Wetlands International South Asia

Annual Report 2018 - 2019

Wetlands INTERNATIONAL

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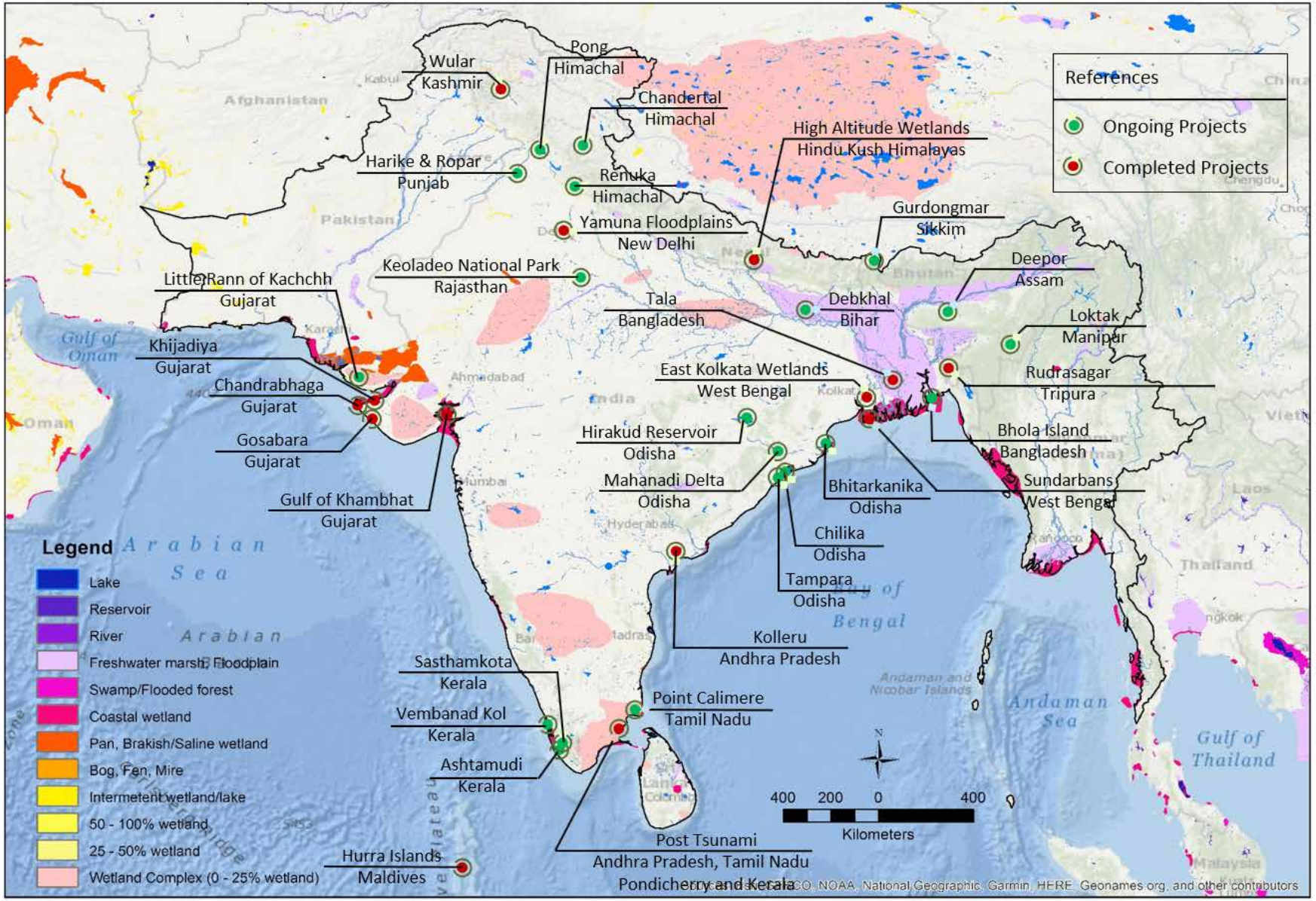


Wetlands International South Asia Programme implementation areas

Wetlands International South Asia

Wetlands International South Asia is a non-government organisation working for sustaining and restoring wetlands, their resources and biodiversity in the South Asia region. Its office in New Delhi (India) was established in 1996 as a part of the Wetlands International network. Wetlands International is a global, independent, non-profit organisation dedicated to conservation and restoration of wetlands, and presently works in over 100 countries through a network of 18 regional and national offices and expert networks headquartered in The Netherlands. Wetlands International is also one of the five International Organisation Partners of the Ramsar Convention. In 2005, Wetlands International South Asia was registered under the Societies Registration Act of Government of India (retaining remit of South Asia region), consequently gaining an Indian legal entity while subscribing to the goals and targets of the Wetlands International network.

Wetlands International South Asia works for wetland conservation in ways which relate to the nature of wetlands as ecosystems, and the wider biophysical and social contexts in which they are placed and function. The organisation, since its inception, has focused on promoting conservation and wise use of wetlands based on a diagnostic assessment of wetland features and their influencing factors. The organisation endeavours to use a mix of approaches including technical knowledge, policy dialogue and field demonstrations for addressing various issues related to wetland management.

A multidisciplinary team within the organisation and expert network enable providing evidence-based scientific and technical advice to central and state governments, wetland authorities, and civil society on various aspects of wetland management. The projects implemented have covered the following wide-ranging elements, designed and delivered in partnership with central government ministries, state government departments and agencies, wetland management authorities, civil society and research organisations:

- **management planning** for ecosystem restoration and wise use
- **design and establishment** of integrated inventory, assessment and monitoring system for supporting adaptive management
- **valuation of ecosystem services and biodiversity** to support mainstreaming in developmental programming
- **environmental flow assessment** for maintaining ecosystem functioning while allocating water for developmental purposes
- **conservation of critical habitats of wetland-dependent species**, particularly migratory waterbirds and fish
- **capacity building** for integrated wetland management
- **institutional development** for cross-sectoral governance
- **policy formulation support** and advocacy for conservation and wise use
- **community-led ecosystem-based approaches** for disaster risk reduction
- **communication, education and public awareness**

Presently, Dr Sidharth Kaul (former Advisor, Wetlands, Ministry of Environment, Forest and Climate Change) is the President of the Society. Dr Ajit Pattnaik (former Principal Chief Conservation of Forests, Forest and Environment Department, Government of Odisha) is the Vice President. Dr J. K. Garg (Senior Fellow, TERI School of Advanced Sciences) is the Honorary Treasurer of the Society. Dr Ritesh Kumar (Director, Wetlands International South Asia) is the ex-officio Secretary of the Society.

The Governing Body comprises the Office Bearers, three members elected by the General Body and Chief Executive Officer, Wetlands International Head Quarters. Dr C. K. Varshney (Professor Emeritus, Environmental Sciences, Jawaharlal Nehru University), Dr E. J. James (Professor Emeritus, Karunya University) and Dr Asad Rahmani (former Director, Bombay Natural History Society) serve as elected members of the General Body. Ms Jane Madgwick, CEO, Wetlands International represents Wetlands International Global Office on the Governing Body.

President's Message

It gives me a great pleasure presenting the Annual Report of the Wetlands International South Asia Society for 2019.

The role of wetlands as JAL SHAKTI in providing water along with other ecosystem services is receiving considerable attention in the recent times. As water scarcity looms large, and floods and droughts ravage the landscape, the role of wetlands conservation in addressing water security is being called for at various levels. This message was strongly conveyed by Dr Rajiv Kumar Vice Chairman of NITI - Aayog and chief guest of our World Wetlands day event this year in his key note address.

South Asian regions complex developmental dynamics, coupled with limited awareness on the contribution wetlands make to societal well being has led to severe pressure on these ecosystems. Wetlands continue to be degraded and lost due to conversion for alternate uses, fragmentation of hydrological regimes, pollution, species invasion, unsustainable tourism, over harvesting of resources and regional climate change .With these issues in mind. We have also broadened our partnerships and landscape engagements during the year. New initiatives on conservation of high-altitude wetlands have been launched. We have also launched a project to address integration of climate risk dimensions into wetlands management.

As most of the problems of wetland degradation in the South Asian region resemble in various dimensions because of population and developmental pressures we are identifying opportunities for regional collaboration and exchange building and have forayed into enhancing the regional presence of the organization. At the Dubai Ramsar Conference of Parties meeting, we signed a Memorandum of Understanding with the Ramsar Regional Center East Asia to collaborate on enhancing implementation of Ramsar Convention in the South Asia region through capacity development, addressing knowledge needs and regional cooperation. Our proposal for establishing a South Asia regional forum for wetlands was received well in the side-event convened by us at the Ramsar CoP. As a follow up to the side event, we organized a meeting of the South Asia Ramsar Focal Points at Colombo during September 2-3, 2019 to further elaborate on capacity and knowledge development needs.

We have continued to champion to value of wetlands to the wider society. Towards this direction, our publication, Wetlands Conservation Ethos, has received wide appreciation. This book was written to remove the discrepancy in dealing with management issues of wetlands in a holistic manner. Wetlands need to be the normal nomenclature for all types of water bodies to enable effective and integrated management of these fragile ecosystems.

The organization has made a steady progress on building staff strength and capacity. A blueprint for human resources development has been prepared and is guiding new recruitments. Efforts have also been made to strengthen communications.

Our key challenge in the coming year would be to upscale our operations and focus on bringing long term impact on the condition of key wetlands and linked governance mechanisms. The organization needs to work hard on building capacity at multiple levels, and engage directly with stakeholders to bring about change.

I thank all the esteemed members for the invaluable guidance and support to the organization.

Dr Sidharth Kaul
President
New Delhi, September 17, 2019

From the Director's Desk

The year 2018-19 was an exciting and challenging one. At Dubai Ramsar CoP, the first edition of Global Wetlands Outlook, of which we were one of the authors, presented a very grim picture of the state of wetlands worldwide. This also means that our work is more relevant than ever, and there is an urgent need to scale up impact.

Implementation of Strategic Partnership projects this year on Disaster Risk Reduction and Water, Sanitation and Health have provided several scalable models of integrating wetlands conservation and wise use in local developmental planning processes, led by the Gram Panchayats. Given that a majority of our wetlands are small and located within rural and agrarian settings, these conservation models and approaches can bring in the much-needed community participation and ownership.

It is a matter of delight that we could initiate implementation of several new initiatives during this year. A three-year partnership with UN Environment on Ecosystem Based Disaster Risk Reduction will enable us to champion, with the required evidence base, integration of wetlands conservation and wise use into disaster risk reduction planning. The International Climate Initiative funded Wetlands and Climate Change project looks into the dimensions of integration of climate change risks into wetlands management planning. With support of UNDP, we have been able to initiate work on conservation of high-altitude wetlands in Sikkim and Himachal Pradesh. These wetlands are undergoing rapid change with retreating glacial extent in several parts of the Himalayas. The rapidly growing tourism industry has large footprints, often stressing the carrying capacity of these fragile ecosystems.

Over the years, we have been able to capitalize the open source remote sensing data for delineating wetlands and demonstrating their embeddedness into landscapes. The wetlands loss assessment carried out for Mahanadi Delta demonstrates that a careful interpretation of remote sensing data alongwith knowledge of the landscape can generate very useful, yet cost-effective, information on wetlands. We will be working towards a harmonized wetlands information base using open source data in the coming years.

Our esteemed Governing Body has been actively guiding our work and challenging us to create deeper impacts on wetlands policy and programming space. We will be engaging more proactively with the state governments and stakeholders to work on landscapes which have received hitherto limited attention. We will also be laying more emphasis on capacity development.

2020 will be special in several ways. The Ramsar Convention will be reaching its penultimate year towards its 50th anniversary. The Convention on Biological Diversity will be launching their post-2020 strategy. The Convention of Migratory Species, for the first time, will be holding their Conference of Parties meeting in India, which will be a significant opportunity to push for implementation of Central Asian Flyway Action Plan. We will work towards raising the profile of South Asian wetlands in these processes. Nationally, the Jal Shakti Mission implementation is expected to catch steam, and we will need to ensure that wetlands are adequately considered and integrated into implementation.

Our work rests on the able shoulders of our highly motivated team and partners. Collectively we hope to create and nurture an efficient, innovative and impactful wetlands programme in South Asia region.

