Wetlands International South Asia

Annual Report 2020-2021

Wetlands International South Asia

Annual Report 2020-2021

Published by
Wetlands International South Asia
A – 25, Floors 1 & 2, Defence Colony
New Delhi – 110024, India
Email: wi.southasia@wi-sa.org

Report ID
2021 – Annual Report – 01

Photographs
Front and back cover: Pong reservoir, Himachal Pradesh
Photo Credits: Wetlands International South Asia Library unless specified

Design and Layout
Sugandha Menda

Wetlands International South Asia

Our Background, Structure and Areas of Work

Wetlands International South Asia is a nongovernment 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 20 regional and national offices and expert networks with Global Office 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). 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 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 enables 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:

- integrated management planning
- wetland inventory, assessment and monitoring system
- valuation of ecosystem services and biodiversity
- environmental flows assessment
- conservation of critical habitats of wetland- dependent species,
- capacity development for integrated wetland management
- policy formulation support
- community-led ecosystem-based approaches for disaster risk reduction
- communication, education and outreach

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. Dr. C. K. Varshney (Professor Emeritus, Environmental Sciences, Jawaharlal Nehru University), Dr. E. J. James (Professor Emeritus, Karunya University), Dr. Asad Rahmani (former Director, Bombay Natural History Society), Dr. Sara Ahmad (Founder, Living Waters Museum), and Dr. Harini Nagendra (Professor, Azim Premji University) serve as elected members of the General Body. Ms. Jane Madgwick, CEO, Wetlands International represents Wetlands International on the Governing Body.

Chandertal, a high-altitude wetland in Himachal Pradesh

FROM THE PRESIDENT

It gives me great pleasure to present the Annual Report for the period April 2020 – March 2021. The year 2021 was marked by the Corona pandemic which forced us to work largely online. During the lockdown, as economic activities ceased and very little human activities were seen in nature, we noticed an increase in waterbirds in some of the wetlands and improvement in water quality as well. However, there were negative impacts as well, as it affected our technical team, forcing many to get admitted to hospitals and claiming life of one of our staff members. In spite of these challenges, we continued our mission of working in these odd circumstances, focussing on work which could be done remotely. Our work on conservation of high-altitude wetlands, wetlands and climate resilience, integrating wetlands in development, inventorying floodplain wetlands, and strengthening wetlands management are briefly outlined in this annual report.

2021 marks the silver jubilee year of our organization, as it was in 1996 that we began our work in South Asia through an office in New Delhi. With a humble beginning from an ecotourism project in Chilika wetland in Odisha, our work now spans over 11 states of India, and across Nepal, Bangladesh and Maldives. In these 25 years, we have made considerable contributions especially in the field of wetlands management planning, strengthening the Ramsar Site network, incorporating wetlands in development programmes such as disaster risk reduction, capacity development at multiple levels, and strengthening institutions.

Our Silver Jubilee year is being celebrated in a befitting manner with a number of events taking place round the year. We are reaching out to children and youth who have a special place in conserving wetlands. During this silver jubilee year, we are organising various competitions such as photography, slogan contests, essay competitions that will allow children and youth to express their multifaceted understanding of wetlands, and their relevance for nature and society. We will also be organizing a series of webinars to raise the profile of wetlands amongst general public. I hope you will join us in these events, and also help spread the word.

We are also engaged in setting a stage for developing a platform to work in a collaborative manner with South Asian countries. On request of our South Asian partners, a training programme is being organised in October this year on water related issues in a virtual mode.

Once again, I take this opportunity to thank all office bearers, members of the Governing Body, members of the General Body and our Nominated Members for their very useful inputs and making a way forward for our organisation to excel. I also thank our technical and administrative staff for their dedicated and sincere work. I am sure with your continued support we will be in a position to move forward to conserve and manage wetlands in a more result-oriented manner.

Dr. Sidharth Kaul
President

CONTENTS

ABBREVIATIONS

AWC	Asian Waterbird Census
BNHS	Bombay Natural History Society
CAF	Central Asian Flyway
CCA	Climate Change Adaptation
CEPA	Communication, Education and Public Awareness
CMDE	Centre for Management of Degraded Ecosystems
CMS	Convention on Migratory Species
CoP	Conference of Parties
CSO	Civil Society Organisation
DEM	Digital Elevation Model
DDMP	District Disaster Management Plan
DORP	Development Organisation of the Rural Poor
DRR	Disaster Risk Reduction
Eco-DRR	Ecosystem based approaches for Disaster Risk Reduction
EKW	East Kolkata Wetlands
EKWMA	East Kolkata Wetlands Management Authority
EMR	Ecosystem Management and Restoration
FGDs	Focus Group Discussions
GEF	Global Environment Facility
GLOF	Glacial Lake Outburst Flood
GoI	Government of India
GoHP	Government of Himachal Pradesh
GPDP	Gram Panchayat Development Plan
GPDRR	Global Platform for Disaster Risk Reduction
GWC	Gurudongmar Wetland Complex
HAW	High Altitude Wetlands
ICEM	International Centre for Environment Management
IGNFA	Indira Gandhi National Forest Academy
ILEC	International Lake Environment Committee
IKI	International Climate Initiative
INTACH	Indian National Trust for Art and Cultural Heritage
IRM	Integrated Risk Management
IWC	International Waterbird Census
MoEFCC	Ministry of Environment, Forest and Climate Change
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MoU	Memorandum of Understanding
NATCOM	National Communication to UNFCCC
NPCA	National Plan for Conservation of Aquatic Ecosystems
NDWI	Normalized Difference Water Index
NGO	Non-Government Organisation
PfR	Partners for Resilience
PRI	Panchayati Raj Institutions
RIS	Ramsar Information Sheet
RRCEA	Ramsar Regional Centre East Asia
SEEDS	Sustainable Environment and Ecological Development Society
SOP	Standard Operating Procedure
SWAK	State Wetlands Authority Kerala
TDEF	Tropical Dry Evergreen Forest
TNC	Third National Communication
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UPSWA	Uttar Pradesh State Wetlands Authority
VWSC	Village Water and Sanitation Committees
WISA	Wetlands International South Asia
YEW	Youth Engaged in Wetlands

FROM THE DIRECTOR'S DESK

In 2021, the Ramsar Convention on Wetlands marks its 50th anniversary. By pitching the wetlands conservation agenda on 'wise use', the progenitors of the Convention sought to appeal to the developing and under-developed countries, wherein wetlands use for meeting various human development outcomes was conspicuous, and a strict nature protection regime was highly likely to be less appealing. The continued loss and degradation of wetlands globally and in South Asia indicates a failure by wetland managers and policy-makers to come to grips with the increasing human imprint on wetland resources, biodiversity, and ecosystem services.

India has established the largest network of Ramsar Sites in South Asia, and nearly 8% of the country's recorded wetland extent comes under this network. While we have contributed to this virtuous goal, we are also conscious that management of these wetlands needs considerable upgradation, and systematic monitoring systems need to be put in place to detect risk of adverse change in these sites, and support implementation of effective management responses.

