SPECIAL ISSUE
WETLANDS AND CLIMATE CHANGE

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Wetlands International South Asia

Wetlands International South Asia Society (Regd.) (WISA) is a Non-Government Organisation with a mission to sustain and restore wetlands, their resources and biodiversity. WISA's office at New Delhi, India was established in 1996 as part of the Global Network Offices of The Wetlands International (WI) with a mandate to promote Wetland Conservation and wise use in South Asia region. WI is a global Non-Profit Organisation which works on Wetland conservation and restoration through 19 regional offices in over 100 Countries supported by headquarters based in the Netherlands. WI is also one of the 5 International Organisation Partners of the Convention on Wetlands (Ramsar Convention). In 2005, WISA was registered as a legal entity under the society's registration act of Government of India. The strategic direction and policies of WISA are set by a General Body which comprises eminent experts and conservation planners.

Sarovar is the newsletter of the Wetlands International South Asia Society (regd.)

CONTENTS

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The Editorial Panel welcomes contributions of articles and information. These may be sent to: editor@wi-sa.org
Cover Photograph: Peat bogs around Chandertal, Himachal Pradesh
Photo credit: Wetlands International South Asia Photo Library (Dushyant Mohil)

Inside Cover Photograph: Chilika, Odisha
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Message from the President

I am delighted that the Wetlands International South Asia is bringing out fifth volume of newsletter Sarovar which is indeed a remarkable step towards fulfilling the dreams of our young wetland scientists to manage these fragile unique ecosystems in a healthy and sustainable manner.

The theme of our newsletter in the present volume is wetlands and climate change. This is an important global issue. Climate changes affect fresh water ecosystems in number of ways like increase in water temperatures, water quality, role of wetlands in carbon sequestration and storage, additional runoff compounded by lower flows and rising temperatures, more frequent droughts and shifting precipitation patterns lower water tables in river, lakes and streams, leaving less water to dilute pollutants. Wetlands are vulnerable to all these changes, yet, conservation and wise use of the wide diversity of inland and coastal wetlands is one of the most formidable climate change response.

An important policy response is to include wetlands conservation and wise use within India's Intended Nationally Determined Contribution towards United Nations Framework Convention on Climate Change. To enable this, the State Action Plans for Climate Change would need significant augmentation to enable consideration of wetlands conservation within climate change mitigation and adaptation actions.

We are drawing attention to the role of wetlands in climate change through a number of initiatives. Work on high altitude wetlands complexes of Sikkim and Himachal Pradesh, which are highly sensitive to changes in glacial extent and weather patterns has been initiated. We are also working on approaches and methods for assessing vulnerability induced by climate change in wetlands management planning processes and enabling wetlands managers to identify suitable response measures. We also continue to work with the Ministry of Environment, Forest and Climate Change on enhancing implementation of national wetlands programme.

We look forward to receiving your feedback on the volume. The next volume will be published on the theme 'Wetlands and Biodiversity', the theme for World Wetlands Day 2020. We look forward to your contributions for this volume to make it more attractive and meaningful.

Happy reading!

Dr Sidharth Kaul
President

November 1, 2019
New Delhi

From the Director's Desk

Climate Change is posing new challenges to wetlands science and practice. On the one hand, several drivers of wetlands degradation are deepening and acting more intensively, and on the other, several new drivers of change. Such as changing vegetation structure within catchments and extreme events which dramatically alter wetlands morphologically, are emerging. In either case, business as usual approaches for wetlands management is going to be insufficient.

Unfortunately, we are ill-prepared to face the challenges posed by climate change. A review of State Action Plans of Climate Change indicates that most of the states neither recognise the interlinkages of wetlands with climate change nor consider wetlands rehabilitation and management within response options. Wetlands management plans, on the other hand, do not even consider climate change dimensions while describing ecosystem change, setting management objectives, or monitoring and evaluation systems.

There are two pressing needs that need to be addressed in this context. Firstly, we will need to ensure that wetlands are not only considered for carbon values, but for their full range of ecosystem services and biodiversity values. Especially, the coupling of carbon and water cycles will need to be taken into account. Secondly, much more research and capacity investment need to be done to understand the sensitivity and adaptive capacity of wetlands to changes induced by a changing climate.

We are deeply concerned about the impact wetland loss has on nature and the diverse range of nature's contribution to people. We also believe that loss and degradation of wetlands can be halted and reversed if the wide-ranging contributions are recognised and integrated within sectoral policies and programmes. Together with our partners and stakeholders, we have put together an ambitious programme on climate change. We are working to improve our knowledge of the future scenarios for wetlands. We are working on modules to enable wetlands managers to systematically assess vulnerabilities of wetlands ecosystems to changing climate. At ground level, we are investing in pilots which can demonstrate how concepts can be transformed into practice.

We look forward to your continued support in this journey.

Dr Ritesh Kumar
Director
November 7, 2019
New Delhi

Integrating Wetlands within Climate Response Actions

A network of conserved and wisely-managed wetlands underpins India's resiliency to climate change. In this article Dr Sidharth Kaul (President, Wetlands International South Asia) and Dr Ritesh Kumar (Director, Wetlands International South Asia) discuss the policy response options for integrating wetlands within climate change mitigation and adaptation strategies and actions.

Climate change projections for India indicate increase in atmospheric temperature, sea-surface temperature, intensifying rainfall, sea-level rise, and increasing extreme events. Wetlands are vulnerable to all these changes through impacts on ecosystem structure, function and processes. Deepening of anthropogenic drivers of change is likely to accentuate adverse changes in wetlands further, yet, conservation and wise use of the wide diversity of inland and coastal wetlands is one of the most formidable climate change response.

Mangroves and deltas can effectively sequester carbon

Wetlands are located at the interface of terrestrial and aquatic ecosystems and typically arise when inundation by water produces soils dominated by anaerobic processes, forcing the biota, particularly rooted plants to adapt to flooding. The Ramsar Convention, ratified by India in 1982 defines wetlands as 'areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed six metres'. Article 2.1 of the Convention provides that wetlands 'may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying within the wetlands'. The six meter depth on coastal and marine frontier was set considering the depth to which coastal waterbirds were believed to dive. Thus the term wetlands refers in broadest sense to a range of inland aquatic ecosystems (such as swamps, marshes, lakes and peatlands); coastal and near shore marine (such as coral reefs, mangroves, seagrass beds and estuaries) and human-made ecosystems (such as reservoirs, irrigation channels, fish ponds and others).

As per the National Wetland Atlas published in 2011 using satellite data of 2006-2007, the total extent of wetlands is India is 15.26 million ha, which is equivalent to 4.6% of her geographical area. Inland wetlands account for nearly 69% (10.56 million ha) of this area. High altitude wetlands have been assessed to extend 126,249 ha. The state of Gujarat has the maximum wetland area (3.47 million ha). The Deccan peninsula and Desert-Semi arid region account for nearly 30% each of the total extent, Gangetic plains and Coast each account for 12% of the wetland extent. North-east and Western Ghats region have 6% and 4% of the total wetland extent respectively. The Himalayan regions (including Trans-Himalayas) have 4% of the total extent, whereas the islands constitute the balance 1.5% of the wetland area.

Wetlands have an important role in regulating climate change as well as buffering humanity from the impacts of climate change. Several wetland types are known to actively sequester carbon and act as sinks for Green House Gases. Through their role in moderating water regimes, sediment accumulation, pollution abatement and as food and water sources, wetlands support climate change adaptation in multiple ways.

Wetlands, carbon accumulation and GHG emissions

Wetlands have a role in stabilization of CO_2, CH_4, N_2O and other Green House Gas (GHG) concentrations through their influence on two pathways namely, preventing climate and land use mediated release of GHGs and increasing the capacity to actively remove CO_2 from the atmosphere and sequester carbon for a long time. For several wetland types, the bulk of sequestered carbon is in the soils as compared with plant communities, due to limitations on decomposition imposed by water saturation and lack of oxygen. The coastal blue carbon soaked by mangroves, salt marshes and seagrasses via photosynthesis and stored in wet anaerobic soils has received considerable attention recently in the context of climate change.

Worldwide, peatlands are known as the one of the largest carbon reserves in the world. The inventory of peatlands in India is very patchy and needs considerable attention. The Himalayas present ideal condition for development of shallow to moderately thick peat. Notably, drainage of peat by their conversion to alternate land uses, such as agriculture or grazing, releases this stored carbon into atmosphere, thus further accentuating climate change impacts.

A number of studies have brought out the carbon storage potential of coastal wetlands. Values range from 21.44 – 25.24 tonnes per ha in above ground biomass in the Sunderbans to 53.95 – 123.30 tonnes per ha in mangroves of Gujarat. The economic value of carbon sequestration service of the seagrass meadows, upscaled for the total cover of the country, was estimated to be $1.02 - $ 3.65 million annually.

Several wetlands can also be a net source of GHGs and emissions are further elevated by anthropogenic disturbances and alterations to these ecosystems. Anthropogenic disturbances have been observed to increase methane emissions from mangroves. Tidal flooding induced anoxic conditions in mangroves have been observed to make these wetlands potential sources of GHGs including CH4 and N2O.