Dr Ritesh Kumar
Director
New Delhi, September 18, 2019

2018-2019 in a snapshot

- Signed Memorandum of Understanding with Ramsar Regional Center East Asia for regional collaboration on implementation of Ramsar Convention in South Asia
- Launched new initiatives on conservation of high-altitude Himalayan wetlands and integration of climate change dimensions in wetlands management
- Organized World Wetlands Day, 2019. Dr Rajiv Kumar, Vice Chairman NITI Aayog as chief guest called for upscaling wetlands conservation for wider impact.
- Supported designation of Sundarbans as India's 27th Ramsar site, and updating Ramsar Information Sheets, out of date by over two decades.
- In 4 landscapes in Bihar and Odisha, developed replicable models for integrating wetlands conservation in developmental planning for disaster risk reduction and WASH
- Demonstrated application of low-cost satellite data for monitoring change in wetlands extent through a case study on Mahanadi Delta in Odisha
- Management plans for three Ramsar sites of Kerala approved for implementation by the State Wetlands Authority
- Designated as MoEFCC's Ramsar CEPA partner, and a technical partner to State Wetlands Authority, Uttar Pradesh
- Increased staff strength through recruitment of Director and two technical positions.
- Published Wetlands Conservation Ethos – elucidating the use of a harmonized terminology for wetlands
- Project revenues higher by 35%, with an increase in proportion of funds raised locally.

Priorities for 2020

- Develop a programme on urban wetlands
- Formulate South Asia regional strategy for 2020-30
- Engage with Jal Shakti Ministry on effective integration of wetlands in water security solutions
- Launch a full-capacity development module on wetlands management
- Initiate a South Asia regional capacity development programme on wetlands and water management
- Operationalize GEF project on Integrated Management of Wetlands Biodiversity and Ecosystem Services
- Work proactively with state governments on implementation of wetlands management plans

Contents

Abbreviations

AWC	Asian Waterbird Census
BBMS	Bhakra Beas Management Board
BNHS	Bombay Natural History Society
BOD	Biological Oxygen Demand
CAF	Central Asian Flyway
CCA	Climate Change Adaptation
CDA	Chilika Deveplopment Authority
CEPA	Communication Education Participation and Awareness
CoP	Conference of Parties
CSO	Civil Society Organisation
CSR	Corporate Social Responsibility
DDMP	District Disaster Management Plans
DEM	Digital Elevation Model
DO	Dissolved Oxygen
DORP	Development Organisation of the Rural Poor
DRR	Disaster Risk Reduction
Eco-DRR	Ecosystem based approaches for Disaster Risk Reduction
EMR	Ecosystem Management and Restoration
FGDs	Focus Group Discussions
GIS	Geographic Information System
GLOFs	Glacial Lake Outburst Flows
GPDP	Gram Panchayat Development Plans
HAW	High Altitude Wetlands
IKI	International Climate Initiative
IRM	Integrated Risk Management
LISS-IV	Linear Imaging Self-Scanning Sensor IV
MoEFCC	Ministry of Environment, Forest and Climate Change
MoU	Memorandum of Understanding
NGO	Non Government Organisation
NITI Aayog	National Institution of Transforming India Aayog
PAG	Project Advisory Group
PfR-SP	Partners for Resilience - Strategic Partnership
psu	Practical Salinity Unit
RIS	Ramsar Information Sheet
RRCEA	Ramsar Regional Center East Asia
SAPCC	State Action Plan for Climate Change
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WASH	Water Sanitation and Hygiene

Executive Summary

Wetlands International South Asia has a mission to sustain and restore wetlands, their resources and biodiversity. The technical programmes are guided by South Asia Regional Strategy 2015-2025, organised under three workstreams (healthy wetland nature, vibrant coasts and deltas, and replenished water stores from mountain to sea. Implementation of technical programme contributed to one or more of the seven regional targets set under these workstreams.

Workstream I: Healthy wetland nature

- Management plan for Chilika for the period 2019-2025 was drawn up based on the review of implementation of the 2012-2018 plan and monitoring records of last six years. The plan responds to four major threats: increasing tourism pressure, unsustainable fisheries, intensification of land use in the catchment, and climate change induced sea-level rise and increased frequency of extreme events.
- In January 2019, waterbird census was conducted in 350 wetlands covering 20 Indian States and Union Territories. A meeting of the state coordinators is proposed on the sidelines of the International Conference on Waterbirds and Wetlands being organized by the BNHS in November 2019.
- Sessions on integrated wetlands management planning were conducted at four regional wetlands managers' workshop convened by MoEFCC. Wetlands International South Asia was designated as a technical partner for the Uttar Pradesh State Wetlands Authority. In collaboration with the authority, a two-day seminar on wetlands management was conducted at Lucknow during 29-30 September, 2018.
- In the four training workshops conducted by MoEFCC, Wetlands International South Asia trained the Ramsar site managers in updation of the Ramsar Information Sheets (RIS) using the electronic system. As a result of the training RIS for 11 Ramsar sites have been updated, and the rest are in progress. Technical knowledge support to the MoEFCC for the formal designation of Indian Sunderbans as a Ramsar Site on 30 January 2019 was provided. The RIS and wetland map were reviewed, corrected and updated.
- Assisted the Ministry of Environment, Forest and Climate Change in developing the national position on the 26 resolutions considered at the 13th CoP meeting of the Ramsar Convention held in October 2018 at Dubai, United Arab Emirates.
- On the occasion of World Wetlands Day, Wetlands International South Asia organized a seminar on 'Wetlands and Climate Change'. The Chief Guest of the event, Dr Rajiv Kumar, Vice-Chairman, NITI Aayog delivered the keynote address.

Workstream 2: Replenished water stores

- Under the aegis of MoEFCC-UNDP SECURE Himalayas project a multi-scalar knowledge needs framework for management planning of HAW has been developed to map the changes in the ecological character of a wetland or wetlands complex influenced by changes at multiple scales.
- Field surveys and consultations in 2018 at Chandertal (Himachal Pradesh) have revealed massive rise in tourism in recent years, the influx of tourists rising to 40,000 which has led to emergence of problems such as solid waste, noise pollution, and infrastructure development.
- Wetlands International South Asia in collaboration with key stakeholders will formulate an integrated management plan for Pong Reservoir and build capacity for wetlands management considering ecosystem services and biodiversity values, as well as climate risks. Field visit and initial discussions with major stakeholder departments have been held, data on various wetlands features have been collated which will form the basis of ecosystem services assessment in the following year.
- Model water security plans for Debkhal Chaur basin (Bihar) and Tampara basin (Odisha) under the aegis of the Watershed India partnership programme were developed. This will help strengthening the capacities of Civil Society Organisations in the governance and management of water and sanitation services thus advocating for sustainable WASH.
- Under Partners for Resilience programme, a mapping of wetlands in the Mahishi block, Saharsa

District of North Bihar was carried out along with determination of major areas of transformation and loss. Information on community benefits, local wetland management practices and community governance arrangements was also collated.

- Initiated assessment of wetland extent, role in community livelihoods, local management and governance arrangements in Rishikuliya Estuary in Tampara basin, Odisha.
- A strategic review of State Action Plan for climate Change (SAPCC) for 28 states and 4 Union territories was under taken to assess the level of integration of wetlands and adaptation strategies to combat climate change. The assessment indicated that states which used latest estimates of wetlands distribution and described effect of climate change on wetlands were also able to integrate wetlands in adaptation strategies better.

Workstream 3: Vibrant coasts and deltas

- Situational analysis of wetlands in Bhola Island, Bangladesh was conducted to map their status, gain insights on ownership pattern and management systems influencing community benefits and impacting degradation. Detailed survey of 40 wetlands shows that communities accrue diverse benefits and that all sections of the society are impacted by their degradation which is largely due to limitations in current management mechanisms and lack of political will.
- Using GIS and RS tools impact of development on hydrological changes of wetlands in the Mahanadi delta was assessed for the period 1994-2017. Study revealed loss of 43.6% wetland extent. Marked shrinkage in the inundation regimes of major wetlands was also recorded. An increase of ca. 37% in the area of artificial wetlands such as aquaculture ponds was noted.

Organizational Development

- Entered into an Memorandum of Understanding with the Ramsar Regional Center East Asia for collaboration on enhancing implementation of Ramsar Convention in the region and building capacity of wetlands managers.
- The 13th meeting of Governing Body was held on September 21, 2018. It was decided to constitute a Project Advisory Group to review ongoing projects, proposals and concept notes. An extraordinary meeting of the Governing Body was convened on February 25, 2019 to firm up the process of recruitment of Director.
- The 11th Annual General Body meeting was held on September 29, 2018. Annual reports and audited financial statements for 2017-18 were adopted.
- Position of Director was advertised in February and recruitment completed in May 2019. Dr Ritesh Kumar was appointed to the position.

Programme Overview 2018-2019

Wetlands International South Asia has a mission to sustain and restore wetlands, their resources and biodiversity. The goal statement of the organisation encapsulates the importance of wetlands in supporting societal well-being:

> Wetlands are wisely used and restored for the role they play in improving human well-being and local livelihoods, conserving biodiversity, sustaining the water cycle and reducing climate change and impacts.

The technical programme of Wetlands International South Asia is guided by the South Asia Regional Strategy 2015-25, which was approved for implementation by the Governing Body in 2016. Three workstreams (healthy wetland nature, vibrant coasts and deltas, and replenished water stores from mountain to sea) and seven regional targets (summarised in the table below) have been set as pathways to achieving the organisation's mission and goal.

The technical programmes are designed around one or several of the intervention strategies, namely, mobilising best available expertise and knowledge, raising awareness on crucial issues, demonstrating change pathways through replicable and scalable models and pilots, and influencing policy and practice.

This section of the annual report presents an overview of activities and achievements of Wetlands International South Asia during the period April 2018 – March 2019 under each of the three workstreams.

Workstream	Regional targets for 2015-2025	Geographical Focus of work during the year
Healthy Wetland Nature	1: Improved status of wetland biodiversity in 8 sites in South Asia (including two sites located in urban landscapes)	Chilika (Odisha)
	2: Asian Waterbird Census (AWC) strengthened as an information base on the status of migratory waterbirds within Central Asian Flyway	South Asia
	3: Implementation of national targets and international commitments related to wetland restoration tracked for two countries in South Asia to promote improved national policy-making and governance	India and Bangladesh
	4: One national scale capacity building programme for wetland managers established	Pan-India through regional workshops
Replenished Water Stores from Mountains to Sea	5: In 3 basins, implementation of water resources plans and projects safeguard and restore wetland functioning to reduce water risks	High altitude wetlands of Lahaul Pangi Landscape (Himachal Pradesh), Pong Reservoir with Sutlej-Beas Basin (Himachal Pradesh and Punjab), Debkhal Chaur Basin (Bihar), Tampara Basin (Odisha)
	6: In 2 landscapes, WASH planning and governance takes into account the role of wetlands resulting in enhanced access to environmentally sustainable water and sanitation solutions	North Bihar floodplains and Mahanadi Basin (Odisha)
Vibrant Coasts and Deltas	7: In 3 deltas and coastal landscapes of South Asia, wetland restoration is linked in coastal zone planning leading to improved livelihood resilience of dependent communities	Mahanadi Delta (Odisha), Cauvery Delta (Tamil Nadu)

Workstream I: Healthy Wetlands Nature

The aim of work under this workstream is to halt and reverse the loss of wetland habitats, sites and species. The four regional targets under the workstream relate to the improved status of wetland biodiversity in selected sites, the establishment of national scale capacity building programme, strengthening information base on the status of migratory waterbirds and tracking implementation of national targets and international commitments related to wetland restoration to promote improved national policy-making and governance.

Revising management plan for Chilika 2019-2025

Wetlands International South Asia is a long-term technical partner of the Chilika Development Authority. During 2019, the organization drafted the management plan for the 2019-2025 period. This is a follow-up of the management plan formulated in 2012 with financial support of Ramsar Convention under its Small Grants Programme.

In line with the 2012 management plan, interventions for maintaining lagoon-sea connectivity, catchment conservation, managing species habitats, strengthening community-managed fisheries and communication and outreach have been implemented. A review of the monitoring records for 2012-18 period indicates that the lagoon maintained a healthy ecological character as discerned from the monitoring records and studies conducted by the CDA. Following were the major trends in the wetland ecosystem:

- The lagoon receives 5815 Mm^3 of which 56% was from Mahanadi delta tributaries 31% from the rainfall and the rest from its western catchments. There was a net flux of 4020 Mm^3 towards Bay of Bengal. The hydrological connectivity of the lagoon with Mahanadi Delta Rivers and the Bay of Bengal enabled maintenance of salinity gradient. Salinity in Northern sector (3.6±3.5 psu) was the least followed by Central sector (9.47±5 psu), Southern sector (11.8±3.4 psu) and Outer Channel (11.9±8 psu).