It is apparent that solutions for addressing wetland loss in the Anthropocene will need to be built on a more nuanced understanding of the relationship between human society and nature, including wetlands, as well as understanding human situatedness within these. The model of integrated management planning, which we developed and field tested in several sites, is increasingly being adopted in the national programme. Yet, accelerating anthropogenic drivers and climate change are limiting effectiveness of stationarity-based management approaches, especially those which build upon past knowledge of ecosystems. We are field testing methods for hydro-geomorphic assessment and climate risk assessment, which will enable consideration of wetlands conservation as nature-based solutions for addressing societal challenges of water and climate security.

A significant policy development this year is framing of the Post 2020 - Global Biodiversity Framework under the aegis of the Convention on Biological Diversity. A crucial element of the first draft is 2030 Action Targets, which when achieved will indicate that the world is on track to achieve 2050 vision. An ambitious proposal is to conserve 30% of terrestrial and 30% of marine areas through a system of well-connected and effective system of protected areas and other area based effective conservation measures. By not lumping wetlands within either terrestrial and marine area targets, systematically addressing degradation of wetlands, can assist India and the South Asia region in meeting these high-level ambitions.

Under the guidance of an illustrious board, and the backing of a strong team, Wetlands International South Asia is consolidating and building upon a forward looking and impact-driven programme that can secure the future of wetlands in an increasingly uncertain world.

Dr. Ritesh Kumar
Director

2020-2021: IN A NUTSHELL

Wetlands International South Asia works for its mission to 'sustain and restore wetlands, their resources and biodiversity' within the framework set in the South Asia Regional Strategy 2015-25. Regional targets under three workstreams (healthy wetlands nature, vibrant coasts and deltas, and replenished water stores from mountains to the sea) guide interventions in the form of funded projects, capacity development, communication and outreach and policy support actions. During 2020-21, our work covered the following five areas, cutting across one or more workstreams:

- Wetlands and climate resilience
- Conserving high-altitude wetlands
- Local action for integrating wetlands in development plans
- Strengthening wetlands management
- Mobilizing citizen-science for waterbirds

2020-2021 was marked by the corona-pandemic, and lockdown in the country prohibited any field work and travel for its major parts. The focus was therefore on completing the ongoing assessments and technical reports, while also continually liaising with the field partners and supporting implementation virtually. Following are the major highlights of work during the year:

- A biogeographic zone level climate vulnerability assessment of Indian wetlands was completed. This forms a part of the Impact-Vulnerability-Assessment commissioned by the Ministry of Environment, Forest and Climate Change (MoEFCC) for the country's Third National Communication to the United Nations Framework Convention on Climate Change (UNFCCC). Natural wetlands located in the Trans-Himalayas, Himalayas, Deserts, Coasts and Islands have been assessed to be the most vulnerable to impacts of climate change.
- Drafting of management plans for two high-altitude wetlands of Himachal Pradesh and Sikkim were completed, and presented for stakeholder reviews. The two wetlands are in near pristine conditions, but under stress due to rapid spurt in tourism, and impacts of climate change. Based on the experiences of work in the Himalayan region, a guidebook on management of High-Altitude Wetlands was published.
- A remote sensing based predictive inventory of wetlands of Chandra Bhaga Basin was completed. The modelling indicates presence of wetlands in 6,583 ha of the basin, which is considerably higher than the available inventories which have focused mostly on high altitude lakes.
- 200 floodplain wetlands of River Ganga in Uttar Pradesh were surveyed. Assessments indicated 80% loss of wetlands in the 10-kilometer buffer during 2000-2019, with smaller wetlands being lost a higher rate. The data will feed into sub-basin scale management planning for the wetlands of the River Ganga.
- In 25 panchayats, wetlands were embedded in water security planning and development planning. In Bhola Sadar District of Bangladesh, the Upzila Parishad, realizing the value of water security planning, decided to replicate the process in the remaining 12 unions.
- Management plan for East Kolkata Wetlands was updated for 2021-25. Since the designation, the Ramsar Site has undergone considerable land use change, and its waste recycling capability has been severely compromised.
- Asian Waterbird Census, conducted in January 2021 covered over 600 sites in 15 states, wherein 201 waterbirds and wetland-dependent birds were sighted.

Our work reached out to over 200 wetlands in 11 states of India, and Bangladesh. The five year-Government of Netherlands funded Strategic Partnership Programmes on Integrated Risk Management and Sustainable WASH came to a close this year. The experiences of programme implementation have been compiled in the form of a flagship report – Local Action, Global Ambition. The work of disaster resilience will continue with focus on wetlands as Nature-based Solutions for disaster risk reduction and climate change mitigation and adaptation.

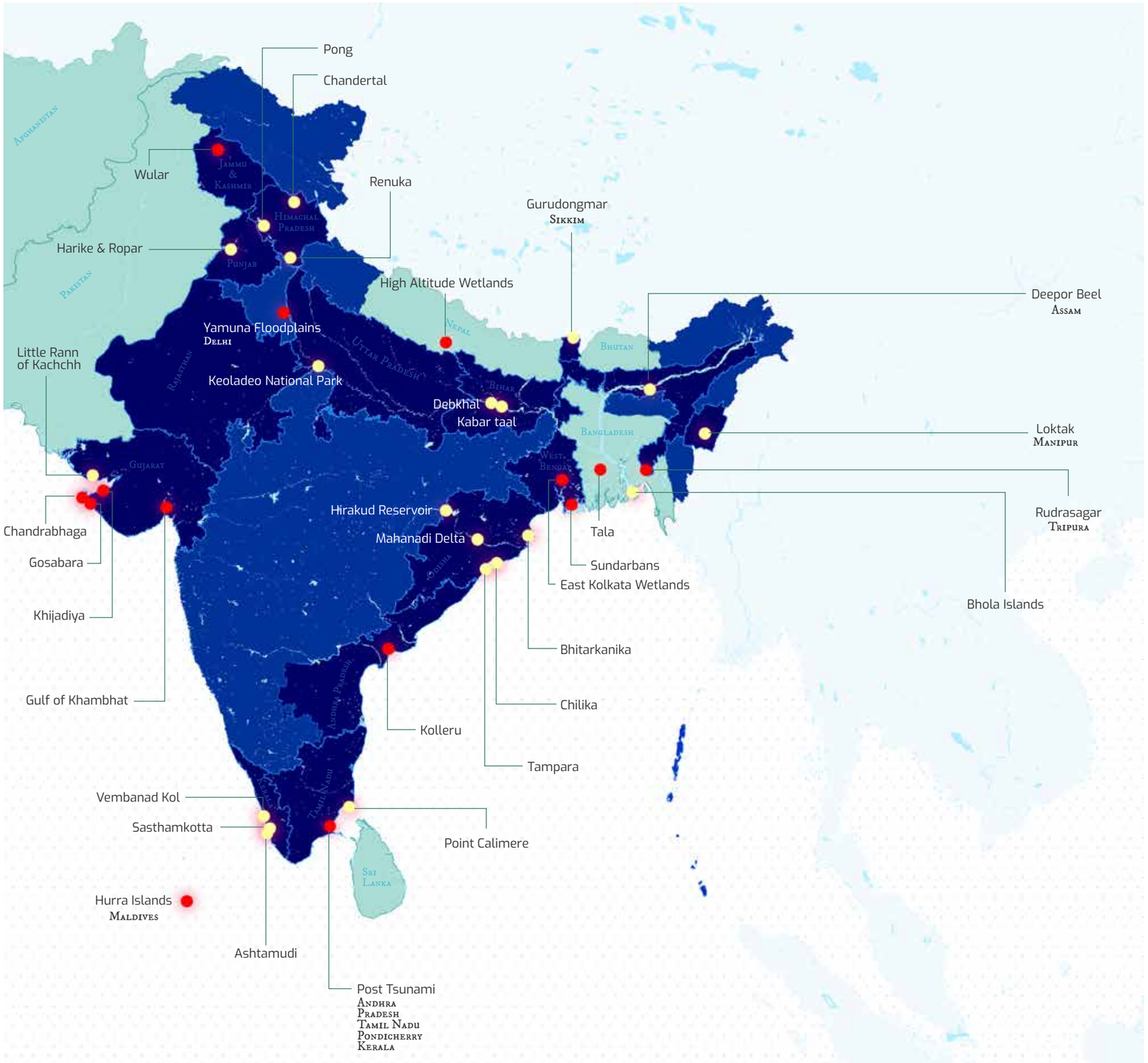
A five-year GEF funded national-scale project 'Integrated Management of Wetlands Biodiversity and Ecosystem Services' was launched during the year. The project is funded by the UN Environment Programme (UNEP), with Wetlands Division of the MoEFCC as the National Executing Agency and Wetlands International South Asia as the Lead Technical Partner. Under its four components of knowledge and tools, capacity development, demonstrating integrated management and monitoring and evaluation systems, the project will help address key barriers limiting consideration of ecosystem services and biodiversity values in management.