Impacts of climate change on wetland dependent species

The effect of global climate change on biodiversity of wetland systems is projected to take place at several landscape spatial scales ranging from habitat units, ecological types, geomorphologic types to global distributions. Much of these changes are expected to be mediated by deepening of drivers of wetlands degradation such as reduced freshwater and sediment input, increased nutrient loading, conversion of natural shoreline and species invasion.

The northern Indian Ocean is identified as one of the 17 climate change hotspots (areas that will warm faster than 90% of the oceans). Long-term climate change is likely to impact coastal ecosystems and their capacity to sustain fish stocks, exacerbate stress on fish stocks thereby affecting the fisher communities along the Indian coastline. Increased sensitivity to climatic fluctuations has been observed in several overfished species such as Bombay duck, tuna, pomfret, various shrimp and catfish. Many tropical fish stocks are already exposed to high extremes of temperature tolerance and face regional extinction, with some others moving towards higher latitudes.

Coral reefs of Indian ocean had experienced as many as 29 widespread bleaching events with intense bleaching around 2002 when observed sea surface temperature was higher than the summer maxima forcing dependent communities to search for other food and breeding sites (www.reefbase.org). During the third global coral bleaching event between 2014 and 2017, corals in the Gulf of Mannar faced high mortality with reduction of live corals to only one-fifth area, fast growing coral forms including Acropora, Montipora and Pocillopora being the most-affected not only by bleaching but also by severe mortality.

Future sea surface temperature changes are also likely to induce adverse impacts on populations of several endangered species such as female skewed sex ratios at many rookeries of sea turtles. This risk is superimposed on the adverse trends in the loss of available nesting sites and flooding of turtle nests.

Wetlands and sea-level rise

A key determinant of the vulnerability of coastal wetlands is whether their surface elevation can keep pace with rising sea level. Salt marshes and mangrove swamps are known to accumulate soils vertically mainly through three synergistic processes: a) below ground growth adding volume to the soil and the above ground portion helping trap inorganic sediments of tidal waters, b) increasing soil volume resulting in raised surface elevation of the wetland enabling it to roughly track sea-level rise, and c) increase in elevation accompanied by lateral expansion over tidal flats in the lower intertidal zone and inland over adjacent terrestrial ecosystems.

Areas surrounded by urbanised wetlands are expected to lead to a coastal squeeze in the face of sea-level rise ultimately leading to wetland loss. Availability of accommodation space, which is strongly influenced by the building of anthropogenic infrastructure in the coastal zone and how such infrastructure changes in response to development dynamics is likely to have a bearing on actual magnitude of loss or even gain in coastal wetlands.

With the rapid intensification of water use in the upstream stretches, there has been a significant reduction in water and sediment availability to the coastal wetlands. Intensive coastal infrastructure built up in major parts of Indian coastline may thus, deprive coastal wetlands of the much-needed accommodation space. For lagoons, rising sea-level along with a reduction in freshwater flows may tend the system to marine processes domination and reduced ecological productivity as compared with brackish water state as has been observed in estuaries as Ashtamudi (in Kerala) and Aghnashini (in Karnataka).

Extreme events and disaster risks

Climate change induced changes in frequency and intensity of extreme events is on a rise. These turn into a disaster when ecosystems and society are unable to cope with the impacts of these events. Water mediated disasters, such as floods, droughts, and storm surges occupy a major proportion of these events. Recent assessments have confirmed instability in Indian monsoon, and increasing intensity of extreme rainfall events, floods and droughts. For coastal regions, a trend

Rising sea levels and extreme events render several parts of Indian coastline vulnerable to change

of enhanced cyclogenesis and increasing extreme rainfall events exposing the coast to the risk of floods, storm surges, tsunamis and tropical cyclones have been recorded.

Sustainable development calls for prospective and preventive measures for reducing disaster risk. Integrating wetlands conservation and wise use within the policies and programmes for disaster risk reduction provides 'cost-effective' and 'no-regrets' options for buffering communities from hazard impacts, reducing exposure to hazards and provide for human needs and livelihoods before, during and after hazard events. Impacts of extreme events on coastal wetlands are known to range from changes in hydrological regimes (such as prolonged freshwater conditions in Chilika after cyclone Phailin) to extensive physical damage (mangrove destruction during great Indian tsunami. Reef areas of Andaman and Nicobar Islands were devastated entirely during the 2004 tsunami, and in Gulf of Mannar, the delicate branching corals needed more than ten years to recolonise.

Degradation of wetlands reduces resilience of society against disaster risks, particularly water-mediated hazards such as floods, droughts and storm surges. The floods of Kashmir Valley of September 2014 and the December 2015 floods that drowned Chennai City are grim reminders of the ways wetland destruction can make lives vulnerable. Evidences from Super cyclone Kalinga of 1999, Indian Ocean Tsunami of 2004 and Phailin of 2013 underline the role coastal wetlands as estuaries and mangroves can play in buffering communities from impacts of these cyclones and wave surges.

How we use and manage wetlands and other ecosystems is central to disaster risk reduction. Healthy wetlands reduce our exposure to water related hazards such as floods and water scarcity. Alone or in combination with traditional infrastructure, wetlands protect cities and communities against inundation and flooding from the sea and rivers, thus reducing loss of life and damage to property. Coastal wetlands such as mangroves protect the coast against flooding and serve as buffers against saltwater intrusion. Floodplains, and lakes retain and detain floodwaters, reducing flood peaks reaching urban areas and communities. Careful stewardship of sediments and reduction in human induced land subsidence is critical to reducing the vulnerability of coastal areas to flooding.

The National Disaster Management Plan, released in May 2016, includes mapping and conservation of wetlands within the set of actions understanding disaster risk, and investing in specific disaster risk reduction actions. The plan echoes the United Nations' Sendai Framework for Disaster Risk Reduction emphasis on addressing underlying risk causes for sustainable reduction of disaster risk.

Integration of wetlands within disaster risk reduction strategies and actions will require a number of collaboration actions between wetlands managers and those responsible for implementation disaster risk reduction actions. Wetlands conservation and restoration should be included within the suite of actions proposed for reducing disaster risk, particularly those related to water, food and climate security. Assessment of wetland ecosystem health should be made a part of District level Disaster Planning processes. Representation of disaster management authorities should be ensured within State Wetland Authorities. Analysis of potential vulnerabilities must be made a part of wetlands management planning processes, and adequate response options included as a part of adaptable management processes.

National policies and management strategies

The linkages of national policy settings for wetlands with climate change are primarily through inclusion in the National Action Plan for Climate Change. Wetland conservation and sustainable management is included in the National Water Mission. Similarly, the National Mission for Green India has a target of 0.1 Mha for wetlands conservation and an additional 0.1 Mha for mangroves. Recently, the blue print of a National Coastal Mission has been developed which will further strengthen conservation and management of coastal wetlands. Under the ambit of the National Plan, Sates Action Plans for Climate Change (SAPCCs) have been formulated spelling out specific climate change mitigation and adaptation measures within each of the state-level planning sectors. Wetlands conservation has been included as an adaptation strategy in most of the states, though the wider role of these ecosystems in adaptation within other sectors has received limited attention.

India ratified in 2016 her Nationally Determined Contributions (NDCs) towards meeting the Paris Agreement, which includes objectives to peak GHG emissions as soon as possible, limit the global average temperature increase above pre-industrial levels to well-below 2 degree centigrade, and to eventually pursue efforts to limit the increase to 1.5 degree centigrade. Amongst the first NDC includes commitment to creating additional carbon sink of 2.5 to 3 billion tonnes of CO2 equivalent through additional forest and tree cover, and to better adapt to climate change by enhancing investments in sectors vulnerable to climate change including agriculture, water resources, Himalayan region, coastal region, health and disaster management. Presently, the carbon storage in wetlands has not been paid attention to. In adaptation space, conservation of wetlands has received only partial attention in terms of their role in water and food security.

India's national efforts to conserve wetlands have taken shape since her ratification of Ramsar Convention in 1982 and establishment of a separate Ministry of Environment and Forest (currently known as Ministry of Environment, Forest and Climate Change) in 1985. Towards the seventies, concerns on declining biodiversity led to high biodiversity value landscapes, including several wetlands being designated as protected areas under the Indian Wildlife Protection Act (1986) and state wildlife laws.

The degradation and pollution of wetlands were identified as one of the significant environment challenges by the MoEFCC and reflected in the National Conservation Strategy and Policy Statement on Environment and Development (1992). The Ministry institutionalised conservation programming for wetlands in the form of a National Wetlands Conservation Plan in 1986. The programme centred around the creation of a network of well-managed wetlands by providing support to state governments in the design and implementation of management plans and providing complementing support to research, capacity development and outreach programmes. The national programme, presently known as National Plan for Conservation of Aquatic Ecosystems (NPCA) supports implementation of integrated management plans of over 180 wetlands identified by state and central government as being of high conservation significance. Besides the NPCA, the Ministry also provides financial supports to wetlands conservation through its scheme of Mangroves and Coral Reefs and Integrated Development of Coastal Habitats.