Extreme events are making Chilika's connection to sea highly dynamic. In 2018, cyclonic storm Daye opened a new mouth 2.5Km north of existing one at Arakhkuda. Cyclone Fani created four new mouth in May 2019

- In response to the northward littoral drift, the sea inlet at Sipakuda has shifted by 4.2 km during October 2000-April 2018. The tidal prism and tidal flux however, are being maintained in the condition as was achieved after post-hydrological restoration in September 2000.
- There has been an increase in built-up area in the lake basin. Land use land cover change estimate indicates an increase in area under settlements from 6.03 to 17.7% of the lake basin area. This increase matches up with a decrease in area under agriculture (from 36.6% to 28.5%) and forest (from 26.1% to 24.7%). Wetlands within the lagoon catchment have been lost as a result of conversion to other land use, a decrease of 137 km^2 has been observed.
- Water quality parameters indicate that the lagoon is well-oxygenated (DO: 7.1-7.47 mg/l) and low biological loading (BOD: 0.92mg/l) which is conducive for aquatic life. The lagoon is mesotrophic throughout the year except few pockets of localised eutrophication in the northern sector.
- The lagoon continues to supports a high diversity of planktons, a total of 259 species mostly dominated by *Bacillariophyceae* followed by *Dinophyta, Chlorophyta, Cyanophyta, Euglenophyta* and *Chrysophyta* have been recorded. Salinity followed by total alkalinity and transparency were the most critical parameters determining the dynamics of plankton.
- Thick stands of *Phragmites karka*, potentially invasive in Chilika have remained restricted to the Northern sector in an area of around 50 km^2.
- Chilika continues to meet Ramsar waterbird criteria by providing habitat to 0.7-0.9 million waterbirds of as many as 174 species. Several species were noted to use both Central Asian and East Asian Australasian Flyway. The counts for 45 species were higher than known 1% biogeographical population. The population of ducks and waders however, declined over the period which is in line with their observed global decline. Five species of ground-nesting birds were noted to have abandoned Nalabana.
- The population of globally endangered cetacean Irrawaddy dolphin *Orcaella brevirostris* has remained stable during the period ranging between 121-156 individuals. After removal of illegal prawn enclosures from Chilika shoreline the habitat use of dolphins has increased.
- The extent of seagrass in Chilika increased from 106 km^2 in 2011 to 138 km^2 in 2018. The extent in Chilika represents one-fifth of known extent in the country and is an indicator of wetland ecosystem health. The beds despite undergoing extensive damage during cyclone Phailin in October 2013 have recovered and expanded in the southern sector and outer channel area.
- The annual average landing at 12465 t/year (comprising 57% fish, 40% prawns and 3% crabs) has continued to support livelihoods of 0.2 million fishers. Out of the five commercial fish species studied during 2011-12 to 2015-16, catch of *Mugil cephalus, Daysciaena albida* and *Eleutheronema tetradactylum* are severely declining, while that of, *Chelon macrolepis* and *Etroplus suratensis* maintains stable catch. All these commercially important species are being overfished, as 66-88% of the catches constitute immature specimens. Fishing and operation of barrier nets in Palur canal during migratory and breeding periods obstruct free movement of larvae, juveniles and adults into the lagoon.
- In response to measures for strengthening major primary fishing societies and reduce the influence of middlemen in trade of Chilika fish and prawns, there has been 21% increase in net revenues to the primary fishers as compared with the situation in 2006-07. However, middlemen continue to trade in nearly 27% of the landings.

Four major existing and emerging risks of adverse change in lagoon ecological character were identified, namely increasing tourism pressure, unsustainable fisheries, intensification of land use in the catchment, and climate change induced sea-level rise and increased frequency of extreme events. Over the coming six years, the management plan of Chilika is proposed to be structured in four components, namely: a) Institutions and governance, b) Land and water management, c) habitat and biodiversity conservation, and d) sustainable resources development and livelihoods.

The plan has been approved for implementation by the Chilika Development Authority and placed for funding support of the Ministry of Environment, Forest and Climate Change. Wetlands International South Asia shall be periodically reviewing management plan implementation to ensure that the desired outcomes are reached, and necessary mid-term course corrections incorporated.

Enhancing reach of Asian Waterbird Census

Within the aegis of International Waterbird Census, Asian Waterbird Census (AWC) is the longest running citizen science programme that systematically monitors waterbird counts and wetland condition in India. The census started in Indian sub-continent in 1987 and now covers a large area of East Asian – Australasian Flyway and Central Asian Flyway. Fundamentally a network of local ornithologists and volunteers, the census is coordinated by Wetlands International South Asia and Bombay Natural History Society at pan India level

During the mid-winter census carried out in January 2019, nearly 350 wetlands of 20 Indian States and Union Territories were covered. Data was reported in the E-bird platform as well as AWC data formats. Data verification and analysis is ongoing, the final results will be reported in the coming year. A meeting of the state coordinators is also being held on the sidelines of the International Conference on Waterbirds and Wetlands being organized by the Bombay Natural History Society in November 2019.

Capacity Development

Wetlands International South Asia continued to work on building capacity of wetlands managers in integrated management of wetlands. Sessions on integrated management planning were conducted as part of Ministry of Environment, Forest and Climate Change's regional workshops. These sessions were held at following four workshops:

- Eastern Region Wetlands Managers Workshop organized by Botanical Survey of India during July 6-7, 2018 at Kolkata
- Southern Region Wetlands Managers Workshop organized by Salim Ali Center for Ornithology during September 6-7, 2018 at Coimbatore

Under the CSR project, Avendus Capital staff participated in Waterbird Census at Thane Creek, Mumbai

- Northeastern Region Wetlands Managers Workshop organized by Sikkim Forest Department during October 8-9, 2018 at Gangtok
- Northern Region Wetlands Managers Workshop organized by Punjab Forest Department during January 21-22, 2019 at Amritsar

Wetlands International South Asia has been designated as a technical partner for the Uttar Pradesh State Wetlands Authority. In collaboration with the authority, a two-day seminar on wetlands management was conducted at Lucknow during 29-30 September, 2018.

Supporting implementation of Ramsar Convention

Training on Updation of Ramsar Sheets

India has designated 27 wetlands as Wetlands of International Importance under Ramsar Convention. The Ramsar Information Sheets, which provide information on ecological character of the Ramsar sites need to be updated every six years to assess whether the goal of maintenance of ecological character and prevention of human-induced adverse change in being met. In 2015, the Convention has launched an electronic system for updation of the Ramsar Information Sheets.

The RIS for 25 Indian Ramsar sites have been out of date, several for over three decades. At the request of MoEFCC, Wetlands International South Asia conducted four training workshops for the Ramsar site managers on the use of Ramsar Site Information service. As a result of the training, the site managers have been able to update data for 11 Ramsar sites thus far, the rest being in progress.

Support to designation of Indian Sundarban as Ramsar site

Straddling the borders of India and Bangladesh, Sunderban is the single largest chunk of mangrove in the world. The Bangladesh part of Sundarban was designated as a Ramsar site in 1992.

The Indian Sundarban, covering the south-westernmost part of the delta, constitutes over 60% of the country's total mangrove forest area and includes 90% of Indian mangrove species. The mangrove forests protect the hinterland from storms, cyclones, tidal surges, and the seepage and intrusion

Dr Sidharth Kaul (President, Wetlands International South Asia) and Mr Seung Oh Suh (Executive Director, Ramsar Regional Center East Asia, South Korea) signed a Memorandum of Understanding at Dubai CoP

Wetlands International South Asia field team at Chandertal (Himachal Pradesh)

of saltwater inland and into waterways. They serve as nurseries to shellfish and finfish and sustain the fisheries of the entire eastern coast. The Sundarban Tiger Reserve is situated within the site and part of it has been declared as a "Tiger Conservation Landscape" of global importance.

A decision to designate Indian Sunderbans as a wetland of International Importance was taken by the MoEFCC in 2018. Wetlands International South Asia provided technical backstopping to the MoEFCC for designation of Indian Sunderbans as a Ramsar site. The Ramsar Site Information Sheet and wetland map were reviewed and corrected. The wetland received the formal designation as a Ramsar site on 30 January 2019.

Montreux Record

Keoladeo National Park (Rajasthan) and Loktak (Manipur) continue to be listed on the Montreux Record of Ramsar Convention. As a part of commitments to Ramsar Convention, the sites placed on Montreux Record deserve a high attention of the Contracting Party to address human-induced adverse change in ecological character.

Wetlands International South Asia raised the issue of taking priority action on these two sites under the Record, and conveying responses to the Ramsar Convention Secretariat. The Keoladeo National Park management organised a consultation workshop on management of the Ramsar site on March 22, 2018. Following up on the meeting, Wetlands International South Asia helped update the over 35 years old Ramsar Information Sheet and upload digital maps of the site boundary. An ecological character change assessment was carried out. The analysis indicated that the rapid spread of *Prosopis sp.,* which was recorded as major threat at the time of listing of the record has been largely contained. However, water management, particularly with consideration to the habitat requirement for waterbirds, remains a cause of concern. The analysis will be submitted to the MoEFCC and the Government of Rajasthan by close of 2019.

National position at 13th Conference of Parties meeting

Wetlands International South Asia assisted the Ministry of Environment, Forest and Climate Change in developing the national position on the 26 resolutions considered at the 13th Conference of Parties meeting of the Ramsar Convention held in October 2018 at Dubai, United Arab Emirates.

Regional collaboration for wetlands wise use in South Asia

Wetlands within South Asia region bear several commonalities regarding ecological connectivity, water and land management regimes governing their status and development contexts. Significant opportunities exist within the region for sharing lessons, experiences and challenges in wetlands management, so that management and governance solutions tailored to the regional context could be evolved.

During the Ramsar CoP 13 meeting, Wetlands International South Asia organised a side event on promoting wise use of wetlands in South Asia to identify opportunities for regional collaboration and exchange. The first panel discussion within the National Focal Points of India, Bhutan, Bangladesh, Nepal, Sri Lanka and Myanmar surmised that the countries within the region had established national programmes seeking to strike a balance between biodiversity conservation outcomes and meeting livelihood needs of the dependent communities. However, management approaches were sill inadequate to account for increasing fragmentation of hydrological regimes, intensifying land and water use practices and growing dependence on wetlands resources for livelihoods. The panel endorsed the idea of the development of a regional platform for supporting the exchange of knowledge and management practices.

The second panel, constituting representatives of the international organization, namely Ramsar Regional Center East Asia, International Water Management Institute and Wildfowl and Wetlands Trust, highlighted the enabling role of the international NGOs in facilitating exchange and building capacity of wetlands managers in the application of latest knowledge and scientific advice into wetlands management.

Dr Rajiv Kumar, Vice-Chairman, NITI Aayog releasing the book Wetland Conservation Ethos

Seminar on World Wetlands Day

To mark World Wetlands Day, Wetlands International South Asia organized a seminar on "Wetlands and Climate Change" at India International Centre, New Delhi. The seminar discussed pathways and policy directions for mainstreaming diverse wetland ecosystems and ecosystem values in climate policy. The event was attended by 70 participants from central government agencies, International organizations, academia, civil society, media and experts.

The Chief Guest of the event, Dr Rajiv Kumar, Vice-Chairman, NITI Aayog (National Institution of Transforming India, the premier policy think-tank of Government of India) released the book Wetland Conservation Ethos, which provides an overview of wetlands, their values and functions, management approaches and role of citizens in conserving wetlands. A poster on the world wetland day theme was also released. Wetlands International also released a training module on integrated wetland management.

Dr Rajiv Kumar delivered the keynote address at the event. Expressing happiness that Wetlands International South Asia has been shouldering the responsibility of championing wetland conservation in South Asia. Dr Kumar called upon the need for upscaling efforts at the national and regional scale. He also urged for a paradigm shift in the way in which nature, including wetlands, is considered in developmental planning processes. Cautioning that society was slow to react to capacity development and outreach actions, he stressed the need for raising the nation-wide alarm on the rapid loss of wetlands and its consequences for development.