Our work is garnering impact. At the level of the Ministry, there is a shift from funding site management plans based on annual cycles to integrated management plans. The ambit of the wetlands rejuvenation programme has been increased to cover all districts of the country wherein a four pronged approach - preparation of brief documents, rapid assessment of wetland health, constitution of stakeholder committees, and drafting framework integrated management plans are being applied. The National Mission on Clean Ganga, is replicating the inventory and management planning approach adopted in the floodplains of Uttar Pradesh to other basin states, and an initiative of similar nature is close to commissioning in Bihar. Wetlands were included in the formal curriculum of the training of Indian Forest Service Probationers, and the first two-day module run in September 2020. In Delhi, the virtual trainings and handholding provided to the various government departments having jurisdiction over wetlands, has resulted in 300 wetlands being surveyed and brief documents prepared.

The General Body adopted revision of the Rules and Regulations, most significant being the broadening of the Governing Body membership to bring in diversity of age, gender and sector experience. A membership and networking strategy was also adopted, which will enable the organization to bring on board new members, and increase representation.

The staff strength during the year increased from 13 to 17, and skillsets in operations and management, communications, wetlands and water quality, and spatial modelling were brought on board. Office operations were streamlined through introduction on online collaboration tools.

During the period April 2020 – March 2021, the organization received funds to the tune of Rs. 46.88 million, of which Rs.40.99 million was on account of project funds received from 7 donor agencies, and the balance, Rs. 5.89 million as interest earned on the reserves. The total expenditure incurred during the year towards various programmatic activities was Rs.26.27 million. With a surplus of Rs.20.61 million, the total reserves at the end of the financial year increased by 20%, further contributing to financial stability of the organization.



OUR PRESENCE

- STATES WITH ACTIVE PROJECTS
- WETLANDS
- ON-GOING PROJECTS
- COMPLETED PROJECTS

WETLANDS AND CLIMATE RESILIENCE

Highlights

- A biogeographic zone level climate vulnerability assessment of wetlands was concluded. The assessment places natural wetlands located in Trans-Himalayas, Himalayas, Desert, Coasts and Islands as the most vulnerable, followed by wetlands in the semi-arid and Indo-Gangetic plains.

- Climate vulnerability assessment of four Ramsar Sites was initiated to identify risk reduction measures for incorporation in site management plans.

Point Calimere, wherein nearly 50,000 Greater Flamingo have been sighted in 1985-86 has been receiving significantly fewer numbers in the recent years

Climate vulnerability assessment of Indian wetlands

The Ministry of Environment, Forest and Climate Change (MoEFCC), within the preparations for India's Third National Communication (TNC), has included wetlands within assessments related to Impacts, Vulnerability and Adaptation. Wetlands International South Asia under the ambit of the GoI-GEF-UNDP project entitled 'Preparation of the TNC and other new information to the UNFCCC (NATCOM Project) was assigned a research project to develop a climate change adaptation framework for Indian wetlands.

The analysis of impact of climate change on wetlands was done using a systematic literature review of 600+ peer-reviewed publications pertaining to different biogeographic zones. The vulnerability analysis of wetlands has been based on assessment of their sensitivity to and inability to adapt or moderate the consequences of climate change and other (anthropogenic) pressures on ecological character. Sensitivity of impacts to climate change has been assessed in terms of hydrology (water level, sources, and quantity), physical form (area and wetland type), species and habitat (range shifts, species composition, instances of diseases and spread of invasives, and impact on flagship, keystone or species of high

conservation significance), biogeochemical processes (availability of nutrients, sediment flux, primary productivity), water quality (temperature, salinity regimes, nutrient contents) and impacts on ecosystem services. The adaptive capacity of wetlands in a biogeographic zone has been assessed in terms of drought and flood resistance, salinity tolerance, temperature tolerance, species diversity and reproduction capacities, habitat connectivity and wetlands area tolerance.

The assessment indicates that the natural wetlands located in Trans-Himalayas, Himalayas, Desert, Coasts and Islands are most vulnerable in the country. Wetlands in Semi-arid and Indo-Gangetic plains biogeographic zones are moderately vulnerable. Wetlands of Deccan Peninsula, North-East and Western Ghats have low vulnerability to climatic changes. The vulnerability assessment report is currently under review of the climate change division of the MoEFCC.

Variation in intensity of climate impacts on wetlands across Biogeographic Zones

Biogeographic Zones	Physical Regime						Extraction			Introduction				Structural Modification			Habitat/Species-level Changes				
	Water Quantity	Water Frequency	Inundation Regime	Sediment	Salinity	Thermal	Water	Biota	Soil & Peat	Nutrients	Chemicals	Invasive Species	Solid Waste	Drainage	Conversion	Burning	Habitat Loss/Modification	Species Composition	Migration Pattern	Range Shifts	Productivity
Trans-Himalayas																					
Himalayas																					
Semi-Arid																					
Desert																					
Indo-Gangetic Plains																					
North-East																					
Western Ghats																					
Deccan Plateau																					
Coastal																					
Islands																					

LEGEND

Most Vulnerable

Moderately Vulnerable

Least Vulnerable

Not Relevant/Data Not Available

Climate risk assessment of Ramsar sites

Under the International Climate Initiative (IKI) funded 'Wetlands Management for Biodiversity and Climate Protection' project, Wetlands International South Asia is working with the project commissioning agencies, the MoEFCC and GIZ-India, for integrating climate risks in wetlands management planning. Launched at Ramsar CoP 13 in 2018, the project works in four Ramsar sites, namely, Pong and Renuka (In Himachal Pradesh), Bhitarkanika (in Odisha) and Point Calimere (in Tamil Nadu).