The National Environment Policy of 2006 lays down specific policy elements for wetlands with recommended actions including integration in developmental planning, management based on prudent use strategies, promotion of eco-tourism and implementation of a regulatory framework.

Provisions of the Indian Forest Act, 1927 and the Indian Wildlife (Protection) Act, 1972 defined the regulatory framework for wetlands located within forests and designated protected areas. Similarly, coastal wetlands are protected under the Coastal Regulation Zone (CRZ) Notification (2011) and the Island Protection Zone (IPZ) Notification 2011. These Notifications recognise coral reefs, mangroves, mud flats, and salt marshes as ecologically sensitive and categorise them as CRZ-I which implies that these areas are accorded protection of the highest order. The Indian Fisheries Act, 1897, The Water (Prevention and Control of Pollution) Act, 1974, The Environment (Protection) Act, 1986 and The Biological Diversity Act, 2002 provide substantive legal and regulatory framework for conservation of Indian wetlands. The Coastal Aquaculture Authority Act, 2005 prohibits the conversion of natural coastal wetlands. In 2010, the Ministry notified the Wetlands (Conservation and Management) Rules as the regulatory architecture for wetlands, which was superseded with 2017 notification, entrusting the state governments with responsibilities of notifying wetlands, ensuring that activities prohibited in notified wetlands do not take place, and management is based on wise use principles.

Well preserved river floodplains are nature's buffer against changing climate

However, the effectiveness of the programmes above has been limited by some factors, of which sectoral approaches, in-effective governance mechanisms, ad-hoc implementation of management plans and insufficient capacity for integrated management remain prominent. Barring mangroves, the extent and quality of which have indicated a positive trend since the devastating Indian Ocean Tsunami of 2004, much of the wetlands are bearing adverse trends. With a multiplicity of national programmes, each being guided by sectoral priorities, a unified policy framework for wetlands remains elusive.

International wetlands and climate policy

International climate policies have oflate taken steps to incorporate wetlands. In 2013, the Wetlands supplement was released by the Intergovernmental Panel on Climate Change guiding the countries on how they can explicitly include emissions from land use change in freshwater wetlands including peatlands in their national carbon inventories. Opportunities for including coastal blue carbon ecosystems and other wetlands exist in Reduced Emissions from Deforestation and Degradation Plus (REDD+), Clean Development Mechanisms (CDM) and nationally appropriate mitigation actions . Ramsar Convention on Wetlands calls for 'conservation and wise-use of all wetlands' through local and national action and international cooperation, as a contribution to achieving sustainable development throughout the world. Towards her commitment under the Ramsar Convention, India has designated 27 Ramsar sites including six coastal wetlands.

Elements pertaining to conservation of coastal wetlands are also contained in the programmes of Convention on Biodiversity (CBD), Convention on Migratory Species of Wild Animals (CMS or the Bonn Convention), Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), World Heritage Convention, Intergovernmental Panel on Climate Change (IPCC) and The United Nations Convention on the Law of the Seas (UNCLOS), the International Convention for the Prevention of Marine Pollution from Ships (MARPOL) and the Stockholm Convention on Persistent Organic Pollutants. The Sendai Framework on Disaster Risk Reduction and the Sustainable Development Goals, clearly recognize that nature-based solutions for reducing disaster risk are vital for a sustainable and secure world. The Sendai Framework explicitly recommends taking into account the role of ecosystems, including wetlands, within disaster planning.

Integrating wetlands within Climate Change response actions

Available evidence indicates increasing vulnerability of wetlands to changing climate and linked drivers and pressures. Avoidance of impacts to wetlands and associated carbon stocks and processes are likely to be the most effective management strategy for preventing increases in GHG emissions from wetlands, and securing climate resiliency functions. Yet the climate related functions of wetlands remain highly undervalued. A first step in this direction would be to include carbon storage and GHG emissions from wetlands within the national carbon stock and flux assessments.

There is a pressing need to build on the current wetlands as well as climate change policy frameworks and programmes to ensure that climate risks are factored at all levels. Existing wetlands management planning approaches are based on business-as-usual scenarios and do not consider vulnerabilities imposed by climate change. In most wetlands, comprehensive monitoring systems do not exist, and the rudimentary systems are not geared towards identification of climate risk indicators and trends thereof.

Prioritization of wetlands for conservation and management can also be done using climate lens, and increasing attention to wetlands which have relatively higher sensitivity and lesser adaptive capacity to climate induced changes.

Wetlands are also exposed to the risk of maladaptation – the likelihood of adverse impacts on these ecosystems in response to adaptation actions in other sectors. For example, the construction of hydraulic structures to increase freshwater storage in upstream stretches, may further accentuate the risks of salinisation in downstream coastal wetlands. With coastal blue carbon receiving increasing attention of late, it is essential to ensure that conservation action is not led by the role of wetlands in carbon cycles alone, instead taking into account the full range of ecosystem services and biodiversity values.

Chandertal: Where the Moon Descends into the Himalayas

In the Himalayan region, high-altitude wetlands form vital freshwater storehouses supporting a multitude of ecosystem services. Chandertal in Himachal Pradesh is one such iconic example. The wetland derives its name from its crescent-moon shape (Chandra). It was designated as a wetland of international importance under the Ramsar Convention in 2005. It is also a priority wetland under the State Wetland Conservation Program since 2018. Dhruv Verma (Technical Officer - Ecology) shares a short note from field mission to Chandertal.

Chandertal (49 ha) is nested within Himalayas at an elevation of 4,300m amsl in the upper catchment of river Chandra. The de-glaciated wetland forms an integral part of the landscape hydrological regime through regulating water and buffering flash floods in downstream areas. Wetland values are further underlined by the presence of unique carbon sinks in the form of peat bogs formed in the trench along the wetland shorelines. Chandertal also serves as a stopover site for trans-boundary migratory birds.

Chandertal is vulnerable to a range of human induced threats as well as a changing climate. Rapid spurt in tourism and infrastructure development have severely jeopardised the habitat characteristics. As the number of tourists visiting Chandertal has increased from 2800 to 35,000 during 2012-2018, so has solid waste pollution, degradation of high altitude rangelands, and disturbance to wildlife. Besides, lack of tourist interpretation, business outsourcing and gradually disintegrating cultural values contribute to irresponsible tourism at Chandertal.

Uncontrolled mass grazing is also considered a major threat to the wetland, peatlands and wildlife. These pressures are further exacerbated by the adverse impacts of climate change. The wetland is undergoing a gradual shift from being snowfall to rainfall dominated. Furthermore, water security and hydrological regime of the Chandra basin has adversely modified as loss in the glaciated area, and glacial mass during 1984-2012 has resulted in a loss of 11.1 ± 8 Gt of water out of 62.10 ± 16 Gt of the total estimated water volume.

These threats are further aggravated by inadequate institutional setup. Ambiguous ownership between administrative and management units, inefficient management plan, lack of inter-sectoral communication and limited human resource for wetland management render the current efforts ineffective.

The Secure Himalayas project implemented by Government of India and UNDP in priority landscapes of Himachal Pradesh, Sikkim, Jammu and Kashmir and Uttarkhand aims to support the Government of India and State Governments to effectively promote sustainable land and forest management in alpine pastures and forests in high range Indian Himalayan ecosystems that secure sustainable livelihoods and ensures conservation of globally significant biodiversity and threatened species. Integrated management of wetlands have been included within the range of interventions being undertaken within the project framework. The current project on developing a model management planning framework for high altitude wetlands of Himachal Pradesh aims to put in place best practices for ensuring that high altitude wetlands are managed based on integrated approaches.

Wetlands International team (Harsh Ganapathi and Dhruv Verma) collecting soil samples from the peat bog

Abandoned toilets after the tourist season

The number of tourists visiting Chadertal has increased rapidly

Wetlands in State Action Plans for Climate Change

Year 2007 saw publishing of fourth assessment report of IPCC that warned of a dangerous increase in frequency and intensity of extreme weather events, especially in tropical and sub-tropical countries. The IPCC report was accompanied by the Bali Road Map—an outcome of the conference of parties, CoP 13, held at Indonesia in the same year.

As a response to the global developments and increasing extreme events in nation, India formulated Prime minister's council on Climate Change in 2007, that played a pivotal role in drafting National Action Plan on Climate Change in 2008 and subsequently, initiating decentralization of India's Climate change governance by ordering states to formulate their individual State action plans for Climate Change. ***In this article, Nehha Sharma(Technical Officer - Socioeconomics) presents an assessment on the SAPCCs and opportunities of wetlands integration within the State action plans.***

Wetlands and State's Response to Climate Change

- 25 states have incorporated information on wetland extent. Tamil Nadu, Bihar and Lakshadweep have included recent estimates on wetland extent as per the National Wetland Atlas.