Workstream 2: Replenished water stores

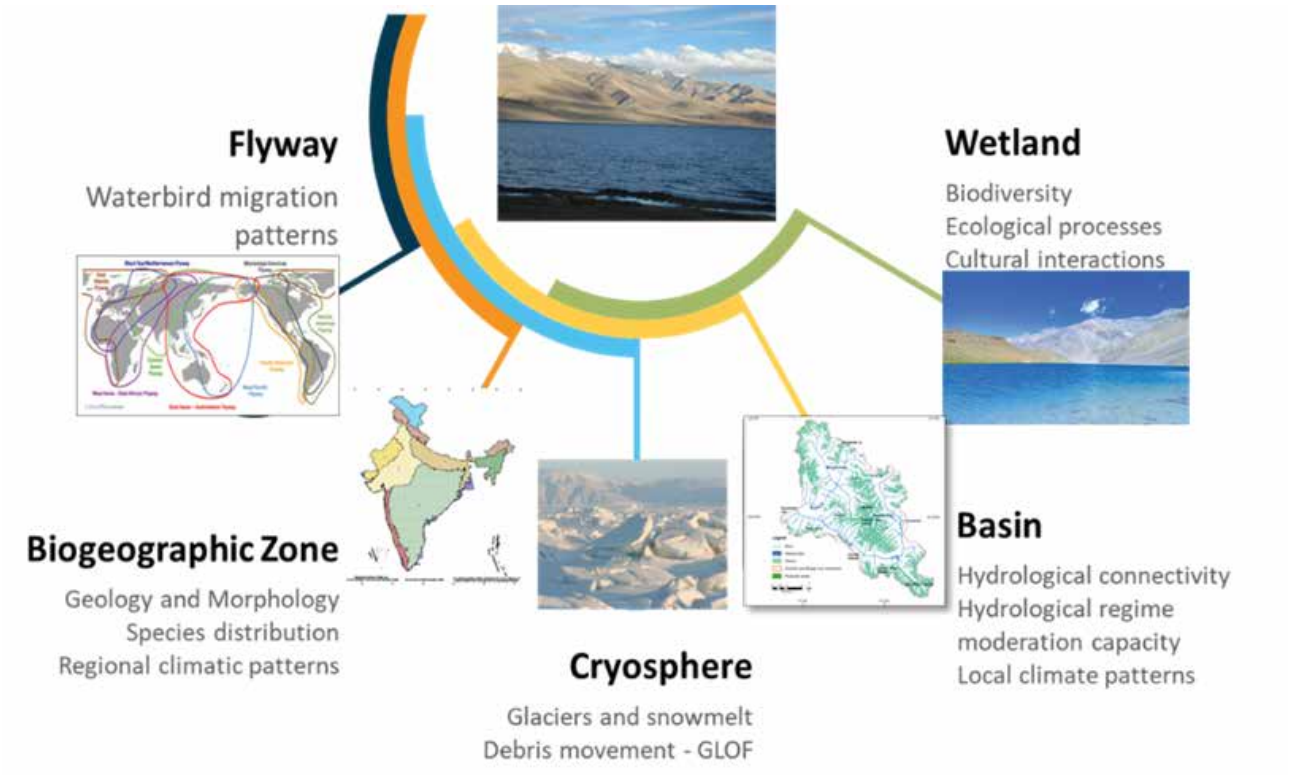
The workstream replenishing water stores from mountains to the sea aims at aligning policies across multiple sectors to transform the ways in which water risks are managed in the landscape, including the improved management and restoration of wetlands as natural infrastructure. The two regional targets under the workstream strive to: a) safeguard and restore wetlands functioning for water risks as part of basin-scale planning, and b) promote the role of wetlands in the provision of sustainable water and sanitation solutions within the basin.

Conserving high altitude Himalayan Wetlands

In the Himalayan region, high-altitude wetlands form crucial freshwater storehouses. Located above 3000m amsl, these dynamic ecosystems are facing escalating threats from anthropogenic stressors as well as changing climate. Conserving and sustainably managing High Altitude Wetlands (HAWs), with due cognizance to the role within the landscape needs urgent attention.

Wetlands International South Asia as a part of the SECURE Himalayas project of MoEFCC and UNDP is developing a model management planning framework for HAW within two landscapes, namely Lahaul-Pangi (Himachal Pradesh) and Upper Teesta (Sikkim). During the year, work on Lahaul-Pangi was initiated. Chandertal, a Ramsar site has been identified by the State Forest Department as a pilot site.

Chandertal (49 ha) is nested in the upper catchment of river Chandra at an elevation of 4,300m amsl. Fed by snow and glaciers from Losar and Chandrabhaga mountain ranges, the wetland forms an integral part of the landscape hydrological regime. The catchment of the crescent-moon shaped wetland supports a representative community of Western Himalayan high altitude biodiversity including endemic medicinal plants, rare and endangered mammals such as Tibetan Wolf and Snow Leopard. Moreover,



Multi-scalar knowledge needs framework for management planning of HAW

the importance of the wetland is underlined by its unparalleled aesthetic beauty and cultural values. Indigenous communities also celebrate it through traditional folklores and festivals, and consider it a sacred wetland.

Despite such recognition and reverence, the wetland is under threat. Uncontrolled livestock grazing, irresponsible tourism and impacts of changing climate adversely stress the wetland's ecological character. The glaciated area in the Chandra-Bhaga basin has shrunk from 377.6 km^2 to 368.2 km^2 during 1980-2010. Field surveys and consultations have revealed massive rise in tourism in recent years. During 2011-2018, the tourist influx has risen from nearly 2800 to 40,000 which has led to emergence of problems such as solid waste, noise pollution, and infrastructure development.

A multi-scalar knowledge needs framework for management planning of HAW, developed for the project, builds on the recognition that the ecological character of a wetland or wetland complex is influenced by changes at multiple scales. At basin level, the role of wetlands in hydrological regime and climate moderation are apparent which are influenced by hydrological connectivity within the landscape and surrounding landuse. The Cryosphere has a major influence on snow and ice melt received into the wetland, which interacting with physical processes may lead to wetland being potential threat to downstream areas through Glacial Lake Outburst Floods (GLOFs). Biogeographic zones provide the basic template in which species, ecosystems evolve and function within the geographic scape and geological time. At this scale, several relatively slower processes such as tectonic movements, rock weathering and regional climatic patterns have a bearing on the structure and functions of HAWs. Migratory species such as waterbirds which use these wetlands to complete their migration movements are influenced by the status of migration corridors often termed as flyways.

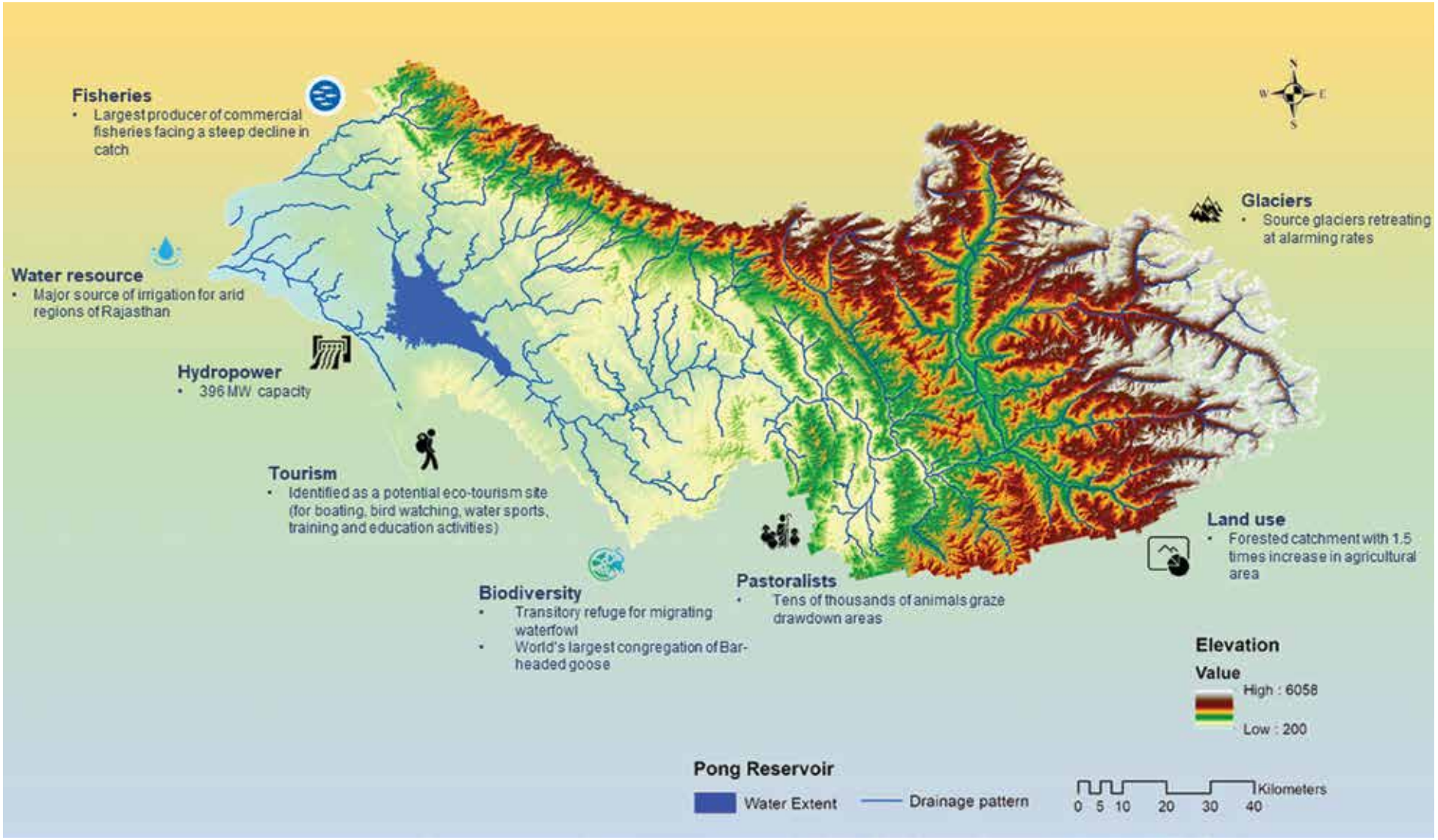
In the coming year, the management plan for Chandertal will be prepared. The wetlands of Chandra and Bhaga basins will be mapped using LISS IV satellite imageries. The project will also develop a Standard Operating Procedure for management planning of HAWs in Himachal Pradesh.

Meeting wise use commitments on Pong Reservoir, Himachal Pradesh

Reservoirs present a unique challenge towards meeting wetlands wise use goal. Built primarily for storing and diverting water for human needs, over a period of time, many of these wetlands are also prime biodiversity habitats. Managing such wetlands only for social purposes, therefore, puts their biodiversity values at risk. As such large structures are prone to rapid siltation and accumulation of pollutants and water contaminants, a basin-scale approach, taking into account water and sediment dynamics, can ensure that reservoirs continue to provide wide ranging benefits on a longer term.

Under the aegis of IKI-Wetlands and Climate Change project initiated in October 2018, Wetlands International South Asia will be working with the Himachal Pradesh State Wetlands Authority to formulate an integrated management plan for the Ramsar Site, as well as build capacity for wetlands management considering ecosystem services and biodiversity values, as well as climate risks.

Constructed in 1974, Pong Dam forms a part of a water resources development project on rivers Sutlej, Beas and Ravi, to meet the water needs of Punjab and green the desert regions of Rajasthan. The water of Beas River 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. Leftover Beas water were to continue flowing into Pong Dam to be released at Harike Barrage, downstream to southern Punjab and Rajasthan through the Indira Gandhi Canal. 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 Ranjit Sagar dam rather recently in 2001, the project was also completed. Pong dam managed by Bhakra Beas Management Board (BBMB) located in the small hamlet Pong, on the right bank of the river Beas in Kangra district, was a part of Punjab till 1966. A hydropower plant was constructed in the final scheme of what was initially planned as an irrigation project. 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.



Status and trends of key wetland features of Pong Reservoir (Himachal Pradesh)

Over time, the reservoir has become one of the prime waterbird habitats of northern India. Pong offers the first transitory refuge for migratory waterfowl in north India from Siberia and Central Asian Countries hosting a variety of avian habitats ranging from mudflats to sandbanks to open deep waters and swamps. Bar-headed goose is seen in flocks of hundreds and thousands creating large congregations in this wetland. Common Coot, Northern Pintail, Common Pochard, Tufted pochard, common teal and Pied Avocet form other dominant groups. Pong's attraction does not stop at wintering waterfowl, the wetland forms ideal habitat for breeding of Indian white-rumped vulture Gyps bangalensis, a critically endangered species with regular siting of its nests by Forest Department.

The impounded area of 307 km^2 was notified as a wildlife sanctuary in 1983. Though the land is owned by Bhakra Beas Management Board, 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 km^2 of Pong was later declared a Ramsar site in 2002 on account of its high waterbird diversity.