In 2019, hydrological, ecological and socio-economic assessments at the four sites were commissioned to establish baselines for management planning, and to identify specific risks of adverse change in the site's ecological character. These baselines were completed during the year, and used as a basis for description and evaluation of ecological character and institutional arrangements for wetlands management. During the year, climate vulnerability assessments were also commissioned for the four sites, bringing on board ICEM (International Centre for Environment Management), a technical service centre specialized in conducting such analysis. The assessment for Point Calimere could be concluded, as the required field work was done prior to the onset of lockdown.

Climate risks for Point Calimere Ramsar Site are likely to be mediated in the form of changes in precipitation (increase in rainfall during SW and NE monsoon and decline in summer rainfall), changes in temperature (temperature increased during SW monsoon, NE monsoon, summer and winter), and extreme events (sea-level rise, cyclone and storm surges). The predicted increase in the rainfall due to climate change in both south west and north east monsoon seasons are liekly to bring more fresh water and sediments into the mangroves resulting in reduction in salinity, enabling land building process due to sedimentation. This will have a positive influence on mangrove health as nutrient rich freshwater and sediments are available. An increase in density and canopy cover will in turn enhance coastal protection.

Within the Great Vedaranyam Swamps, a reduction in salinity will increase the productivity of mudflats, since less saline water favours phytoplankton and zooplankton growth. However, there is a possibility of increased concentration of pollutants such as heavy metals, pesticides and agriculture fertilizers which may have a negative impact on the planktons and invertebrates which the birds rely on.

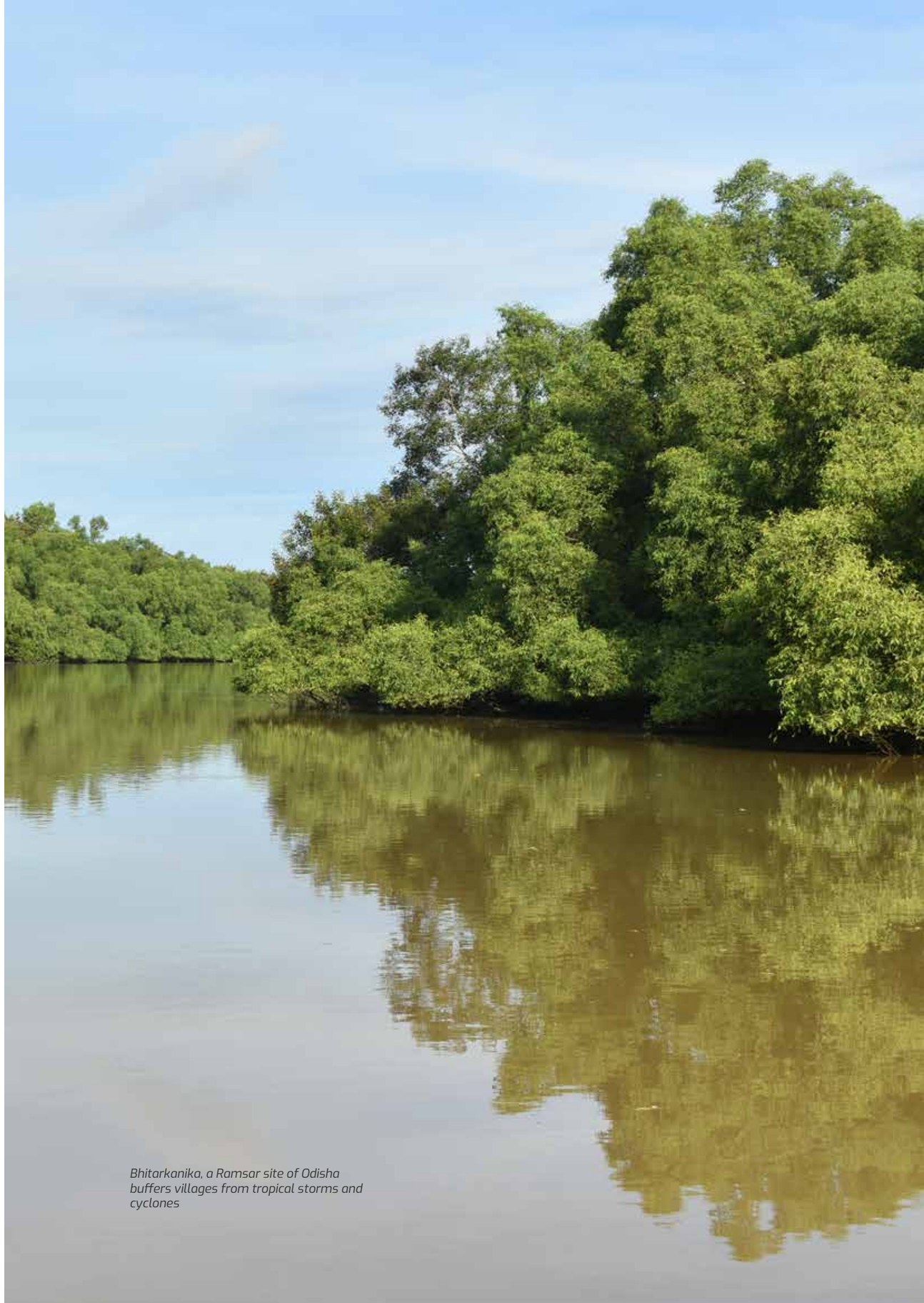
The predicted increase in temperature during summer will increase the water and soil salinities thus adversely affecting the mangrove growth and health, and instances of shoot dieback. The saline sensitive

species belonging to *Rhizophoraceae* are likely to become extinct. Within the Vedaranyam swamps, a declining mudflat productivity will reduce its suitability as a waterbird habitat. The TDEF region is also likely to degrade further, with the spread of drought tolerant *Lantana sp.* and *Prosopis*.

The mangroves in the Point Calimere will have high vulnerability to the predicted sea level rise. In Muthupet, submergence of mangroves will lead to loss of mangrove extent as the vertical elevation of the mangrove floor will be less due to lack of sufficient sediment supply from the rivers. About 441 ha and 875 ha are likely to be inundated due to rising sea level at 0.5 and 1 m level rise. Further, movement of mangroves into the elevated areas will be less as most of the area already has thick patches of *Prosopis* and halophyte species like *Suaeda*.

The mangroves of Point Calimere are likely to be physically damaged on account of increasing frequency and intensity of tropical cyclones, especially the sparser regions of Muthupet. *Avicennia*, which is able to coppice after the cyclone, may be at an advantage. The Vedaranyam swamps are likely to face major topographic changes, and highly saline, rendering the region very highly vulnerable. The TDEF vegetation may suffer high destruction, and loss of grasslands, stressing dependent species. Increased storm surges and consequent prolonged water stagnation may suffocate mangrove roots. In the Vedaranyam swamps, extensive inundation will affect the burrowing animals, and reduce productivity due to increase in salinity. Saline water intrusion into the grasslands may lead to their reduction, thus stressing the dependent communities.

The climate vulnerability assessments will form an integral part of the site management plans, with specific vulnerability reduction actions forming a part of the action plans. The plans are in various stages of completion, and will all be finalized in 2021.