- The SAPCCs of Tamil Nadu and Punjab have given sufficient information on wetlands within description of climate change context (wetland extent, loss, major threats, role in water security and restoration measures). However, such themes have been given very little consideration within SAPCCs of Jharkhand, Chandigarh and Arunachal Pradesh.

- Reference to trends in wetland loss is one aspect that sees comparatively least inclusion within SAPCCs of all states and Union Territories. SAPCCs of Maharashtra, Chhattisgarh, Meghalaya, Jammu & Kashmir and Pondicherry sparsely mention trend in wetland loss. Tamil Nadu however, has discussed such trends, although partially by giving data on percentage of corals bleached from 2005-2009 and qualitatively describing enhanced coastal erosion.

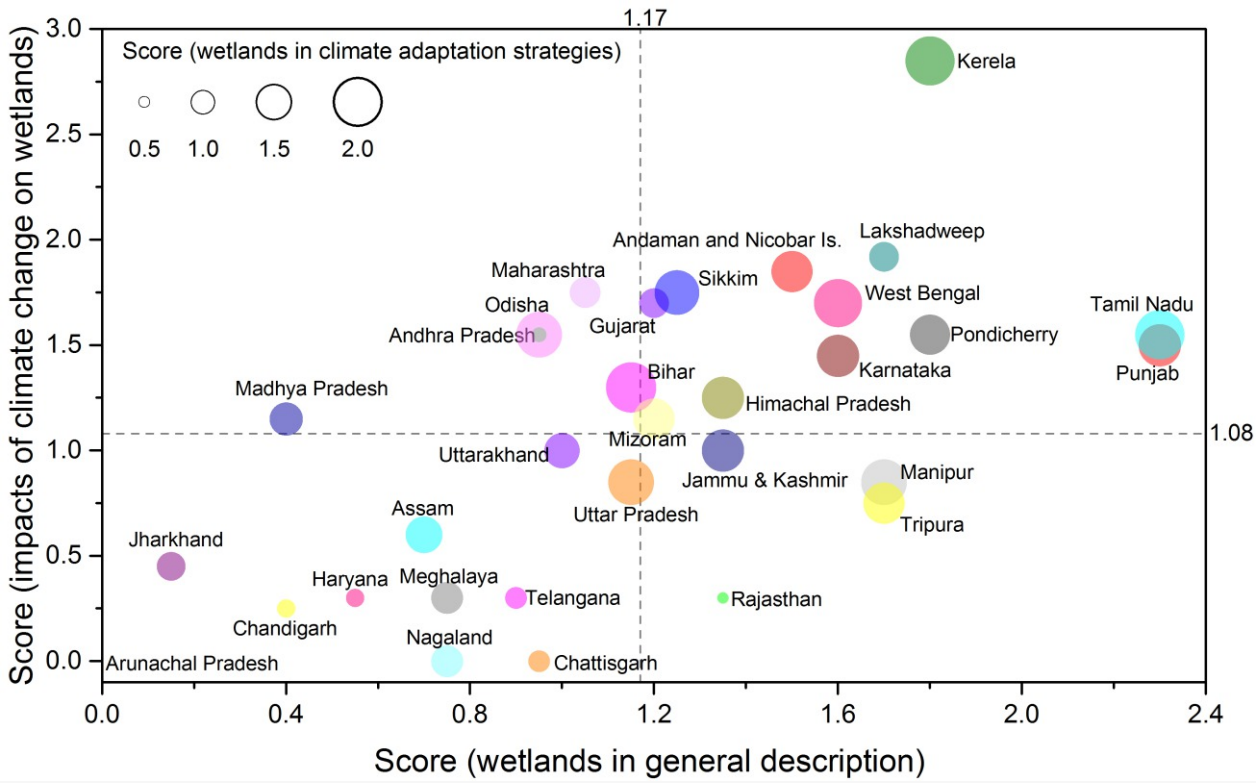
- Information on impacts of climate change forms a significant part of basic framework of SAPCCs. Such information, inclusive of both current and projected impacts on wetlands, associated implications and key wetland types in under threat has been included by 29 states and union territories. The SAPCC of Kerala discusses this aspect at length, followed by state of Maharashtra and Island territories of Andaman and Nicobar Islands and Lakshadweep.

- 9 states and one UT of Chandigarh have only referred to key types of wetlands present which are likely to be affected by climate change, while 8 states and 3 Union territories have just mentioned few wetland types. None of the states or UTs have provided an exhaustive list.

- Extent of inclusion of wetlands within climate change adaptation strategies varies amongst states and Union territories. The level of integration is high in SAPCCs of West Bengal, Tamil Nadu and Kerala, which adopted wetland conservation and management-based strategies within adaptation planning for at least 6 sectors from identified sectors of Agriculture, Water Resources, Forestry, Tourism, Health, Urban development, Livestock, Disaster management, Transport, Fisheries, Forest and biodiversity. Such inclusion was adjudged to be least in SAPCCs of Rajasthan and Andhra Pradesh.

- As many as 25 states and union territories have considered including Budget for wetland conservation and management for climate change adaptation into their SAPCCs.

In conclusion, the review indicates that integration of wetlands within SAPCCs remains a major gap area. States which have used more recent information on wetlands distribution and extent, have also tended to consider wetlands better in climate change mitigation and response options. Specific attention may be given to SAPCCs of states listed in the bottom left quadrant on the graph, where integration seems to be weakest, amongst all SAPCCs reviewed.



SAPCCs having more recent estimates of wetlands extent and impacts of climate change are able to discuss integration of wetlands in adaptation strategies better.

In the graph, qualitative score on inclusion of wetlands within adaptation strategies (size of bubble) is mapped on inclusion of wetlands distribution data in general description (X-axis) and consideration of impacts of climate change on wetlands (Y-axis). Bubble colours represent different states.

Consideration of impacts of climate change on wetlands has been assessed with reference to specific sectors. Distribution data pertains to ascertaining whether latest wetland inventory data has been included in SAPCC.

Applying Wise Use in Reservoirs
Experiences from Pong

Pong Reservoir, a Ramsar Site of Himachal Pradesh, is a major source of water for irrigating the arid region of Rajasthan. The reservoir also draws a large congregation of waterbirds migrating within the Central Asia Flyway. Dr Ridhi Saluja (Technical Officer – Ecology) highlights the opportunities and challenges in integrated management of the reservoir.

The Ramsar Convention places reservoirs within the category of wetlands which are 'purpose-built' or 'human-made' water storage areas. The complex interactions between fluviatile and lacustrine environments, and the swift changes in water levels, inflows and outflows distinguish reservoirs from natural wetlands. Species, habitats and ecological productivity are known to exhibit complex responses to the obstruction of river flow, impoundment and drastic changes in water levels. Management issues across rivers and diverse wetland habitats are very interconnected, often leading to unpredictable behaviour and problems requiring longer timeframe for effective resolution.

Wetlands are managed to achieve wise use. For reservoirs, this principle loosely translates to maintenance of developmental benefits as well as ecological values of the reservoir considering its role in the wider River Basin landscape. In terms of ecosystem services, this requires achieving a balance between provisioning, cultural and regulating services, and ensuring maintenance of critical ecosystem components and processes that underpin ecosystem services and biodiversity. This is often a contested space, as meeting water needs for various human uses acquires primacy over other management objectives, particularly those related to biodiversity and maintenance of ecosystem processes.

Genesis of Pong Reservoir

The idea for a dam on Beas river at Pong conceived in 1926 as a part of Bhakra Nangal project envisioned with the purpose of water storage for irrigation and hydroelectric power generation. The project however could not be initiated due to anticipated damage that could be brought by flood waters. Post-independence, the idea was revaluated as it showed promise due to new dam designs which were proposed for consideration. Today, Pong Reservoir is an integral part of the Bhakra Nangal Project, which is a multipurpose river valley project encompassing three major rivers- Sutlej, Beas and Ravi. The project emphasized integrated water resource management and was also a pioneer river linking project in the country.

Formation of Pong dam was interwoven within the grand Bhakra-Beas-Rajasthan project with an ambitious aim of greening the Thar desert. This project envisaged development of three rivers as an integrated unit with a

Fishers fishing within Pong Reservoir

storage dam at Bhakra on Sutlej to meet the water needs of Punjab with a significant portion channelized to Rajasthan. In order to meet the high water demands of the two states, Beas water was diverted into Sutlej to fill Bhakra reservoir through a high-level canal, now known as the Beas-Sutlej link established through Pandoh dam upstream Pong. Left over Beas water were to continue flowing into Pong Dam to be released at Harike covering major burden of the Indra Gandhi Canal. Harike was further benefited by the Beas- Ravi link. Phase-wise realization of the project initiated in 1954. Bhakra dam was the first one to be completed in 1963 followed by Pong dam in 1974 and the Beas-Sutlej link was completed in 1977. With the construction of Ranjit Sagar dam in 2001, the project was also completed. A hydropower plant was provided in the final scheme of what was initially planned as an irrigation project. In view of increasing power demand, six units of 60 MW were installed. Water from Pong reservoir is channelled to Indira Gandhi Irrigation Canal (649 km long) to irrigate the arid regions of Rajasthan. The project transformed economy of Northern India in a big way by significantly increasing the gross irrigated area, boosted agricultural productivity and increased generation of hydropower. A large reservoir, Maharana Pratap Sagar was created as a result of dam construction and a large population was displaced.