Management of the Ramsar site is a contested space. The Forest Department manages the area on the principles of the sanctuary, and focuses on enhancing habitat conditions. The department plans to develop the area as a tourist hotspot. The department vehemently dissuades any human intervention in the area, especially by the graziers, and farming in the drawdown area. Fishing in the sanctuary is however permitted, under licensing by the State Fisheries Department. The Bhakra Beas Management Board, which has the final say on the management of water levels, operates based on the downstream demands of water and ensuring the structural safety of the dam.

Wetlands International South Asia will be working towards harmonizing multiple objectives into a single management framework. During the year, a field visit to the site and initial discussions with major stakeholder departments have been held. Available data on various wetlands features has been collated. These will form the basis of ecosystem services assessment in the coming year.

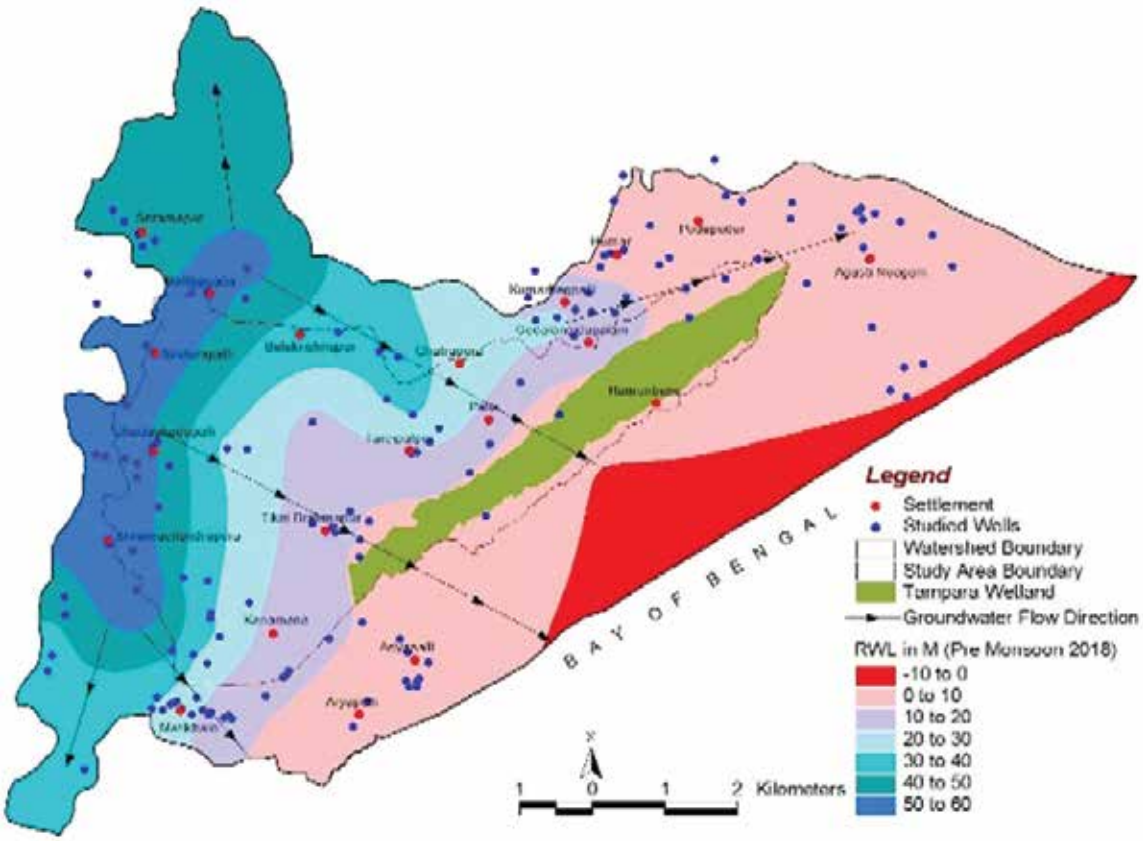
Embedding wetlands in water security planning

Under the aegis of Watershed India partnership, Wetlands International South Asia worked for developing a model water security plan for Debkhal Chaur basin (Bihar) and Tampara basin (Odisha). 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 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.

The programme brings to focus the role natural ecosystems such as wetlands play in moderating hydrological regimes through their groundwater recharge and flood buffering functions. Water thus made available as surface or groundwater underpins delivery of WASH services.

During the year an inventory of water levels in 146 dugwells were undertaken in Tampara basin to assess groundwater flow directions and influence of wetlands on the overall water regimes. The Panchayat members and CSOs were imparted training on monitoring water levels in dugwells. The data collected from the exercise was used to generate Reduced Water Level Map of the basin. The maps indicate that along the coast there are areas where the freshwater lens is below sea level and at high risk of salinity intrusion. Conserving wetlands will ensure that salinity ingress is kept in check. The inventory has also led to identification of pockets of high Total Dissolved Solids levels that were beyond permissible limits. Cases of Fluoride contamination were detected after subsequent testing and validation by line departments.

In Debkhal Chaur basin, the impact of shallow aquifers depletion was evident in increasing dysfunctionality of water points. In 2019, around 80% of the handpumps were not functioning during peak summers in several villages. Tubewells in intensively cultivated landscape and private submersibles guzzle up groundwater. Conversion of wetlands, which are the primary means through which rainwater recharges groundwater in the landscape has made matters worse.



Groundwater flow direction map in pre monsoon season for Tampara basin (Odisha) based on dugwell inventory

CSOs training on dugwell surveys, Podapadar village, Tampara basin (Odisha)

Pong Reservoir (Himachal Pradesh) drawdown area is a preferred habitat for waterbirds. Grazing in this area is a major disturbance

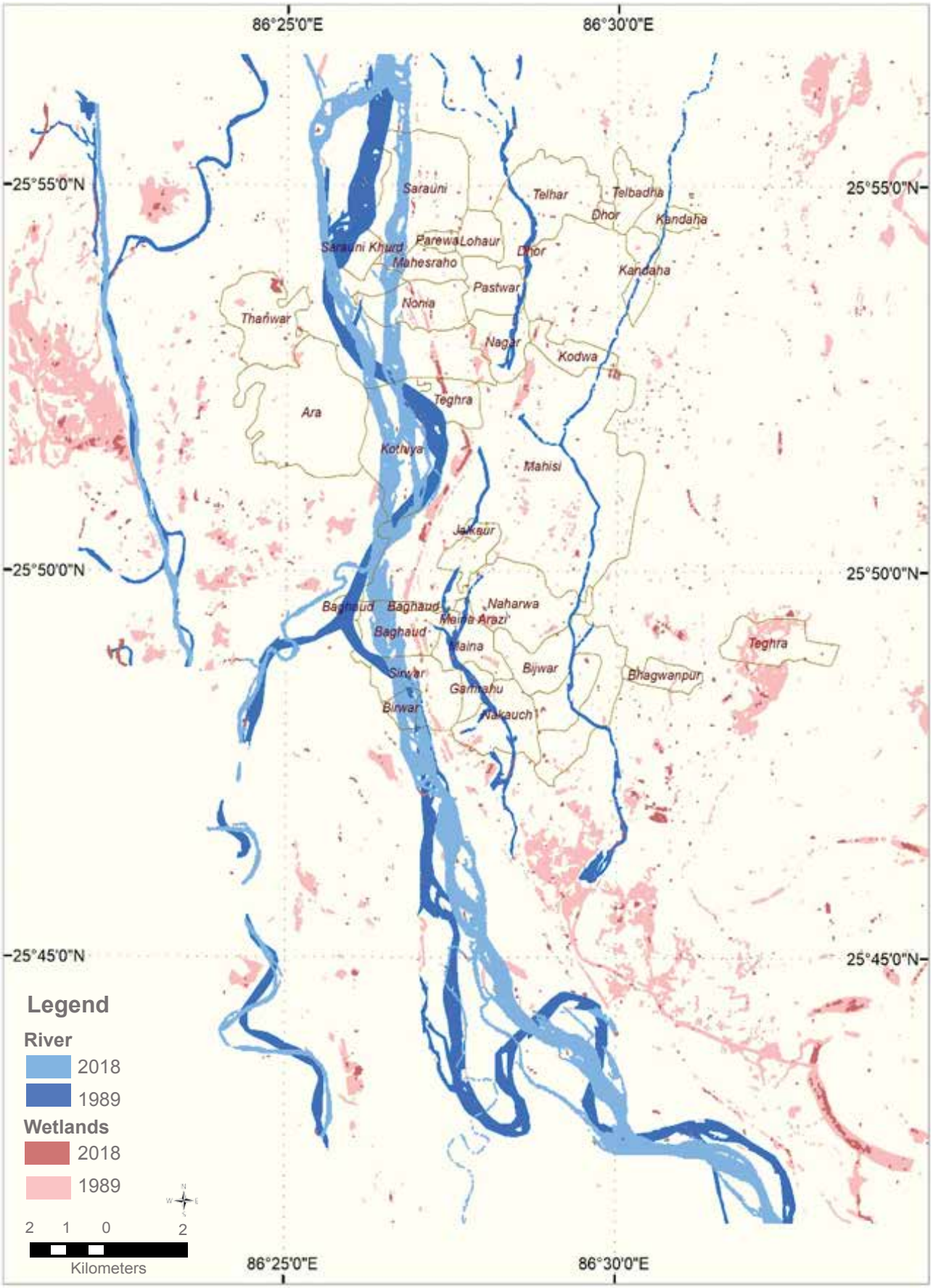
Wetlands International South Asia along with its technical partner - Arid Communities and Technologies, Gujarat is supporting the preparation of village water security plans as the means to effectively allocate water for various ecological and human uses including water for WASH. These plans have identified interventions for discharge, recharge and depletion zones and serve as reference documents to inform communities, Panchayats and block and district level departments on the desired actions. During the reporting period, water security planning was taken up in the ten villages in Tampara and Debkhal Chaur basins.

The focus of project implementation in the coming year is to promote replication of water security planning approaches through engagement with district level officials and knowledge partners.

Community led management of floodplains of Kosi River Bihar

The Partners for Resilience programme, a strategic partnership with Dutch Ministry of Foreign Affairs promotes a multi-sectoral approach for managing water mediated risks in development. The integrated Risk Management (IRM) approach promoted by the partnership, blends Disaster Risk Reduction (DRR), Ecosystem Management and Restoration (EMR) and Climate Change Adaptation (CCA) to address the multi-faceted dimensions of vulnerability reduction and building community resilience.

Under the aegis of PfR a community led wetland management programme is being implemented in Mahishi block, located on the eastern flanks of River Kosi in Saharsa District of North Bihar. During the year a mapping of wetlands of the region was carried out along with determination of major areas of transformation and loss. The information is supplemented with survey on community benefits, local wetland management practices and community governance arrangements. During the coming year community will be imparted training on wetlands management to facilitate incorporation of related elements in Panchayat level development plans.



Changes in wetlands along Kosi River (Bihar)

Upscaling community resilience through ecosystem based disaster risk reduction approaches in Tampara Basin, Odisha

During the last five decades, water induced disasters have accounted for over half of the disasters in the country. Lopsided water management, with a focus on hard engineering solutions, destruction of natural buffers such as wetlands and a lack of integrated land and water planning have been major causative factors underlining these trends. Nature based solutions in particular Eco-DRR are well positioned and significant opportunity for addressing such risks. Building on the implementation of PfR-SP, Wetlands International South Asia, with support of UN Environment launched a new three year initiative to support wider uptake, replication and upscaling of Eco-DRR approaches as a contribution to strengthened disaster risk governance.

The basin of Tampara, a freshwater wetland located in Rishikuliya Estuary has been taken up as a intervention area under the programme. During 2018-2019, a mapping of wetland extent, and their role in community livelihoods, local management and governance arrangements was initiated.