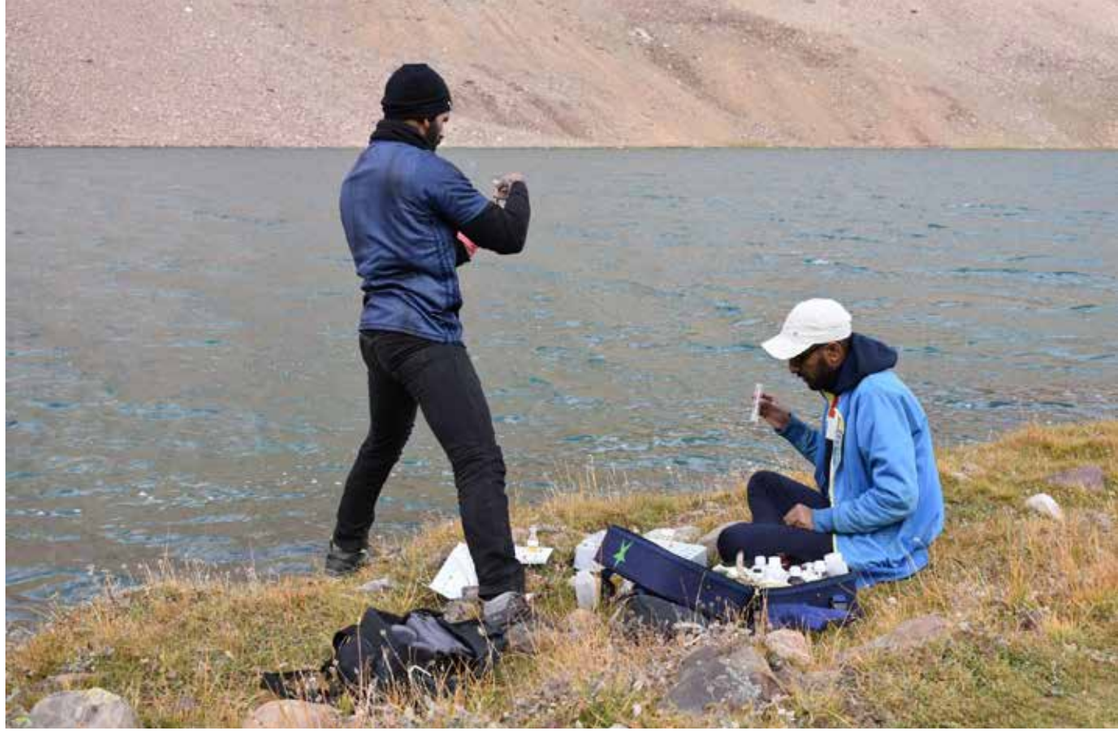


Bhitarkanika, a Ramsar site of Odisha buffers villages from tropical storms and cyclones

CONSERVING HIGH-ALTITUDE HIMALAYAN WETLANDS

Highlights

- Developed management plans for two high-altitude wetlands in Sikkim and Himachal Pradesh
- Completed a remote-sensing based predictive inventory of wetlands of Chandra-Bhaga Basin
- Prepared a guidebook on management of High-Altitude Wetlands



WISA team conducting water quality testing at Chandertal

Management planning for Chandertal

During the year, we completed drafting the management plan for Chandertal, a Ramsar Site of Himachal Pradesh. Fieldwork for data collection and stakeholder consultations were completed in three missions held in 2019, prior to the pandemic.

Nested within the upper part of River Chandra sub-basin and flanked by Pir Panjal and Zanskar mountain ranges, Chandertal is one of the significant High-Altitude Wetlands (HAW) of the north Indian state of Himachal Pradesh. This crescent-moon shaped wetland spanning 46 ha at an elevation above 4,300 m amsl is a distal lake of the Chandra Bhaga glacier complex. Chandertal forms a conspicuous element of the cold and arid landscape of Spiti, sustaining diverse life forms, including the iconic and globally vulnerable Snow Leopard *Panthera uncia* - the state animal of Himachal Pradesh. The peatlands on the western margins of the wetland are a rich carbon store. Chandertal forms an integral part of the Central Asian Flyway (CAF) network, and is used by a range of migratory waterbird species in their sojourn from temperate to tropics for completing their lifecycle, such as Ruddy Shelduck, Garganey and Gadwall. Chandertal is a popular tourist destination and a cultural icon, annually visited by over

40,000 tourists and providing livelihoods to residents of 10 villages of Kaza and Keylong divisions.

The MoEFCC, in 2005, designated Chandertal as a Wetland of International Importance under Ramsar Convention site designation criterion 2 (owing to presence of high conservation value species such as Snow Leopard and Himalayan Marmot) and criterion 3 (role in sustaining biological diversity of high-altitude regions of western Himalayas). This designation commits the Government of India (GoI) and the Government of Himachal Pradesh (GoHP) to wise use of Chandertal by ensuring maintenance of ecological character and in particular preventing any human induced adverse change. In 2007, the upper part of Chandra sub-basin spanning 3,856 ha was declared as a Protected Area under the Wildlife (Protection) Act, 1972, with Chandertal being the core.

Chandertal is in a near-pristine state, however is undergoing gradual transformation in response to the cryospheric changes in the Trans Himalayan region as well as anthropogenic stresses. Increasing warming of the basin and gradual predominance of rainfall precipitation in Chandra Basin is highly likely to increase inundation regime variability as well as flux of water and sediments. The gradual increase in size of Samudri Tapu also presents the risk of Glacial Lake Outburst Floods (GLOF), an extreme event that may fundamentally alter the entire landscape. The greening and upward shift of alpine vegetation may increase nutrient transport to the wetland. An issue of great concern is rapid spurt in tourism, increasing nearly 20-fold in the last two decades, and bringing along the challenges of irresponsible tourist behaviour, solid-waste management challenges and disturbance to wildlife habitats. Several elusive mammals remain unsighted due to high livestock densities, presence of guard dogs, and lack of wild prey.

The management plan formulated in consultation with concerned government line departments, village pradhans, CSOs and tour operators, builds action around five components: namely institutions and governance; wetlands inventory, assessment and monitoring; water regime and habitat management; communication, education, participation and public awareness; and, promoting of responsible wetland tourism. At the core of the management actions is establishment of a Lahaul and Spiti District Wetlands Committee to oversee convergence of sectoral actions around wetlands and its catchments, regulation of tourism and putting in place a comprehensive wetland monitoring arrangement to guide adaptive management. The existing peatlands within the catchment are also proposed to be protected from high-intensity grazing, and drying. Wetlands International South Asia has recommended that the wetland management plan be adopted as an integral part of the Chandertal Sanctuary management plan, and posed for funding to the National Plan for Conservation of Aquatic Ecosystems of the Ministry of Environment, Forest and Climate Change, Government of India.

Management planning for Gurudongmar

During the year, the integrated management plan for Gurudongmar Wetland Complex (GWC), a HAW of North Sikkim was finalized. This was under the GoI-UNDP-GEF supported Secure Himalayas project. Field work for the management planning was undertaken in 2019, and the drafting completed in the current year.