In 1966, the Bhakhra Beas Management Board was established as an inter-state mechanism to allocate water for various uses from the project.

Pong as a key habitat for migratory birds

Pong offers the first transitory refuge for migratory waterbirds in north India, who flyin to the warmer tropical regions to escape the harsh winters of the Siberia and Central Asian Countries. The diversity of habitat ranging from mudflats to sandbanks to open deep waters and swamps provides an ideal condition for several species. Bar headed goose can be seen in flocks of hundreds and thousands in this wetland. Common Coot, Northern Pintail, Common Pochard, Tufted pochard, common teal and Pied Avocet form other dominant groups.

Impounded area of 307 km2 was notified as a wildlife sanctuary in the year 1983. Though the land is owned by BBMB, the Forest Department regulates activities in the immediate catchment area. An area of about 20,000 ha (above 440m, within a radius of 5 km) is notified as a wetland buffer zone. An impoundment area of 156 km2 of Pong was later declared a Ramsar site in 2002.

Besides wintering waterbirds, Pong forms ideal habitat for breeding of Indian white rumped vulture (Gyps bangalensis), a critically endangered species. Egyptian vulture (Nephron percnopterus) and black bellied tern (Sterna acuticauda) under category endangered, Ferruginous duck (Aythya nyroca), Himalayan griffon (Gyps himalayensis), great thick knee (Esacus recurvirostris), river lapwing (Vanellus duvaucelii), river tern (Sterna aurentia) listed as near threatened reside in the wetland area. Woolly necked stork (Ciconia nigra) and greater spotted eagle (Clanga clanga) listed as vulnerable species also inhabit Pong.

Reservoir fishery

Commercial fishing in Pong was initiated soon after its filling in the year 1974 and much ahead of its notification as a wildlife sanctuary. During the first year, a catch of 98t was observed which progressively increased, attaining a peak of 794t in 1987-88 followed by a decline attributable to opening of floodgates in 1988 as a result of heavy rains. Catch stabilized around 400t by the end of nineties but has been declining in the recent times. A catch of 381t was observed in 2016-17. Ten species, primary Indian Major Carp dominate the reservoir fishery. Species as golden mahseer, snow trout and Labeo dero which thrive in unfettered rivers are on a decline.

In order to regulate and plan fishing activities in Pong, fishers were brought under a cooperative fold by a State level 'Reservoir Development Committee' established in 1976. Currently, there are 15 cooperative societies, one at each landing centre supporting over 2500 licensed fishers majorly recruited from oustees.

Endorsing tourism at Pong

The picturesque wetland is being promoted by the State Government as an international tourist attraction. Forest Department has sketched out an ambitious tourism plan for Pong which includes water sports, boating, nature trails and angling activities. Suknara, Guglara, Dhameta and Rancer island are proposed to be the focus. In addition, an interpretation centre at Rancer island has been established and will be upgraded. Further development and promotion of tourism at Pong is envisioned by operationalizing the Pong Lake Biodiversity Conservation Society, with representatives from all major government departments.

Seasonal farming in drawdown area a worry

As water levels recede post monsoon, a large area of upto 200 km2 is exposed. This area, though under the ownership and control of Bhakra Beas Management Board, is farmed by the reservoir oustee communities (as several families have refused to shift to land given in Ganganagar District in Rajasthan). The farmed area is also habitat of migratory birds. Soil mobilised due to farming is also seen as a major contributor to siltation in the reservoir. Though BBMB and Himachal Pradesh government jointly took a decision in 2003 to halt all tilling activities in this protected area, it was not received well by the locals. Till date, the contestation continues.

The conflict with Grazers

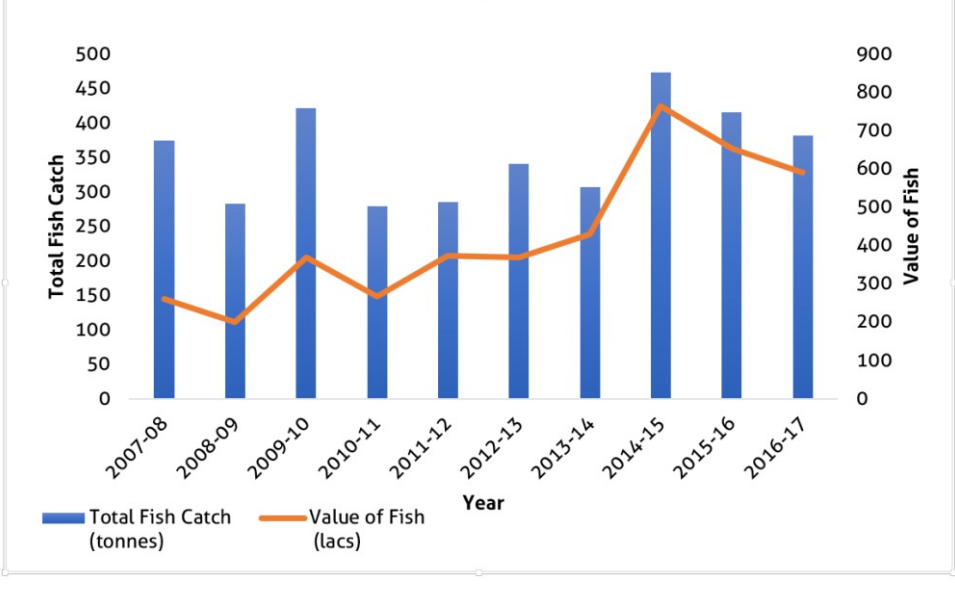
Creation of Pong reservoir has forced the nomadic pastoralists to alter their seasonal migration routes. Construction of the reservoir has declaration of reservoir area as sanctuary has impacted Gaddis hard. They now have to traverse through longer routes and have lost many of the halting sites on their way to Dada Sibha forests, parts of which have also submerged. Ban gujjars, another pastoral nomadic group spends summer in the high ranges of Himalayas and winters in the lower ranges. This group used to visit Mand area before dam construction and continued visiting Mand for few years after construction. Since 1984-85, Gujjars are frequenting the Pong drawdown area where they put up makeshift tents and stay from April to July. Grazing denudes the vegetative cover and mobilizes high amount of silt, apart from disturbing the habitats of migratory waterbirds. Movement of grazers has been a major concern for wetlands management.

A complex institutional arrangement

Management of Pong reservoir is multi-faceted and involves numerous stakeholders. As the water infrastructure owner and manager, BBMB is responsible for water regulation, dam and reservoir safety along with silt reduction and water quality management. Administrative control of Pong reservoir lies with Forest Department which manages the area in accordance with the wildlife protection objectives. The Deaprtment has drawn out a 10-year management action plan, with specific focus on wildlife and habitat management, curbing prohibited activities and tourism promotion. To promote tourism in Pong and facilitate coordination among stakeholders, Pong Lake Biodiversity Conservation Society has been established by Forest Department targeting equal representation from all stakeholders to ensure integrated management of Pong reservoir. Fisheries were established in Pong during its earlier stages and is still one of the major actors in the Pong system. Fisheries Department manages fishing operations, and is focused on catch sustenance and enhancement. At state level, the Government of HImlachal Pradesh has constituted State Wetlands Authority to provide overall policy and regulatory architecture for wetlands of the state, including Pong. In the milieu of varied institutions responsible for managing different aspects of the reservoir, there is no reconciliation of management objectives towards a unified set of management principles and approaches. Monitoring systems are fragmented across various agencies, and have never been compiled to assess the status and trends in overall ecosystem health. Representation of communities in wetlands management is marginal at best, rather, the various departments are at loggerheads with local communities for various reasons.

Climate Risk

The ability of Pong reservoir to meet various water demands is subject to increasing climate risks. Glaciers within the Beas basin are retreating at an annual rate of ~11.6% increasing the overall flows within the basin. Simulated future inflows accounting for climate change scenarios show an increase in summer and monsoon months leading to an overall increase in the mean annual runoff received by Pong reservoir. Larger reservoir storage capacity is needed to adjust for the high future inter-annual fluctuations in flow. Improved operating practices such as hedging policies could be an effective and low-cost adaptation and mitigation strategy for addressing climate risks. Yet, these do not find space in current management.