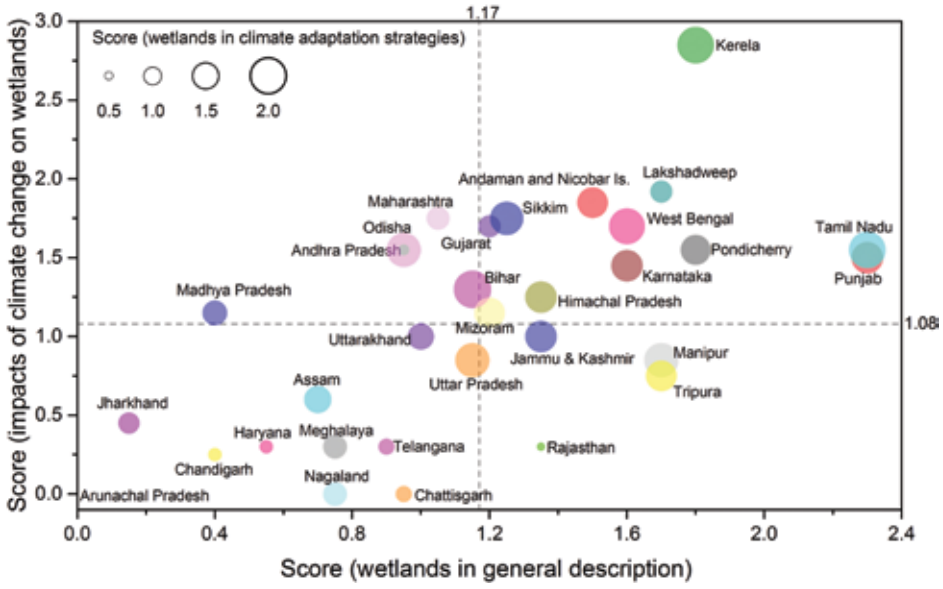
In the coming year the project implementation will focus on participatory community risk reduction planning and implementing Eco-DRR actions, particularly blending wetland ecosystem functioning with built infrastructure.

Wetlands in State Action Plan for Climate Change

As a part of project under India's Third National communication to the United Nation's Framework Convention on Climate Change, a strategic review of State Action Plan for Climate Change (SAPCC) was under taken during the year.

The analysis of 32 SAPCCs indicated the following:

- 25 states have included information on extent of wetlands present within their territories in their respective SAPCCs. Tamil Nadu, Bihar as well as Island territory of Lakshadweep have incorporated most recent estimates provided by National inland inventory and assessment Atlas. Six states of Arunachal Pradesh, Chandigarh, Haryana, Nagaland, Jharkhand, Madhya Pradesh, Andhra Pradesh and Union territory of Chandigarh have not included such data. Other states like Karnataka, Punjab, and Gujarat have either used old data or have just included qualitative description as exemplified by Uttar Pradesh and Jammu & Kashmir.
- Inclusion of information on wetlands within description of climate context, role in water and climatic security, trends in wetland loss, major threats and corrective measures of states has been best demonstrated by states of Tamil Nadu and Punjab while its least inclusion was found in SAPCCs of Jharkhand, Chandigarh and Madhya Pradesh. Arunachal Pradesh has not included



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.

any wetland related information within its climate change Action plan.

- 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 under stress has been included by 29 states and union territories but completely missed by three states Arunachal Pradesh, Nagaland and Chhattisgarh. Kerala has best inclusion followed by states of Maharashtra and Island territories of Andaman and Nicobar Islands and Lakshadweep.
- 17 states have not included any information on current impacts of climate change on wetlands. In contrast, only five states have not included any such information on projected impacts
- Except Arunachal Pradesh, all 27 states and four union territories have included wetlands within climate change adaptation strategies. The level of integration was varying between the state of Bihar, West Bengal, Tamil Nadu and Kerala. These identified comprehension and included wetland conservation, and management-based strategies within planning of at least 6 sectors aimed at adapting to climate change. However, Rajasthan and Andhra Pradesh are on the other extreme.

The analysis shall be concluded in December 2019, along with development of Climate change adaptation framework for wetlands of the country and results of climate change vulnerability assessment in Chilika, Odisha.

Wetlands Solutions for Chennai

Wetlands International South Asia, as a part of Partners for Resilience (PfR) consortium, participated in the Water as Leverage initiative of the Ministry of Foreign Affairs, Government of Netherlands. The programme is collaborating with cities of Chennai (India), Khulna (Bangladesh) and Semarang (Indonesia) to tackle urban water related challenges in an innovative and inclusive way. Bankable, innovative and comprehensive proposals have been developed for the three cities engaging international design experts.

Wetlands International South Asia worked with design teams in Chennai to embed wetlands in landscape solutions for addressing water risks. Chennai houses some of the largest wetland systems in South India and till the 1980's 80% of the city was covered by wetlands. Now that number has reduced to 15%. Historically, the wetlands were important in providing Chennai with water during drought but are lost to urban expansion. The wetlands in the city are surrounded by areas where economic development is rampant and the pressure to build on them is enormous.

The project has developed templates for using wetlands as natural solutions for meeting water security challenges of Chennai. In the coming year, funding for these concepts will be secured through international donors. Wetlands International South Asia will continue providing technical support to the initiative in the areas of wetland restoration.

A model design for Muthukadu basin straddling the southern boundary of Chennai. The model, developed by Deltares team shows how wetlands can be used as coastal defense

Workstream 3: Vibrant coasts and deltas

The workstream on vibrant coasts and deltas aims at restoring wetlands ecosystems along the coast as an integral part of resilient and productive coastal landscapes. The regional target aims at linking wetlands restoration with coastal zone planning in three deltas and coastal zones.

Enhancing management of Point Calimere Wetlands Complex

Under the aegis of IKI-Wetlands and Climate Change project initiated in October 2018, work on strengthening management planning of Point Calimere Wetlands Complex (Tamil Nadu) was initiated.

Point Calimere Wetland complex, located along the Palk Strait at the apex of Cauvery Delta, is a geographic landmark of the Indian subcontinent. The wetland is located at a point where the Bay of Bengal and the Palk Strait cut each other at right angles. The complex spans 38,500 ha from Point Calimere in the east to Adirampattinam in the west, encompassing Point Calimere Wildlife Sanctuary, Muthupet mangroves and the Great Vedaranyam Swamps.

The wetlands complex is an extremely important staging and wintering ground for migratory birds especially flamingos, ducks, waders, gulls and terns. During 1980-90s, the critically endangered Spoon-billed Sandpiper were ringed here. Large flocks of waterbirds nearing upto a million in number with 6000 flamingos can be regularly sighted in winters. Blackbuck is a flagship species of the sanctuary. The region is also famed as one of the few remaining natural patches of tropical dry evergreen forests in this part of the country. The wetland complex was designated as a Ramsar site in 2002.

High biodiversity values of the wetland complex, co-exist with livelihood dependence of 3000 fisher households harvesting over 100 tons of marine products. Chemplast and some others small scale industries produce around 0.5 M tons of salt every year employing nearly 20,000 people. Mangroves also produce vital ecosystem services such as sustaining coastal productivity, erosion control, and buffering tropical storms.

An approved five - year management plan of Point Calimere Wildlife Sanctuary has an overall objective of species conservation esp. the flagship species i.e. Blackbuck in conjunction with development of ecotourism, promoting research and monitoring and lays special emphasis to consolidation of Point Calimere Wetland complex and its conservation.

The goal of maintenance of ecological character of the Point Calimere wetland complex is constrained by multiple anthropogenic and natural threats. Reduced freshwater inflows and changing monsoon patterns

Point Calimere (Tamil Nadu) is a mosaic of coastal landforms

have adversely affected mangrove structure and diversity. Vedaranyam canal which used to carry freshwater to the complex though still exists but is blocked by a series of bunds and is being increasingly utilized for sea water pumping by the salt producers. Expansion of salt pans and discharge of untreated effluents from the salt industries, is leading to gradual increase in salinity levels. Mudflats, the prime habitats for wintering and foraging migratory waterbirds, have been squeezed by expansion of salt production. *Prosopis* has overrun severe grassland stretches. Extreme events like Gaja cyclone which hit the region in November, 2018 bring about frequent perturbation to the landscape often causing long term changes in vegetation and species habitats.

Over the coming two years, Wetlands International South Asia will work with Forest Department and other key stakeholders to assess multiple ecosystem services and climate risks. A stakeholder driven process of management plan formulation will be implemented with articulation of clear, long-term and short-term objectives, ecological and social outcomes and detailed activity plan.

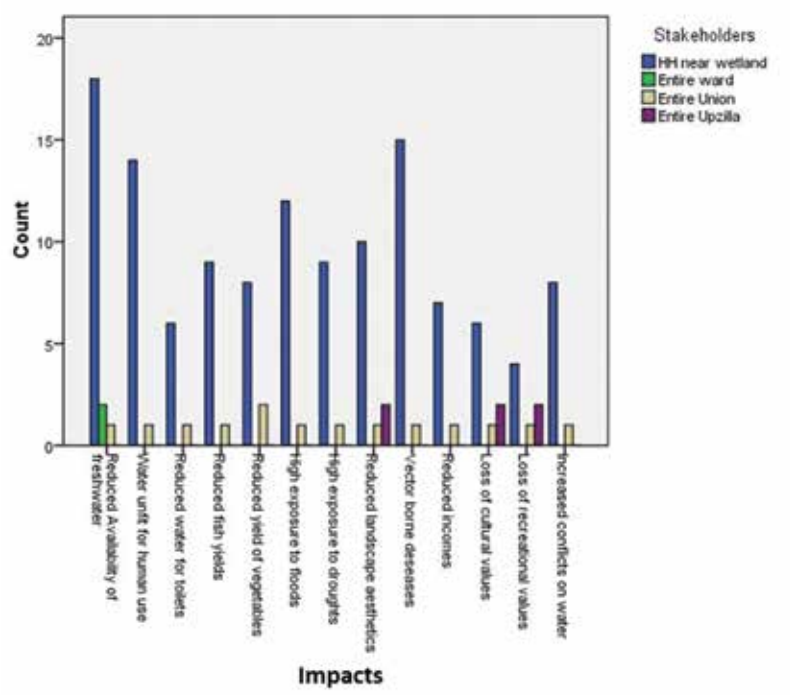
Wetlands and water security in Bhola Island, Bangladesh

Wetlands International South Asia has partnered with DORP (Development Organisation of the Rural Poor), a development NGO, to promote restoration of wetlands as means of enhancing water security in Bhola, the largest island of Bangladesh. The work is done under the aegis of Watershed partnership which aims at empowering citizens to lobby and advocacy at local level for sustainable WASH services.

Bhola island spanning 3403 km^2, is within the estuarine floodplains of Meghna River is inhabited by 1.7 million people. The wetlands, locally known as pukhur (ponds) and khal (natural channels) store and convey freshwater primarily from rainfall for various human and ecological usages. The mainstay of livelihoods in the island, agriculture, was initially dependent on plentiful of freshwater available in the northern and central part of the island. The wetlands provided a natural means of storing freshwater for domestic use. Post-1970s, with the introduction of borewell technologies, the possibility of increasing agriculture intensity emerged, leading to a gradual reduction in dependence on surface water as a single source of freshwater. As the technology to tap deep water aquifers became available with the government agencies, the significance of wetlands in water security reduced. Unplanned expansion of WASH infrastructure led to wetlands being highly polluted. The depth at which water for drinking and domestic use is tapped is presently in excess of 1,000 feet.