Situated in North Sikkim District 5 km away from international border and perched at elevation of 5150-5430 m amsl, the GWC spans 329 ha and forms the headwaters of Teesta River. The three wetlands of the complex cumulatively store 170 MCM of precipitation providing a flood buffer to downstream communities of Chopta, Thangu and Lachen. The alpine meadows of the region lock atmospheric carbon in peat, thus reducing the emissions of Greenhouse gases in the region. The mosaic of habitats within the GWC is inhabited by diverse species which include at least 52 bacterial isolates, 15 phytoplankton, 20 macrophytes, 2 amphibians, 9 waterbird species and 15 mammal species. Four species of ungulates including Kiang, Blue Sheep, Tibetan Gazelle, Tibetan Argali are endemic to the region. The picturesque landscape of GWC not only holds cultural relevance for local people, but also interests throngs of tourists. The wetland complex is designated as a sacred lake of the state finding special mention in several local legends and folklores. Local people hailing from the entire state of Sikkim take yearly pilgrimage to GWC, marking their socio-cultural linkages with the wetland complex. The wetland has been identified as a priority conservation site under various programmes of the State and Central Government, and receives protection under the Places of Worship (Special Provision) Act, 1991.

An evaluation of wetland features has indicated wide-ranging impacts of climate change. In the last two decades, the overall snowfall has declined while rainfall has become erratic. As the glaciers of the basin have receded, the two ice contact proglacial lakes in GWC have undergone an increase in area by over 25%. These changes have been taking place in the backdrop of a rapidly increasing tourism pressure. In 2018, nearly 0.2 million tourists visited the wetland which is nearly four times the number in 2016. Influx of tourists, construction of roads and expansion of human settlements are disturbing the wildlife habitat. This is further exacerbated by an increase in the number of feral dogs in the landscape, which were observed to feed upon leftover garbage of tourists, army camps & villagers, and freely range in upper stretches of the landscape to hunt species like Himalayan marmot, Kiang, and other wild or domestic species.

The management plan for GWC has been structured around six strategies, namely setting up a harmonized and

Gurudongmar Wetland Complex, a glacier fed wetland in Sikkim

well-defined institutional structure for wetland management; wetland monitoring system to support adaptive management; ensuring sustainable and responsible tourism; and behavioural change towards wetlands conservation and wise use.
The management actions pertain to five components: Institutions and Governance, Wetlands Inventory Assessment and Monitoring, Communication, Education, Participation and Public Awareness, Habitat Management, and Responsible wetland tourism. The draft plan was presented to the Sikkim Wetlands Authority and recommendations incorporated in the final revision.

Probabilistic modelling of wetlands of Chandra-Bhaga Basin

Inventorying HAW on the basis of satellite data alone has been fraught with challenges such as availability of images of adequate quality and albedo effect. Ecological niche models, although historically used for species distributions, provide a promising means for delineating HAW due to wetland positional correlation with climatic and topographic features, thus augmenting the information generated by satellite data alone.

During the year, a probabilistic modelling of HAW of Chandra-Bhaga Basin was undertaken, as a part of the UNDP-GoI-GEF funded Secure Himalayas Project. MaxEnt (maximum entropy) a non-parametric model which relies on known occurrences to predict probabilistic distribution of HAW on the basis of geographic suitability indicators was used.

The sub-basin was modelled using surface-corrected Aster digital elevation model (DEM) data to capture spatial topography, and temporal features driven by seasonal precipitation. Bioclimatic variables were also modelled to capture the seasonality effects of precipitation and temperature. Existing wetlands were extracted from the remotely sensed Sentinel 2B imagery employing a Normalized Difference Water Index (NDWI) method and modelled to locate their spatial distribution in the MaxEnt Spatial analysis.

As a training dataset, existing inventory of High-Altitude Wetlands of the sub-basin was extracted and digitized (128 presence records used for training and 54 presence records used for testing, following two-thirds and one-third ratios of test and training dataset).

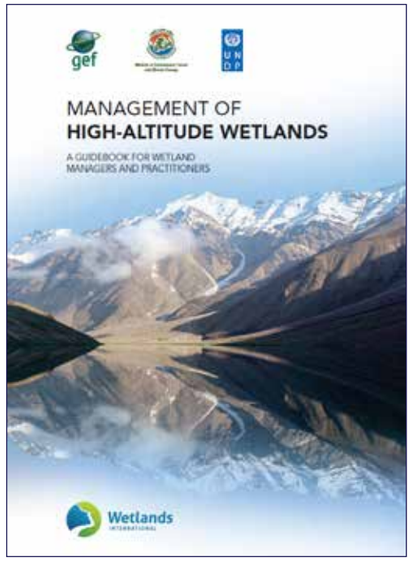
The modelling suggests that HAW occupy an area of 6,583 ha (in the probability range of 0.8-1) in the sub-basin. At a 0.6-0.8 probability range, which also captures wet vegetation on the fringes of the wetland, the area is 8260 ha. Our assessments are significantly higher than those derived from images of 2011-13. The previous inventories have exclusively focused on lakes while missing out on other wetland types such as peatlands, and wet meadows.

Management of High-Altitude Wetlands: A Guidebook for Wetland Managers and Practitioners

Nested in the high Himalayas, the HAW are unique ecosystems which play an important role in providing water, food and climate security and cultural identity to the entire Indian Himalayan region and beyond. HAW are distinct wetland types, having high sensitivity to climatic changes, very limited human presence, unique biodiversity forms, hydrological regimes influenced by glacial action, and limnology reflecting the composition and weathering pattern of local geologies.

The MoEFCC is increasingly emphasizing on integrated management plans as a basis of providing funding support to states. A diagnostic to identification of management objectives and actions, based on evaluation of wetlands features is recommended in the wetlands management planning guidelines of the National Plan for Conservation of Aquatic Ecosystems (NPCA).

However, the diagnostic wetland evaluation, as recommended in the NPCA guidelines, may need a different approach in the context of HAW, given their unique ecological characteristic and limitations of



A Guidebook for Managers and Practitioners on High Altitude Wetlands

data availability for management planning. For several wetlands, active management interventions may not be required.

Responding to the request made by the Government of Himachal Pradesh, Wetlands International South Asia prepared a guidebook to enable wetlands managers in preparing integrated management plans for HAWs taking into account their unique ecological setting, and specific management needs. The guidebook is structured in following seven chapters:

Section 1
HAW: the management context - contains an introduction to HAWs, their values, threats and management needs, and management principles and approaches,

Section 2
Setting up a management planning process - contains an introduction to management planning process, stakeholder involvement, and communication strategy

Section 3
Developing an integrated management plan - elaborates a diagnostic approach and step-by-step guidance on preparation of a management plan.

Section 4
Implementing management - contains discussions on the ways in which intersectoral coordination can be achieved, activities phased and different stakeholders informed of management plan implementation progress.

Section 5
Reviewing and evaluating management - elaborates steps for assessing management effectiveness and adapting management plans.

Section 6
Designating HAW as Ramsar Sites - elaborates steps for designating HAW fulfilling the nine site designation criteria as a Wetland of International Importance

Section 7
Notifying HAW under Wetlands (Conservation and Management) Rules, 2017 - details out steps to notify these wetlands under the provisions of Wetlands Rules, 2017 and establish the regulatory regime as recommended in these Rules.