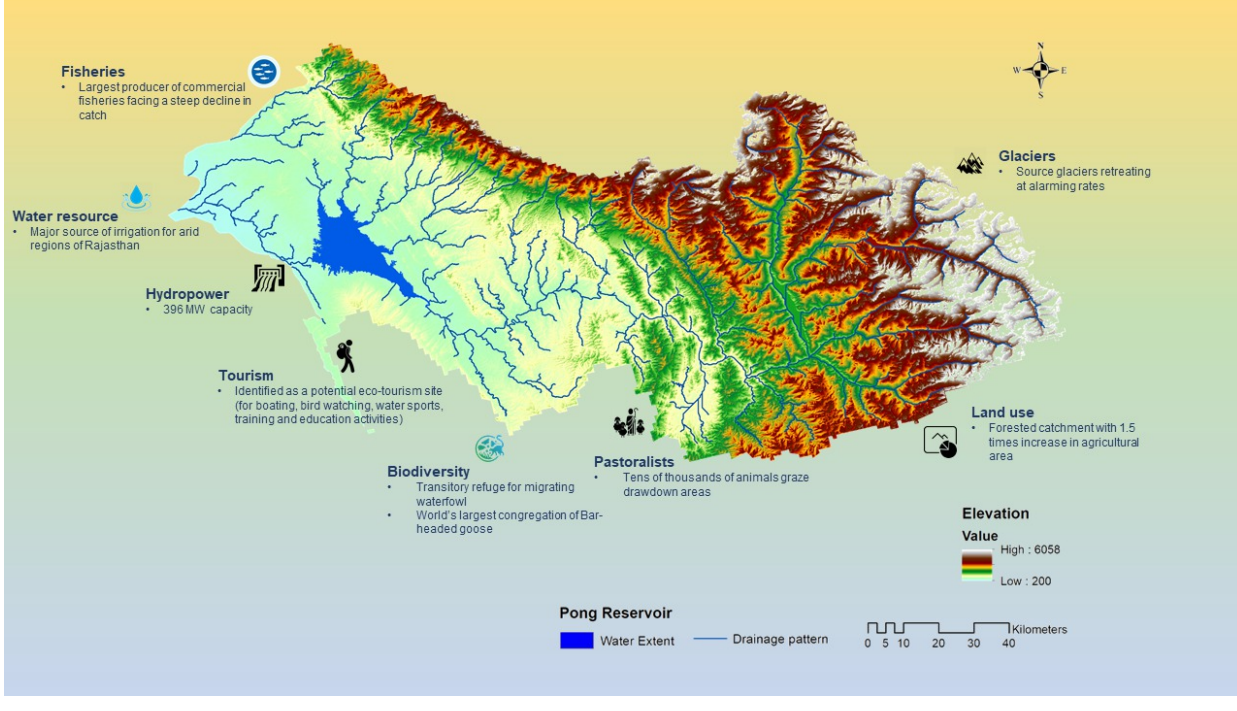
Trends in fish catch of Pong Reservoir

Meeting wise use commitments

Integrated management of Pong requires harmonizing various conservation and development objectives, while ensuring that the fundamental ecosystem processes and services underpinning these objectives are not adversely impacted. There is also a need to factor in climate risks which have an important bearing on ecological and hydrological conditions within the reservoir and its surrounding basin.

In the current situation, Pong is being managed to meeting disparate objectives with distinct tradeoffs. The barrage operation rules, for example, do not accommodate the habitat requirements of migrating waterbirds and other species, either upstream or downstream. Sanctuary management is largely centered on the needs of birds, and is pitted against any human use of the drawn down area. Within this framework, however, fisheries and tourism are promoted by the state. The communities living around the reservoir have a very limited say in decision-making, and often at the receiving end.

Wetlands International South Asia, under the framework of IKI-Wetlands project, shall be working with GIZ-India and State Wetlands Authority to support development of an integrated management plan which can enable development of a collective vision of Pong management. Addressing conservation-development tradeoffs, while accounting for climate risks will be the primary focus on the process.



Status and trends of ecosystem services

Wetlands for reducing water risks in Indo - Gangetic plains

The case of Debkhal Chaur, Bihar

In June 2019, the Government of India initiated major structural reforms in the water sector with the merger of two water related ministries - the Ministry of Drinking Water and Sanitation and the Ministry of Water Resources, River Development & Ganga Rejuvenation in to a unified Jal Shakti Ministry.

The step comes in the wake of an unprecedented water crisis that has gripped the country necessitating integrated management actions. As the water insecurity monster spreads its fangs far and wide, hitherto water safe regions such as the Indo Gangetic plains have also come in its clutch. ***Ms Kalpana Ambastha (Technical Officer - WASH Programme) shares experiences from water security planning process that she led in Debkhal Chaur, a floodplain wetland of North Bihar.***

During summers this year, large parts of Bihar witnessed drought like situation. As many districts grappled with the drinking water crisis, multiple protests and demonstrations could be seen across the affected districts. Deficient rainfall in 2018, precipitated this crisis. The state which normally receives 1027 mm rainfall received 28 % less rainfall and 206 blocks in 23 of the 38 districts of the state were declared drought-affected. The Magadh region in the state comprising districts situated mostly south of the Ganges such as Gaya, Aurangabad, Sheikhpura, Saharsa, Jehanabad, Nalanda, Rohtas, Banka, Patna and Begusarai is drought prone but the situation has become quite disquieting in districts situated further north such as Muzaffarpur, Samastipur and Darbhanga.

What led to this situation in a state that is normally regarded as the land of floods?

The findings of Watershed India programme from Debkhal Chaur basin, Samastipur District, Bihar provide useful insights. Watershed is a five year (2016-2020) partnership programme of the Dutch Ministry of Foreign Affairs, IRC, Wetlands International and Akvo. The programme aims to facilitate improvements in the

'Elixir of life - lost' – locals of Samastipur district hold rallies demanding water from local government

governance and management of water and sanitation services and the water resources on which they draw upon by strengthening the capacities of Civil Society Organisations to advocate for sustainable WASH. Wetlands International South Asia leads the programme implementation in India.

Samastipur District is blessed with adequate water resources. It is traversed by the Ganga and its tributaries the Burhi Gandak, the Baya, the Kosi, the Kamla, the Kareh and the Balan Rivers. However, the major rivers here are embanked and the water regimes are fragmented. Rainfall in the district has been deficient in last decades. These factors make Samastipur district vulnerable to droughts.

Participatory surveys were conducted during 2017 in ten villages situated around Debkhal Chaur wetland and falling under Ujiarpur and Sarairanjan blocks of Samastipur. 1035 waterpoints and 406 households were surveyed to assess WASH and water resource situation.

While communities had the desired access to water points, water quantity and quality and reliability still remained the major concerns. 45 % public water points and 51% private water points yielded no or limited quantities of water providing 0-40 litres of water per capita per day. 27 % of the public waterpoints, majorly handpumps were found to be dysfunctional. 57 % of households faced water scarcity in summers for a period of more than two months. Bacterial contamination was found in nearly 40 % of water samples that were collected.
The situation has worsened in the last two years. In 2019, around 80% of the handpumps were not functioning during peak summers in several villages. The shallow agricultural tubewells were not working and very little summer cropping was observed.

Wetlands International South Asia explored the factors leading to this state. A temporal analysis of water bodies and inundation patterns revealed that the "sponge capacity" of the system to store water through wetlands as chaur, maun, village ponds and tanks has declined severely over the last two decades.

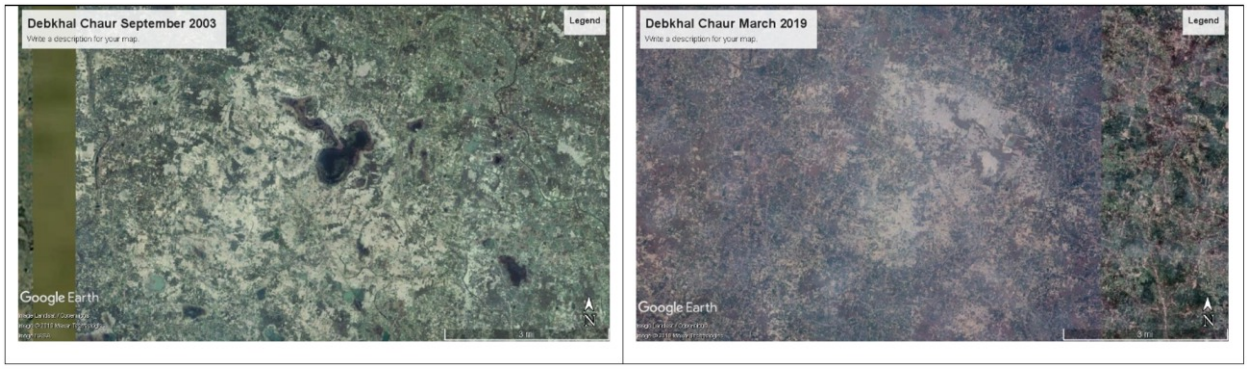
Wetlands locally known as Chaur and Maun underpin water security in the region, recharging shallow aquifers. As recently as 2003, a number of waterbodies dotted the landscape. Major ones are Debkhal Chaur, Kamrawan Chaur, Chaubhaga Chaur, Chand Chaur. However, at present many of these wetlands have been encroached for agriculture. Water holding capacity in the rest is greatly reduced as a result of siltation. As a result, groundwater recharge of unconfined aquifers is not taking place.