During the year a situation analysis on the status of wetlands in Bhola Sadar was conducted to gain insights on ownership pattern and management system of wetlands, ways in which the community benefit from wetlands and is impacted by degradation and opportunities for promoting participatory wetland management for enhancing water security and sustainable WASH. Focus group discussions (FGDs)

Wetlands are frequently used to discharge household waste and sewage in Bhola Island (Bangladesh). In this picture, a pond is seen with full algal bloom



Wetlands degradation affects everyone – right from the households living around till the Upzila level

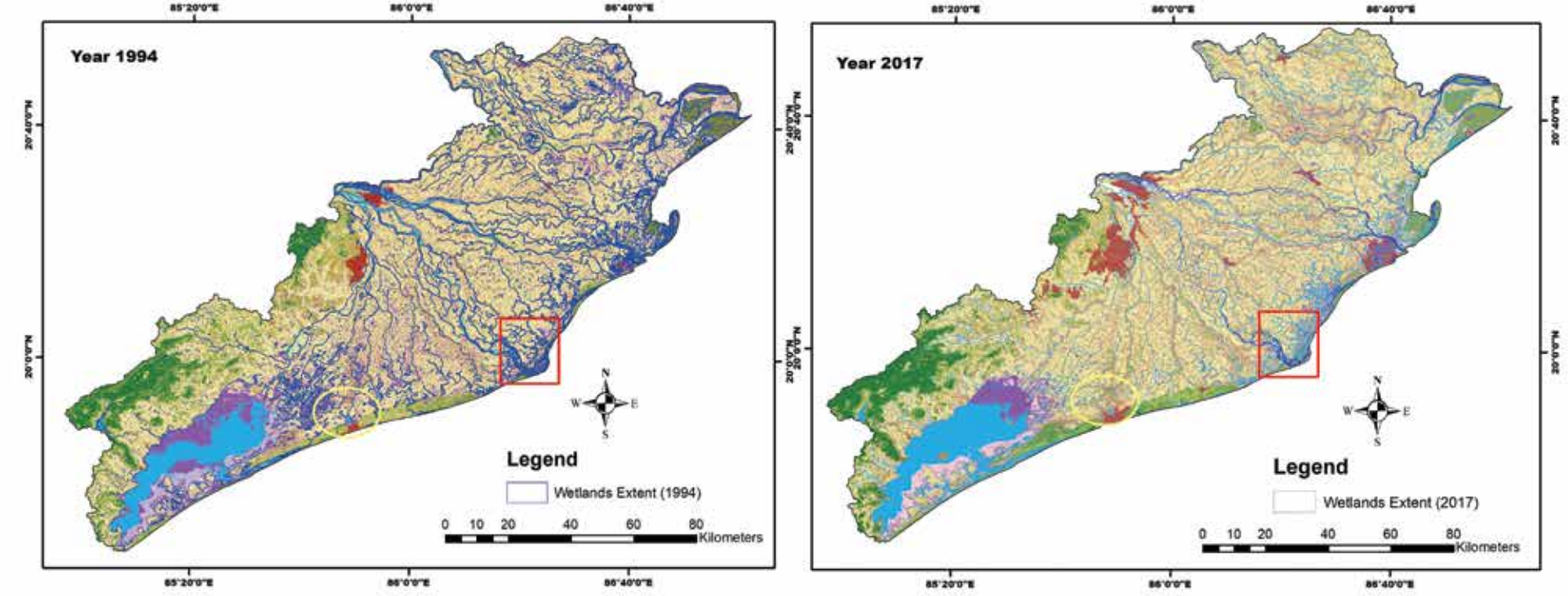
with community representatives and concerned government departments indicated that wetlands were valued for their role in water storage and flood buffering, yet continued to be degraded due to lack of clarity on ownership and management arrangements. A detailed survey of 40 wetlands further elaborated the diverse benefits communities derived from the wetlands and that all sections of society were impacted by their degradation. A number of formal and informal regulations have been placed on wetlands, yet their implementation remained a challenge. As family sizes have increased, majority of wetlands were being converted into housing. Insufficient budget allocation and lack of wetland conservation initiatives in the political agenda were identified as the major limitations in current management mechanisms.

Over the next year the program aims at building the capacity of stakeholders in terms of knowledgebase and implementation of sustainable practices for wetlands conservation. A model water security plan for one union in Bhola Sadar Upazila will be developed which will be critical in highlighting the role of wetlands to achieve sustainable WASH.

Assessing wetlands loss in Mahanadi Delta

River discharge, nutrient load and sediment load of most of the world's largest rivers have experienced great changes in recent decades and are vulnerable to future changes due to the climatic variations and anthropogenic impacts around the globe. The delta systems forming from deposition of sediments at the mouths of these large river catchments are therefore unavoidably affected by these changes. Mahanadi River, one of the largest peninsular rivers in India, forms a large delta spanning 1.38 Mha around the river confluence with the Bay of Bengal. Extensive hydrological fragmentation and land use changes have significantly altered water and sediment distribution patterns within the delta. Loss of connectivity between the river channels and floodplains has made the delta even more vulnerable. Wetlands, which in different forms/regimes are widely distributed within the delta, have faced the wrath of unplanned development and have been rapidly converted to other land use. Two iconic Ramsar sites of the state, Chilika and Bhitarkanika are also facing increasing risks of adverse change. Since, Odisha has been proactive in conservation of these areas through implementation of various management initiatives. Establishing a baseline of wetland extent and identifying major drivers of change for effective management of wetlands within the delta is a prerequisite.

To study the impact of rampant development and hydrological changes on the wetlands of the region, a baseline of wetlands extent was established and the transformation of the wetlands was mapped using remote sensing and GIS-based tools for the period 1994-2017. Assessment of wetlands extent has revealed loss of 43.6% wetlands in the region currently covering 0.09 Mha and forming ca 6.69% of the deltaic region. Major wetlands of the delta show a marked shrinkage in their inundation regimes. Significant portion of the delta ca 7.4% was under settlements in 1994 which increased by ca 69% in the year 2017 covering 0.17 Mha majorly at the cost of wetlands within the delta. On the other hand, artificial wetlands such as aquaculture ponds followed a positive trend with an increase of ca 37% in the area.



Wetlands transformation and loss in Mahanadi Delta (Odisha)

Organizational Development and Governance

Governance

The governance of Wetlands International South Asia is based on a three-tier structure. At the apex is the General Body which provides strategic direction and guides policy making of the organisation. The overall management is vested in its Governing Body. The Office Bearers, comprising the President, Vice President and Treasurer meet periodically to maintain oversight of implementation of various decisions and programme operations. The Director serves as the head of Wetlands International South Asia office and as an ex-officio Secretary to the Society.

The 13th meeting of the Governing Body was held on September 21, 2018. Major decisions taken during the meeting included constitution of a Project Advisory Group for reviewing the ongoing projects. Recommendations for enhancing staff strength, visibility and effectiveness of project delivery were made. An extraordinary meeting of the Governing Body was held on February 25, 2019 during which the process for recruitment of Director as finalized.

The 11th Annual General Body meeting of the Society was held on September 29, 2018. The members approved the annual report for 2017-18 period and the audited financial statements.

The Office Bearers met six times during the reporting period to review progress of implementation of decisions taken at the meetings of Governing Body and General Body.

The Project Advisory Group, constituted as per recommendations of the Governing Body met four times during the year. Management plans for Ramsar Sites of Kerala and Hirakud Reservoir were reviewed. The PAG also reviewed project proposals on ecosystem based DRR and wetlands and climate change adaptation.

The 11th Annual General Body meeting of the Wetlands International South Asia Society

Memorandum of Understanding with Ramsar Regional Center East Asia

At the Ramsar Conference of Parties meeting held in Dubai in October 2018 Wetlands International South Asia and Ramsar Regional Center East Asia signed a Memorandum of Understanding to promote wise use of wetlands in South Asia through capacity development, and supporting application of recent scientific and technical advancements in the management of wetlands. The MoU was signed by Dr Sidharth Kaul (President, Wetlands International South Asia) and Mr Seung Oh Suh (Executive Director, Ramsar Regional Center East Asia, South Korea).

Calendar on Ramsar Sites of South Asia

A 2019 wall and desk calendar featuring Ramsar Sites of South Asia was published. Ramsar Sites from India, Bhutan, Bangladesh, Myanmar, Pakistan, Nepal and Sri Lanka have been featured in the calendar. The calendar was released at the meeting of Project Advisory Committee held on January 17, 2019.

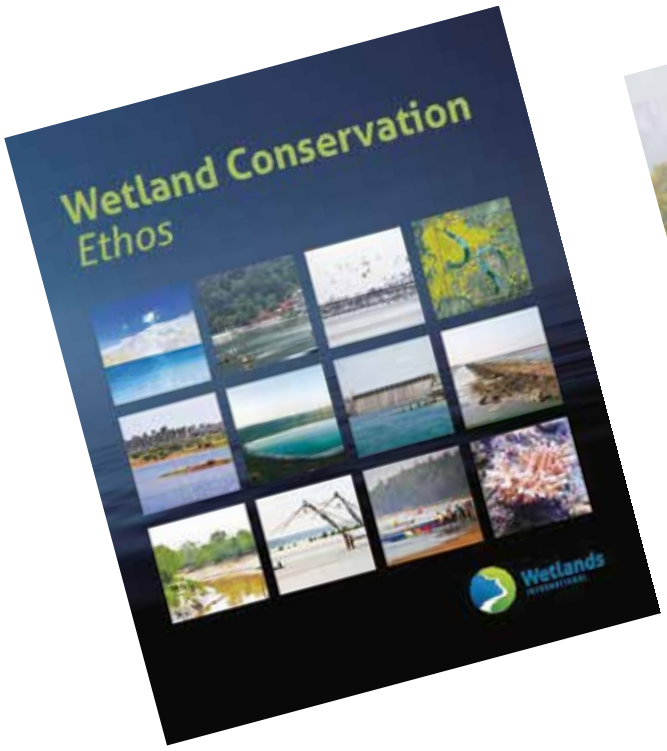
Publication of Sarovar

The fourth volume of organization's newsletter Sarovar was published on the theme of urban wetlands. The newsletter was released on the World Wetlands Day, February 2, 2019 and has been placed on the website for wider dissemination.

Recruitments

The position of Director was advertised in February 2019 as per the process set by the Governing Body. The recruitment was completed in April 2019. Dr Ritesh Kumar was appointed to the position in May 2019.

Mr Dhruv Verma was appointed to the position of Technical Officer – Wetlands Ecology. Dhruv holds a Masters degree in Environment Management from Forest Research Institute. He worked on conservation issues of World Heritage sites at the UNESCO Category 2 Centre, Wildlife Institute of India.



Outlook 2019-2020 and beyond

The Wetlands International strategy, which guides the work of the entire network will be reviewed in 2019, and a new strategy launched for the coming decade 2020-30. The South Asia regional strategy, which guides the work of Wetlands International South Asia shall also be revised during the year.

Policy and programming for water security have received high emphasis in recent times, particularly with the creation of a separate Jal Shakti Ministry and launch of a new water mission. This is an important opportunity for Wetlands International South Asia to showcase the value of wetlands in addressing water security outcomes, and ensure that wetlands conservation is considered within response strategy. The focus shall also be on ensuring that the programs do not end up compromising the biodiversity values of the ecosystem, and consider wetlands only from water storage and regime management perspective. Towards this end, the organization shall formulate projects for priority river basins on integrated management of wetlands. The organization shall also work on building the capacity of wetlands and water sector managers on the integrating wetlands in water resources planning and decision making.

Conservation of high-altitude Himalayan wetlands acquires high prominence given the increasing water insecurity in the landscape and rapid changes attributable to climate change linked drivers and pressures. The model management planning framework development initiated in Sikkim and Himachal Pradesh will be concluded, and the learnings upscaled and replicated in other Himalayan states of the country.

Urban wetlands are increasingly stressed due to unplanned development, high-intensity water and land use, and pollution. Most often, management of urban wetlands tends to be focused on engineering interventions, such as diversion and treatment of pollutants, or improvement of aesthetics by paving and concretizing the shorelines and installing artificial structures. Such 'beatification' initiatives tend to impede the natural wetland processes. Wetlands International South Asia, building from work under 'Water as Leverage' and past work on Yamuna floodplains and other urban wetlands shall focus on building a program centered on the urban wetlands. Engagement will include designing restoration strategies, capacity development, and models of

Urban Wetlands will be a priority programme area in 2020 for Wetlands International South Asia (In photo: Basai in Gurugram, Haryana)

integrating wetlands within urban planning and design frameworks.

While large wetlands and Ramsar Sites have received high policy and programming attention, it is the smaller wetlands which are more vulnerable to land use transformation. Building on the work under Netherlands Ministry of Foreign Affairs Strategic Programmes, the organization will promote community-based wetlands management models, particularly small rural wetlands, and their integration in village-level developmental planning.

2020 will also be year wherein the Convention on Biological Diversity will launch their strategy for the coming decade. Wetlands International South Asia shall work with the entire network at the global level to ensure that wetlands are appropriately considered in the post-2020 strategy. At the national level, the organization will engage with the National Biodiversity Authority and the Ministry of Environment, Forest and Climate Change to ensure that national dialogues on resetting National Biodiversity Targets in line with the post-2020 framework include wetlands.

The 13th Conference of Parties meeting of the Convention on Migratory Species is scheduled to be held on February 2020 in Gujarat. Wetlands International South Asia will work with the WI network and partners to showcase the importance of robust waterbird population estimates for designation of Ramsar Sites and seek fundraising for the same. The organization shall also seek implementation of the Central Asian Flyway Action Plan in the region.

In the runup to the Ramsar 14th Conference of Parties meeting, Wetlands International South Asia shall be preparing a resolution on wetlands monitoring. The organization shall continue providing support to the designation and management of Ramsar Sites.

The focus on capacity development of wetlands managers and stakeholders on integrated management of wetlands will be continued. Tailor-made courses will be delivered to interested state governments.

Within the framework of Memorandum of Understanding with Ramsar Regional Center East Asia, Wetlands International South Asia shall strive to design and deliver a capacity development course for wetlands managers on 'water and wetlands'.

An important priority during the year is to ramp up staff strength and expertise base to respond to demands of projects as well as policy engagement. A blueprint organogram has been developed and approved by the Governing Body for implementation. The document will serve as a guide for recruitment and setting up line management. Alongside, an organizational development plan to enhance visibility and impact will be drafted and implemented.