A policy dialogue on Standard Operating Procedures (SOPs) for Integrated Management Planning of Himalayan High-Altitude Wetlands (HAWs) was organized by United Nations Development Programme and Wetlands International South Asia on November 20, 2020 wherein the guidebook was presented for review by the MoEFCC's wetlands and wildlife divisions, state government representatives and subject matter experts. The suggested editions have been duly incorporated in the guidebook.

In the coming year, the guidebook shall be developed into modules on specific topics, and implemented as a part of capacity development programme in collaboration with the MoEFCC and state governments.

INVENTORYING FLOODPLAIN WETLANDS OF GANGA

Highlights

- Surveyed 200 wetlands located in the 10 km buffer of River Ganga in 27 districts
- 80% of wetlands have been lost during 2000-2019 with smaller wetlands being the most vulnerable.

In 2019, under the National Mission on Clean Ganga of the Jal Shakti Mantralaya, Wetlands International South Asia with support of Uttar Pradesh State Wetlands Authority launched a two-year project aimed at developing an integrated plan for conservation of wise use of floodplain wetlands of River Ganga in Uttar Pradesh. The project involves definition and characterization of floodplain wetland regimes within Ganga districts, developing stakeholder led integrated management plans and designing a monitoring regime to enable periodic assessment of wetland ecosystem health and management effectiveness. The project adopts a hydro-geomorphic assessment of wetlands as the conceptual basis for management planning.

During the year, a survey of 200 wetlands within the 10 km buffer of the Ganga River channel across 27 districts of Uttar Pradesh was completed. During the survey, field data on location and extent, hydrological regimes, notable plant and animal species, ecosystem services, threats and management arrangements were collected for each site. Land use cover for year 2000 and 2019 was analysed based on interpretation of satellite data and data from pilot sites to determine the trends in wetlands loss and identification of major drivers of adverse change.

As the project uses a higher scale for wetlands mapping in comparison with the National Wetlands Atlas, the number and extent of wetlands identified in the project are at least 10% higher than those reported in the Atlas. Village panchayats have a major share of ownership within these wetlands and thereby are major stakeholders. At least 80% of the wetlands have been lost during the two decades, majority being converted to permanent agricultural lands and settlement, with smaller wetlands being relatively at high vulnerability. A majority (4 out of 10) exhibited low ecosystem health with pollution and structural modification being the major drivers of change. Based on consideration of wetlands functions, ecosystem services and biodiversity values, landscape settings and management arrangements, five distinct categories have been identified: village ponds, urban and peri-urban wetlands, floodplain agriculture wetlands, wetlands within protected areas, and production systems. In the coming year, the project will focus on analyses of the data and stakeholder consultations to shape up the management plans.

Haiderpur Wetlands is in the process of being designated as a Ramsar Site

LOCAL ACTION FOR INTEGRATING WETLANDS IN DEVELOPMENT PLANS

Highlights

- **In 25 panchayats, wetlands were embedded in water security plans and development plans.**
- **In Bhola Sadar District of Bangladesh, the Upzila Parishad, realizing the value of water security planning, decided to replicate the process in the remaining 12 unions.**

Shrinkage of Debkhal Chaur (Samastipur , Bihar) has led to depletion of groundwater levels in the region

Integrating wetlands in local water security plans in demonstration basins of Odisha and Bihar

In 2021, the five-year Dutch Ministry of Foreign Affairs funded Watershed programme came to a close. The programme, implemented in collaboration with IRC and Akvo aimed at improving the governance and management of water and sanitation services and water resources by empowering Civil Society Organisations (CSOs). In India, Watershed implementation focused on showcasing the role of wetlands conservation as a water source sustainability measure in the basins of two wetlands - Debkhal Chaur in Samastipur District, Bihar and Tampara in Ganjam District, Odisha.

In 2017, when the programme implementation was launched in the two landscapes, WASH (Water, Sanitation and hygiene) service levels were highly inadequate, and the communities had limited capacities to identify source sustainability problems, as well as measures that would lead to improved water security. Reliable evidence to highlight WASH issues to the relevant line departments was lacking, a problem further confounded by the prevailing gender and caste disparities. For example, a tokenistic participation of women in local bodies and decision-making was observed.

Nidan

Heads of Panchayts of villages surrounding Debkhal Chaur display village water security plans

Through a series of outreach activities, training workshops, and meetings Wetlands International South Asia along with its landscape implementation partners Nidan in Bihar and Gram Utthan in Odisha, and technical partner ACT engaged with CSOs such as Village Water and Sanitation Committees (VWSC), Village Development Committees, Ward Implementation and Management Committees, local governments, Women SHGs and NGOs and trained them to conduct hydrological assessments and understand local water regimes. The communities learned how the degradation of wetlands increased the risk of salinization of coastal freshwater pockets and caused summer season water shortages in the plains.

The project supported the VWSC, PRIs, communities to map their land use and cropping pattern and hydrological regimes, estimate water use and demand and helped them to identify strategies for water safety and water source sustainability including service improvement and operation and maintenance of WASH services. In 2020, five such plans were consolidated and published and formally approved by Panchayats. In total ten village water security plans covering five Panchayats have been prepared in the two wetland basins. The plans also include an operational plan with individual roles and responsibilities. This was the first time PRIs and CSOs prepared Water Security Plans in the two districts.

As the programme moved to its closing year, visible impacts of capacity development measures could be observed. Most significantly, the Panchayats have integrated activities from the plans within their Gram Panchayat Development Plans that have been formally approved by the block authorities.

Apart from deploying their funds, Panchayats with the help of landscape partners and WISA shared information on convergence funding opportunities from Minor Irrigation Division in Odisha and CSR funds from industries. The programme provided handholding support to local governments and CSOs on the scientific design elements of the water security interventions - inlet and outlet channels design, soil and siltation issues, drainage and connectivity between water bodies, zones of recharge and discharge of groundwater.

COVID-19 health risks have constantly remained high and posed a challenge for implementing programme actions. But this also served as an opportunity as the programme flexibly adapted to opportunities such as the Jal Jeevan Hariyali Mission, the Saat Nischaya Programme and the heightened focus on MGNREGS for water conservation works during COVID-19 times to drive the implementation of the proposed actions on improved WASH and water management.

The knowledge and information has helped the communities to engage with government officials to demand for improved WASH services and water security actions. In Bihar, CSOs and communities got together to demand for regular water testing and training for conservation of wetlands and water security. Links to Watershed programme has helped the women in the Self Help Group to become more vocal about their WASH needs. This has helped them to secure new borewells for water supply, renovation of existing sources and water quality testing of water points that were previously not done.

Work on renovation of at least nine ponds were undertaken in Kanamana Panchayat by the end of the year. There is greater awareness amongst PRIs and CSOs and on the importance of maintaining hydrological connectivity in the landscape and ensuring regular inflows in wetlands for greater water security.