Reduced water availability has adversely impacted WASH services in the basin. In June 2019, while the "Har Ghar Nal Ka Jal" piped water supply scheme had commenced only in a few village wards, the handpumps that tapped in to shallow aquifers were failing as this aquifer layer was depleted. Households had to depend on limited water supplies from outside tankers and few handpumps that were still functioning.

Impact on agriculture and fisheries sectors could also be seen. High cropping intensity implies high water usage which is mostly groundwater. Earlier surface water from wetlands was used to irrigate crops but that is not the case now. Shallow borewells have given way to deeper borewells to sustain a beleaguered mainly tobacco farming that once thrived here but is at risk now. The fishing Jalkars dry up as early as January. As seen elsewhere in the country, absence of water governance measures a number of private submersibles have come up that keep on guzzling up water.

Mentoring wetland stewardship to enhance water security

In an effort to improve things Wetlands International South Asia with its partners is working to create community level awareness on WASH and Water resource management interlinkages and bring about an improved recognition of the role of healthy ecosystems to address water woes. In 2018, a detailed geohydrological assessment of the basin was carried out to understand the influence of wetlands on recharging and sustaining groundwater. This has helped creating a cadre of trained community volunteers who can monitor water resources.



Google Earth images show a reduction in wetlands in Debkhal Chaur basin since 2003

Recognizing that water management is about science based planning and about creating enabling governance, the programme is promoting water security planning as a means to effectively allocate water for various ecological and human uses including water for WASH. WASH and water literate village communities have actively participated in developing water security plans that will serve as guiding documents to inform communities, Panchayats and block and district level departments on the desired actions.

The Jal Shakti Abhiyan ambition to provide piped water to every household could only be fulfilled if adequate local scale interventions are made to ensure water security. Wetlands provide distributed storage and can hold water that can meet much of agricultural and domestic demands. Even in 2016 which was an average rainfall year, the open water in Debkhal Chaur basin constituted 3.3 % of the catchment and intermittently flooded areas occupied 8.2% which by rough estimates can provide considerable storage volumes. These values are indicative of the role wetlands can play in water security if timely interventions are made to preserve existing wetland areas, focussing not just on large systems but a number of distributed waterbodies which might be even less than 1 ha.

Village and basin level water security planning integrating elements of water demand and management with wetland hydrology, climate, catchment are a step towards ensuring the 3Es - economic, equitable and ecosystem based approach to water management.

दैनिक भास्कर

23-Jan-2019
समस्तीपुर भास्कर Page 4

पेयजल समस्या से निदान के लिए लोगों को जागरूक करेंगे पंचायत प्रतिनिधि

Media plays its part to highlight water management issues

Dugwell inventory in progress in Debkhal Chaur basin during August 2018

Ecosystems for Risk Reduction:
Reflections from the Global Platform for DRR

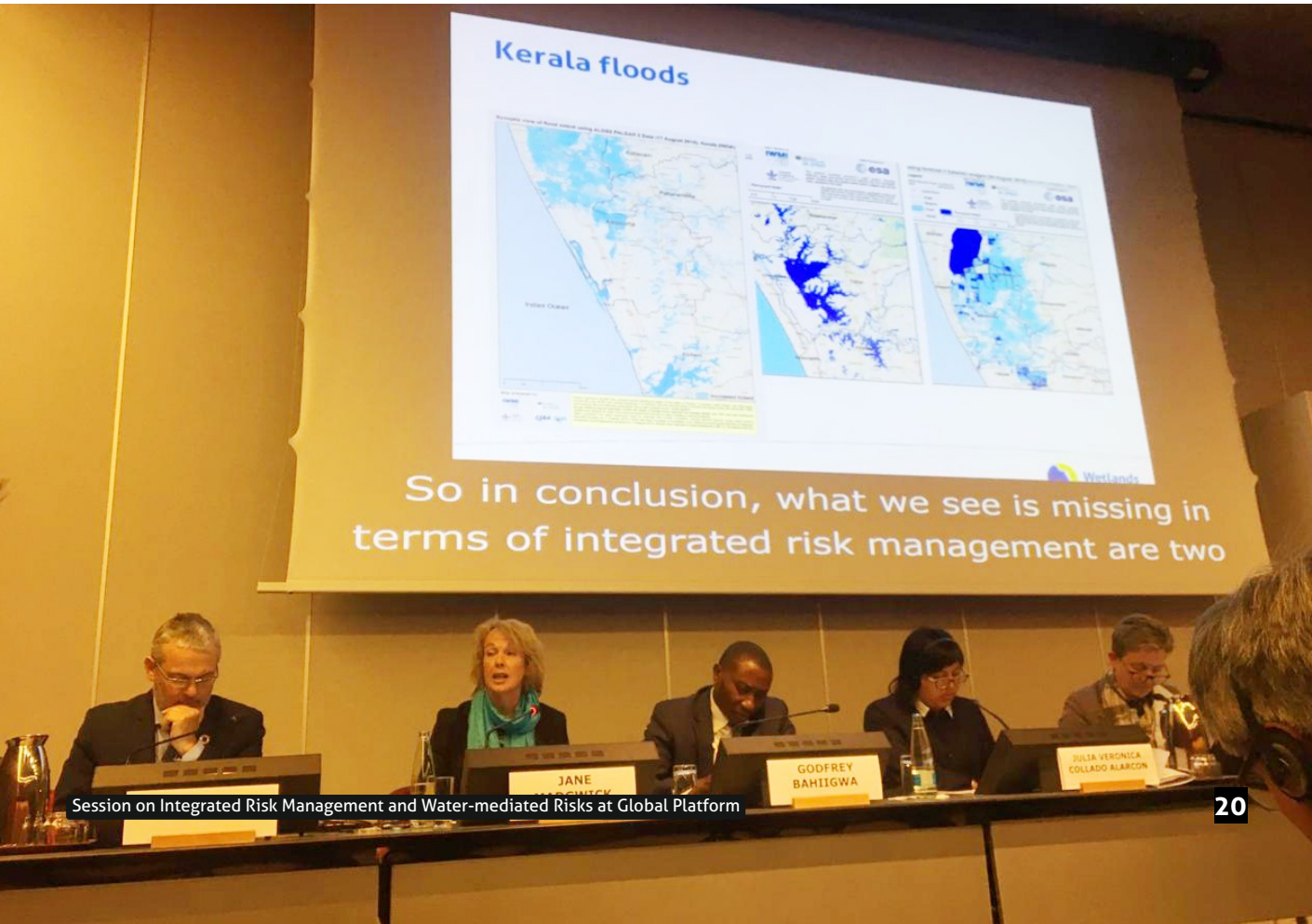
Dushyant Mohil (Programme Manager - Partners for Resilience) pens down impressions from the sixth session of the Global Platform for Disaster Risk Reduction (GP2019) which took place in Geneva, Switzerland from 13 to 17 May 2019. Convened and organized by the United Nations Office for Disaster Risk Reduction (UNDRR), the global platform is the world's foremost gathering on reducing disaster risk and building resilience.

GP 2019 had a thematic focus on the integration of disaster risk elements in the implementation of the Sustainable Development Goals (SDGs) to take the implementation of the Sendai Framework and the SDG 2030 Agenda forward. Partners for Resilience has been advocating the integration of ecosystem-based approaches for resilience building, and the participation in the global Platform was to assess progress, as well as identify impediments.

Increasing attention to the role of ecosystems in DRR

In general, the role of ecosystems in buffering disaster risk, especially those mediated by water, received greater attention as compared with the previous regional or sub-regional platforms. Co-Chair's summary reflected this emphasis by recording:

"There is a strong need to capitalize on the co-benefits of ecosystem-based approaches and leverage the complementarity across blue, green and grey infrastructure".



Session on Integrated Risk Management and Water-mediated Risks at Global Platform

"Nature- and ecosystem-based approaches should be promoted to achieve the objectives of resilience dividend and integrated in disaster risk reduction strategies at all levels. The stakeholders committed to engage with the nature-based solutions and resilience and adaptation track of the Climate Action Summit".

The Global Assessment Report on Disaster Risk Reduction, which is published as a precursor to the Global Platform identifies ecosystem-based solution as one of the risk-mitigating factors. However, a reference to ecosystem solutions for DRR had limited mention within the official statements made by various heads of delegations.

Recognition to Indian Government Efforts

India received commendable recognition at the Platform for her achievement in reducing mortalities in cyclone Fani. India has made significant steps towards achieving Target E of Sendai by formulating the National Disaster Management Plan (NDMP), and addressing coherence in the implementation of the Sendai Framework, SDGs and the Paris Agreement. The fact that 29 states have a State Disaster Management Plan and 95% of districts have prepared District Disaster Management Plans was also received very well at the Platform. These achievements were recognized by the Indian government being conferred the Saswaka award for risk reduction.

Green Recovery for Kerala

A specific session aimed at Green Recovery for Kerala was organized at the World Reconstruction Conference held as a part of the GP2019. Significant problems in Kerala that led to the floods were discussed by the panel members. The CEO of the Rebuild Kerala Initiative, Mr V Venu struck the right chords by placing emphasis on ecosystem restoration as part of planned DRR efforts. The Dutch water expert, Paul van Meel, highlighted significant opportunities in restructuring water management, to prevent recurrence of such disasters. A river basin authority with a specific focus on Kuttanad similar to the Dutch Room for the River project was proposed. Panel discussions, however, gave the impression that specific interventions for ecosystem restoration were yet to be given firm implementation shape.

