN agencies like UNEP, UN Habitat, UN ESCAP, UNESCO, WHO, FAO, UNICEF etc., and international water organizations look

upon water from their regional or problem-centric perspective. Nevertheless, water governance is a global issue that calls for collective approach and not sectoral approach. India Water Foundation lays emphasis on international and inter and intra-organizational synergy in water sector to tackle the problems pertaining to water and thereby ensuring sustainable supply of safe drinking water globally.

Can 'Circular Water Economy' Uncover the Production-Consumption Dynamics?

The world can maximize chances of avoiding dangerous climate change by moving to a circular economy, thereby allowing access to meet the goals of the Paris Agreement on Climate Action. The global economy is only 9% circular - just 9% of the 92.8 billion tones of minerals, fossil fuels, metals and biomass that enter the economy are re-used annually, a key finding of The Circularity Gap Report 2019, released by the organization Circle Economy.

Understanding Circular Economy

Sacred water wisdom: Rediscovery of traditions

By Dr Arvind Kumar

Most of the groves are located in the catchment areas of major rivers. The vegetation as at Cherrapunji, is today represented by sacred groves where Sacred Waters are found connected

Existing legal frameworks impede efficient water management

Dr. Arvind Kumar
President, India Water Foundation & Governor, World Water Council

PROFILE

Dr. Arvind Kumar is the Governor of the World Water Council and founder president of India Water Foundation (IWF), a New Delhi, India based civil society, which familiarizes people regarding the vital role of water, energy, and the environment in human lives. Dr. Kumar has been instrumental in Inter-Sectoral Convergence in the water sector and regional water diplomacy. He is a member of the technical advisory committee for India's third national communication and biennial update reports to UNFCCC, and a member of the National Wetlands Committee. He is also a member of the Meghalaya State Water Resources Council and has advised the government of Meghalaya to institutionalize the River Basin Management (RBM) mechanism, addressing climate and ecosystem related issues through its Integrated Basin Development and Livelihood Programme (IBDLP). He has published over 350-plus research articles in reputed journals and is the editor of online e-Magazine Focus Global Reporter. He is the lead author of a publication published by SAC in December 2015 (Dhaka, Bangladesh) entitled "SAARC Outlook on Water-Energy-Food Nexus in SAARC Region".

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SIKKIM EXPRESS

Sikkim, the gateway to North-East prosperity

Towards Green Growth via Green Industrial Policy

Dr. Arvind Kumar
President and Founder
India Water Foundation

Towards Green Growth via Green Industrial Policy

Synopsis: This article deals with linkages between industry and climate change with specific allusion to adverse impact from industrial pollution. It examines the rationale for having a green industrial policy, its various ingredients, challenges in adopting this policy framework and trade-offs thereof.

Shweta Tyagi
Chief Functionary
India Water Foundation
Spaces, 17th Floor, Max Towers, Sector 16B, DND Flyway Noida-201301, India,
Phone: +91120-518-5040 Direct Phone No: 91-11-26349533
shweta.tyagi@indiawaterfoundation.org
www.indiawaterfoundation.org