Financial Overview: 2018 - 2019

During the period April 2018 – March 2019, a total income of Rs. 43.93 million was received. Of this, Rs.39.21 million was on account of project funds received from 5 donor agencies, and the balance, Rs. 4.72 million as interest earned on the reserves. Funds received from Wetlands International – Head Quarters for implementation of Partners for Resilience project was the major source (45%) during the year.

The total expenditure incurred during the year towards various programmatic activities was Rs.27.79 million. Direct overheads stood at Rs. 1.89 million, forming 6.79% of total expenditure. Project expenses were Rs.19.01million, including Rs.6.89 million towards staff salary. On a net, a surplus of Rs.16.13 million was accrued. The total reserves at the end of the financial year stood at Rs. 54.63 million, which is an increase of Rs. 12.31 million over the last year. Overall, the expenses made under projects were fully covered by project incomes. Similarly, the overheads were also well covered by the incomes accrued under staff time.

B.P. Agrawal & Co.

Chartered Accountants

E-931, LG Floor, Chittranjan Park, New Delhi-110019, Phone: 011-41602789,
Mobile: 09312605338, E-Mail: partner@bpcaindia.com,www.bpcaindia.com

[22][FORM NO. 10B

(See Rule 17B)

Audit report under section 12A(1)(b) of the Income-tax Act, 1961, in the case of charitable or religious trusts or institutions

[See rule 17B]

*I/ We have examined the Balance sheet of Wetlands International-South Asia Society Regd. (Pan No: AAATW1125E, A-25, 2nd Floor, Defence colony, New Delhi) as at 31-3-2019 and the Income and Expenditure account for the year ended on that date which are in agreement with the books of account maintained by the said trust or institution.

*I/ We have obtained all the information and explanations which to the best of *my/ our knowledge and belief were necessary for the purposes of the audit. In *my/ our opinion, proper books of account have been kept by the head office and the branches of the above named *trust/ institution visited by *me/ us so far as appears from *my/ our examination of the books, and proper returns adequate for the purposes of audit have been received from branches not visited by *me/ us, subject to the comments given below:

In *my/ our opinion and to the best of *my/ our information, and according to information given to *me/ us, the said accounts give a true and fair view-
(i) in the case of the balance sheet, of the state of affairs of the above named *trust/ institution as at 31-3-2019 , and
(ii) in the case of the Income & Expenditure account, of the Surplus or Deficit of its accounting year ending on 31-3-2019

The prescribed particulars are annexed hereto.

For BP Agrawal & Co
Chartered Accountants
FRN: 001210C

Place : New Delhi
Date : 04-09-2019

C.A. Rakesh Kumar Agarwal
Partner
MS No 095224
UDIN: 19095224AAAAF05064

Notes:
1. *Strike out whichever is not applicable.

2. †This report has to be given by-
(i) a chartered accountant within the meaning of the Chartered Accountants Act, 1949 (38 of 1949); or
(ii) any person who, in relation to any State, is, by virtue of the provisions of sub-section (2) of section 226 of the Companies Act, 1956 (1 of 1956), entitled to be appointed to act as an auditor of the company registered in that State.

Audited Balance Sheet

Particulars		2018-2019	2017-2018	2016-2017
Sources of Funds				
Capital Account		14,10,796	14,10,796	14,10,796
General Reserve				
	Opening Balance	4,23,29,868	3,00,56,142	2,33,27,079
	Add Transfer during the year	1,23,09,503	1,22,73,726	67,29,063
	Closing Balance	5,46,39,371	4,23,29,868	3,00,56,142
Income & Expenditure Account				
	Opening Balance	1,65,40,128	1,65,04,351	1,09,59,688
	Add Surplus during the year	1,61,35,937	1,23,09,503	1,22,73,726
	Less Transfer to General Reserve	(1,23,09,503)	(1,22,73,726)	(67,29,063)
	Closing Balance	2,03,66,562	1,65,40,128	1,65,04,351
Current Liabilities		55,38,021	18,17,531	23,52,908
Total		8,19,54,750	6,20,98,323	5,03,24,197
Application of Funds				
Fixed Assets				
	Opening Balance	8,53,508	9,73,362	10,01,906
	Additions during the year	2,78,300	25,250	1,37,149
	Less: Sale	(5,000)	-	-
	Less: Depreciation	(2,29,370)	(1,45,104)	(1,65,693)
	Closing Balance	8,97,438	8,53,508	9,73,362
Current Assets, Loans, Advances, Deposits& Cash balances		8,10,57,314	6,12,44,818	4,93,50,835
Rounding off Difference		-2	-3	1
Total		8,19,54,750	6,20,98,323	5,03,24,198

Signed in original copy

For BP Agrawal & Co.
Chartered Accountants
FRN 001210C

Rakesh Agrawal & Co.
Partner
MS No.095224

Audited Income and Expenditure Statement

Particulars	2018-2019	2017-2018	2016-2017
Income			
Project Income	3,92,12,117	2,85,80,939	2,85,60,542
Other Income	47,22,567	29,19,405	22,59,430
Total	4,39,34,684	3,15,00,344	3,08,19,972
Expenditure			
Overhead Costs			
Salary	68,96,670	58,10,401	53,88,657
Office running expenses	16,59,310	14,79,225	11,64,248
Organisational Tax	-	59,695	7,56,003
Depreciation	2,29,370	1,45,104	1,65,693
Project Costs			
Sub-contractor/Project Grant	1,23,68,971	68,66,764	65,62,711
Travel Costs	12,48,071	5,11,465	8,59,274
Project Material	98,787	5,18,457	93,695
Communication	89,326	1,14,673	59,853
Financial Charges	(2,78,865)	1,00,369	7,174
Publications	7,20,064	4,43,001	3,91,558
Training/Workshops/Meetings	47,67,043	31,41,686	30,97,381
Total	2,77,98,747	1,91,90,841	1,85,46,247
Surplus During the period	1,61,35,937	1,23,09,503	1,22,73,725
Total	4,39,34,684	3,15,00,344	3,08,19,972

Signed in original copy

For BP Agrawal & Co.
Chartered Accountants
FRN 001210C

Rakesh Agrawal & Co.
Partner
MS No.095224

Publications

Popular

Wetlands Conservation Ethos by Sidharth Kaul and Ritesh Kumar.

Technical Reports

Wetlands of Lahaul Pangi Landscape: A review of current knowledge by Dhruv Verma, Ridhi Saluja and Ritesh Kumar.

Wetlands of Upper Teesta-Kanchendzonga Landscape: A review of current knowledge by Ridhi Saluja, Dhruv Verma and Ritesh Kumar.

Training Manual on Integrated Wetland Management. Module 1 - Wetlands of India: An Introduction by Ritesh Kumar and Sidharth Kaul.

Newsletter

Sarovar, Volume IV, Special Issue - Urban Wetlands.

External Publications

Kumar, R. (2019). Wetlands and Waterbirds in Central Asian Flyway: An overview of status, management and conservation priorities of India. The Journal of Governance, Vol 18, 97-109.

Kumar, R., Finlayson, C. M., and Pattnaik, A. K. (2019). Ecological characterization of Chilika: defining strategies and management needs for wise use. *In* C. M Finlayson, G. Rastogi, A. K Pattnaik and D. Mishra (ed). Ecology, conservation, and restoration of Chilika lagoon, India, Springer, The Netherlands (Accepted for publication).

Kumar, R. and Pattnaik, A. K. (2019). Integrating ecosystem services values in management of Chilika, Odisha. *In* C. M Finlayson, G. Rastogi, A. K Pattnaik and D. Mishra (ed). Ecology, conservation, and restoration of Chilika lagoon, India, Springer, The Netherlands (Accepted for publication).

Kumar, R. and Saluja, R. (2018). Coastal wetlands in India and Climate Change: Status, trends and policy response options. *In* Ramesh, R., and Bhatt, J. R (ed). Climate Change and the Vulnerable Indian Coast, Ministry of Environment, Forest and Climate Change.

Everard, M. et. al. (2018). Assessing the feasibility of integrating ecosystem-based with engineered water resource governance and management for water security in semi-arid landscapes: A case study in the Banas catchment, Rajasthan, India. Science of The Total Environment. (612), 1249-1265.

Gardner, R. C., Baker, C., Davidson, N., Kumar, R and Stroud, D. (2018). Responses in Ramsar Convention on Wetlands. Global Wetland Outlook: State of the World's Wetlands and their Services to People. Gland, Switzerland: Ramsar Convention Secretariat.

IPBES. (2018). Summary for policymakers of the regional assessment report on biodiversity and ecosystem services for Asia and the Pacific of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. IPBES secretariat, Bonn, Germany.

Posters

Wetlands and Climate Change, published on World Wetlands Day, 2019.

Wetlands International South Asia Society General Body

Dr Sidharth Kaul, formerly Advisor (Wetlands), Ministry of Environment and Forests, Government of India (President)

Dr Ajit K. Pattnaik, formerly Principal Chief Conservator of Forests, Government of Odisha (Vice President)

Prof. J. K Garg, Senior Fellow, TERI School of Advanced Sciences New Delhi (Honorary Treasurer)

Dr C. K Varshney, Professor Emeritus, Environmental Sciences, Jawaharlal Nehru University and Distinguished Adjunct Professor, AIT, Bangkok (Member, Governing Body)

Dr Asad Rahmani, formerly Director, Bombay Natural History Society, Mumbai (Member, Governing Body)

Prof. Erinjery J. James, Pro-Vice Chancellor, Karunya Institute of Technology and Science, Coimbatore, Tamil Nadu (Member, Governing Body)

Dr Ashok K. Kundra, formerly Secretary to the Ministry of Mines and Special Secretary, Ministry of Environment and Forests, Government of India

Mr. Sudhir K. Pande, formerly Director General (Forests), Ministry of Environment and Forests, Government of India

Ms. Jane Madgwick, Chief Executive Officer, Wetlands International – Global office, The Netherlands

Prof. M. N Murty, formerly Director, Institute of Economic Growth, New Delhi

Mr. Thokchom Manihar, formerly Project Director, Loktak Development Authority, Manipur

Dr J. S Samra, formerly Chief Executive, National Rainfed Area Authority, Planning Commission, Government of India

Dr N. S Tiwana, formerly Chairman, Central Pollution Control Board, Government of India

Prof. Kailash C. Malhotra, Professor Emeritus, Indian Statistical Institute, Kolkata

Prof. K. V Jayakumar, Professor (HAG) and Dean, Civil Engineering Department, National Institute of Technology, Warangal, Andhra Pradesh

Prof. B. B Dhar, formerly Director, Central Institute for Mining Research of Council of Scientific and Industrial Research

Dr K. K Vass, formerly Director, Central Inland Fisheries Research Institute, Kolkata, West Bengal

Dr J. S Samant, Trustee, Development Research Awareness and Action Institution, Kolhapur, Maharashtra

Mr. J. C Kala, Vice President, Amity Institute of Global Warming and Ecological Studies and formerly Secretary, Ministry of Environment and Forests, Government of India

Dr Lalitha Vijayan, formerly Director, Salim Ali Centre for Ornithology, Coimbatore

Dr N. B Narasimha Prasad, formerly Executive Director, Centre for Water Resources Development and Management, Kozikode

Prof. P. C Kesavan, Professor and Distinguish Fellow, M S Swaminathan Research Foundation, Chennai

Ms. Archana Chatterjee, Programme Manager, IUCN – India, New Delhi

Mr. V. S. R Krishna, Advocate, Supreme Court of India, New Delhi

Wetlands International South Asia Office

Dr Ritesh Kumar, Director

Dr Asghar Nawab, Programme Head (Aquatic Ecology)

Mr. M. L Khan, Administration and Finance Officer

Mr. Dushyant Singh Mohil, Technical Officer - Community Livelihoods & Resilience

Ms. Kalpana Ambastha, Technical Officer - WASH Programme

Dr Ridhi Saluja, Technical Officer - Wetlands Ecology

Ms. Nehha Sharma, Technical Officer - Wetlands Socioeconomics

Mr. Dhruv Verma, Technical Officer- Wetlands Ecology

Mr. Harsh Ganapati, Technical Officer - Water Management

Dr Santosh S. Palmate, Technical Officer - Water Management

Mr. Kamal Dalakoti, Jr. Technical Officer

Mr. Avinash Kumar Saroj, Accountant

Mr. Rakesh Verma, Office Assistant

Mr. Mahendra Kumar, Office Assistant

Stay in touch

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