Multi-stakeholder dialogue blending climate change adaptation and ecosystem restoration

Partners for Resilience hosted a networking event along with International Federation of the Red Cross (IFRC), the Nature Conservancy, and PEDRR (Partnership for Environment and Disaster Risk Reduction) on the theme "we bend we do not break". Community-based approaches for building resilience, through the strengthened capacity for managing ecosystems and addressing climate risks were presented. Key thinking emerging of the session was to embed community participation as the connecting thread through various risk reduction and post-disaster reconstruction interventions.

Disasters and Displacement

On Thursday afternoon a special session on disasters and displacement was also held and attended in large numbers. Andrew Harper, from UN Refugee Agency (UNHCR), noted that climate change will become the biggest driver of population displacement in the near distant future, and called for infrastructure to be put in place to respond to future disruption. Environmental degradation and stresses were keenly discussed as significant drivers for displacement. Lack of policy coherence was repeatedly brought up along with the need for investing in resilience.

Panellists discussed best practices in addressing disaster-induced displacement, such as initiatives to enable researchers from neighbouring countries to collaborate on data collection, and engage displaced people in policy planning in host regions. They also heard interventions from two young women from the Philippines and Indonesia, who drew from their own experiences to discuss policymakers' blind spots. These included, they said, the vital need for people with special needs to be better accommodated, and for local customs to be respected in shelters. Speaking from the floor, representatives of, among others, France, the Philippines, and Saudi Arabia, voiced their commitment to prioritizing action on displacements due to disasters. The role of education, especially that of primary and high school level was highlighted.

Integrated Risk Management and Water mediated risks

A special session on Integrating risk management and water-related risks at the Platform was indicative of the mainstream attention the topic had been able to generate. Notably, water-related disasters account for almost 90 per cent of the 1,000 most disastrous events that have taken place since 1990. "Water is life, but water can also be a threat to life," said Dr. Han Seung-Soo, former Prime Minister of South Korea, during his keynote speech.

The panellists of the session included Ms Julia Veronica Collado Alarcon Vice-Minister, Ministry of Environment and Water, Bolivia; Dr. Godfrey Bahiigwa, Director, Department of Rural Economy and Agriculture African Union Commission; Ms Jane Madgwick, CEO, Wetlands International, and Mr Deon Nel, CEO, Global Resilience Partnership. A wide range of water risks and complexity of the challenge were shared by the panellists. The session also highlighted the key policy measures across different water risks and sectors and demonstrate practical examples of replicable and scale-able

ecosystem-based approaches, particularly in the water sector. Specific mention of the role of wetlands in buffering floodwaters in Kerala was highlighted by Ms Jane Madgwick. Innovative financial and social instruments for climate and disaster risk reduction, including gender considerations, were shared. The session concluded by stressing on the urgency of including ecosystem restoration within disaster risk reduction solution.

In conclusion

The DRR sector has made a considerable leap by calling attention to risk reduction measures, along with making effective disaster and post-disaster response. The Platform has given enough signals that ecosystem-based solutions to risk reduction are gradually being accepted by the DRR community as an important entry point. However, the uptake has been slow on account of following challenges:

- The gains by made ecosystem-based solutions are slow compared with others
- Economic incentives for ecosystem solutions are not well developed
- Lack of business cases for ecosystem-based solutions
- Most countries and donors are not yet aware of these solutions
- Knowledge on the topic is limited
- Lack of hybrid approaches can make the solutions less flexible in nature

Conversations in the Platform also pointed out opportunities for promoting ecosystem-based solutions. Some of the significant ones are:

- Including targets on ecosystem restoration within national disaster management plans, SDGs, NAP and other sectoral policies
- Integrating ecosystem assessments within risk understanding
- Safeguarding upstream development to ensure risk reduction in downstream reaches of a landscape
- Enhancing Transboundary collaboration over ecosystem restoration
- Making business case for ecosystem-based solutions (i.e. http://www.teebweb.org/)

Launch of initiative on ecosystem-based disaster risk reduction

During the last five decades, water-induced disasters (floods and droughts) have accounted for over half of disasters (52%) in the country, thus requiring a graduated approach to DRR actions. Lopsided water management with a focus on hard engineering solutions, destruction of natural buffers such as wetlands, desertification, a lack of integrated landscape-scale land and water planning have been major causative factors underlying these trends. An increase in the frequency and intensity of extreme weather events (particularly floods and tropical cyclones as also heat waves) during the last 50 years has amplified these risks, superimposing on an increasingly water insecure economy. This has led to frequent livelihood disruptions and deepening poverty amongst highly vulnerable. Nature-based solutions, in particular, Eco-DRR are well-positioned and a significant opportunity for addressing the increasing trend in water-induced disaster risks in the country. Policy and practice emphasis on Eco-DRR in India is in an evolving phase, and there is limited evidence of the systemic impact of global practices and experiences.

Building on the implementation of Partners for Resilience: Strategic Partnership, as well as its predecessor Partners for Resilience program, Wetlands International South Asia with UN-Environment, and International Federation for Red Cross and Red Crescent societies, launched a EU-Dev Co supported three-year initiative on 'upscaling community resilience through ecosystem-based disaster risk reduction.' The project was formally launched in June 2019.

The project aims at increasing uptake and investments in Ecosystem-based Disaster Risk Reduction and Adaptation (Eco-DRR) approaches. In the coming three years, scalable models of community-based Eco-DRR will be developed, learning from field sites in Odisha, Bihar and Gujarat, wherein the project will design and implement measures for building community resilience towards water-mediated disaster risks. Besides India, the project will also be implemented in Haiti, Ethiopia, Uganda and Indonesia, thus providing a platf orm for cross-country learning and exchange.

Project partners at launch of inception workshop held at India International Centre, June 2019

News

China to host 14th Ramsar Conference of Contracting Parties

The Ramsar Convention will be holding its 14th Conference of Parties meeting in Wuhan City, China. This was announced at the plenary session of the 57th meeting of Standing Committee held on June 26, 2019.The City of Wuhan sits at the confluence of the Yangtze River and its longest tributary Han River, has 1,624 square km of wetlands, accounting for nearly 19 percent of the city's total area.

Biodiversity to be World Wetlands Day theme for 2020

World Wetlands Day is celebrated every year on 2 February. This day marks the date of the adoption of the Convention on Wetlands on 2 February 1971, in the Iranian city of Ramsar on the shores of the Caspian Sea. Each year, the day is attached to a seminal theme to draw attention to pressing issues facing wetlands.

The 2020 World Wetlands Day theme is Wetlands and Biodiversity. Notably, this is the year in which the 10 year Aichi Biodiversity Targets of the Convention on Biodiversity will come to a close. The Convention will adopt a post-2020 global biodiversity framework as a stepping stone towards the 2050 Vision of ""Living in harmony with nature".

India submits new proposals for designation of Ramsar Sites

The Ministry of Environment, Forest and Climate Change has submitted proposals for designation of 9 wetlands as Wetlands of International Importance under Ramsar Convention. These include 5 wetlands from Uttar Pradesh (Sarsai-Nawar, Nawabganj, Sandi, Samaspur and Saman), 3 from Punjab (Keshopur-Miani, Nangal, Beas Conservation Reserve) and 1 from Maharashtra (Nandur-Madhmeshwar). Proposals for 7 more wetlands are under preparation.

CMS CoP in Gandhinagar in February 2020

India will host the 13th Conference of Parties (COP) of the Convention on the conservation of migratory species of wild animals (CMS) during February 15-22, 2020 at Gandhinagar in Gujarat. Representatives from 129 Parties and eminent conservationists and international NGOs working in the field of wildlife conservation are expected to attend the COP.

India has launched the National Action Plan for conservation of migratory species under the Central Asian Flyway. India is also a signatory to non-legally binding MoU with CMS on the conservation and management of Siberian Cranes (1998), Marine Turtles (2007), Dugongs (2008) and Raptors (2016).

Establishing a regional collaborative platform for wise use of wetlands in South Asia

Wetlands International South Asia (WISA) joined hands with International Water Management Institute (IWMI) and Department of Wildlife Conservation, Sri Lanka to bring together Ramsar wetland focal point representatives from South Asia countries to chalk out a pathway for collaborative action. Representatives from Bangladesh, Bhutan, India, Nepal and, Sri Lanka shared success and challenges on wetlands conservation in their country, and also identified areas of mutual learning. Capacity development and wetlands management emerged as a priority need for the region.

Delegates for India, Sri Lanka, Bhutan, Nepal and Bangaldesh at the South Asia Wetlands Managers' Roundtable meeting held on September 2-3, 2019 at IWMI headquarters, Sri Lanka

We safeguard and restore wetlands for people and nature.

Wetlands International

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