Minor Irrigation Department has initiated work on construction of irrigation canal and renovation of Bada Bandha Minor Irrigation pond in Kanamana

Ecosystem-based Disaster Risk Reduction

In 2019, implementation of the EU Dev Co, UNEP and the Netherlands Red Cross supported 'Upscaling Community Resilience through Ecosystem-based DRR' project was initiated. Under the project, scalable models of community-based Nature-based Solutions for Disaster Risk Reduction are being designed and implemented in three landscapes in India, namely, Tampara Wetland in Ganjam district of Odisha, Kanwar Basin in Begusarai district of Bihar and drylands of Suigam Taluka in Banaskantha district of Gujarat. Learning from the field sites and traditional knowledge of communities, the project envisages mainstreaming Eco-DRR in developmental planning and programmes through policy recommendations and capacity building of key stakeholders. Wetlands International South Asia coordinates project implementation in India, with support from its field partners - Netcoast in Odisha, SEEDS in Bihar and the Indian Red Cross Federation in Gujarat. To date, the project has engaged with 25,000 community members through its various activities.

Eco-DRR project team in discussion with PRI members and SHGs to conduct hazard-vulnerability and capacity assessment in Dunhi Panchayat around Kabartal

World Wetlands Day rallies were conducted in schools in Begusarai, Bihar to generate public awareness on conservation of Kabartal

In Odisha, local innovations such as bamboo fishing nets made by community members are being showcased to encourage zero plastic use

Cycle rally to promote awareness on Eco-DRR Panchayats of Begusarai District

In Odisha, a community-based participatory wetland management plan for Tampara was developed. Eco-DRR measures under the plan have been incorporated in the Gram Panchayat Development Plans for five project villages. These annual plans are the guiding documents for implementation of various socio-economic schemes like the Mahatma Gandhi National Rural Employment Scheme and Jal Jeevan Hariyali Mission. In addition, 15 women self-help groups have been trained on sustainable livelihood practices and wetland wise use. Women have played an active role in generation of awareness during World Wetland Day celebrations.

In Bihar, the project has established hazard-capacity-vulnerability baselines and ecosystem services profiles through a survey in six panchayats. Working with fish co-operatives, 17 wetlands were identified for restoration and proposed for inclusion under the Jal Jeevan Hariyali mission of the Government of Bihar. Fourteen of these proposals have been accepted for implementation by the government. Rejuvenation of these wetlands will greatly assist in arresting the declining groundwater levels of the region.

Building capacity for community led water security planning in Southern Bangladesh

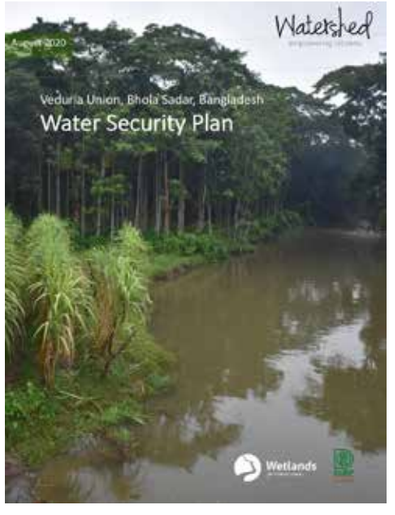
CSO members being trained to assess water quality using simple toolkits

Under the aegis of Watershed programme implementation in Bangladesh, Wetlands International South Asia and DORP (Development Organisation of the Rural Poor) supported water security planning for sustainable WASH in Bhola Sadar Upazila, a sub-district of Bhola, the largest Island of Bangladesh situated at the mouth of Meghna River. An important component of planning is to rejuvenate wetlands and their connecting drainages which store the plentiful rainfall and recharge groundwater aquifers.

Post 1970s, the significance of wetlands in water security reduced due to the increase in the use of deep tubewells to abstract groundwater from deep confined aquifers located as far as 1000 feet below ground level. Unplanned expansion of WASH infrastructure led to wetlands being highly polluted. The aquifer that runs from north of Bangladesh to south east of Bangladesh serves approximately 60 million people. With drawdown surpassing the recharge capacity of groundwater by exceedingly high rates, the declining water table threatens the renewability of the aquifer leading to serious issues of water mediated risks to Bhola and other parts of the country like Dhaka.

The water security planning process was initiated in 2019 and concluded in September 2020. The process involved building capacity of the local CSOs and community and developing a knowledge base to implement sustainable practices to ensure wetland conservation for sustainable WASH and water security.

In February 2020, a training workshop was conducted for the CSOs on water security planning and collection of relevant water quality, quantity and used data. A draft water security plan for Veduria Union was circulated to stakeholders and duty bearers and followed up by DORP. Within the plan, specific interventions like re-excavation of ponds and canals, spreading awareness to people on the role of wetlands in water security, pollution abatement and source water security was encapsulated. Veduria Union Parishad endorsed the plan in their meeting held in July 2020 and committed to allocate budget and implement various interventions listed. Subsequently, the Upazila Parishad agreed to undertake water security planning in the remaining 12 unions, with the support of various line departments and civil society.



Israeil Mia/DORP

Signboard with guidelines on sustainable water use from the pukhur(pond)

The water security planning process for Veduria Union has created a platform for the members of the government, local stakeholders, CSOs and communities to hold dialogues and plan the actions to ensure safe water and sustainable use. As a result of advocacy with the duty bearers, the Union Parishad has incorporated, within its annual plan, programmes for re-excavation of ponds and canals, and creating awareness on the need to abstain from polluting wetlands.

STRENGTHENING WETLANDS MANAGEMENT

Highlights

- A national-scale 5-year GEF project to support integrated management of wetlands was launched.
- Management action plan for East Kolkata Wetlands was updated for 2021-2025.

Kanwar Jheel, a Ramsar Site in Bihar is one of the three demonstration sites for GEF project

Launch of GEF project on integrating ecosystem services in wetland management

In June 2020, the implementation of the GEF-UNEP funded five-year project 'Integrated Management of Wetlands Biodiversity and Ecosystem Services (IMWBES)' was initiated. The project has a goal of 'conservation and wise use of wetlands for sustained provision of their full range of ecosystem services and maintenance of biological diversity.' The objective is to 'enhance management effectiveness of wetlands of national and global significance and integration in developmental programming'. The project complements the national wetlands programme (National Plan for Conservation of Aquatic Ecosystems), and is designed to address knowledge, capacity and institutional barriers limiting integrated management of wetlands.

IMWBES has been approved for an implementation period of 5 years, with the MoEFCC as the National Executing Agency. Wetlands International South Asia is the Lead Technical Support Agency (LTSA) anchoring the Project Management Unit (PMU) and providing technical backstopping to project implementation.

The IMWBES project is organized in four components:

COMPONENT 1
National wetland biodiversity and ecosystem services-based knowledge systems designed to make available knowledge systems that enable wetland managers systematic inclusion of wetland biodiversity and ecosystem services (BES) values in wetland identification and prioritization, management planning, developing cross-sectoral institutional arrangements and responding to emerging challenges of climate change.

COMPONENT 2
National scale capacity building for applying integrated wetland management intending to build the capacity of wetlands managers to deliver and apply integrated management.

COMPONENT 3
Demonstration of integrated wetland management in three wetlands to facilitate learning and the development of best practices for up-scaling and wider implementation within state governments. The project will support inventory and assessments, finalization of management plan and implementation of core activities.

COMPONENT 4
Project monitoring, evaluation and outcome dissemination to ensure that the project meets its stipulated objectives, and the results are effectively disseminated to the wetland managers and stakeholders within state governments.

The overall project objectives are to be delivered through achievement of planned outcomes and outputs in all four components. Components 1 and 2 are to be delivered at national scale, whereas work under Component 3 is entailed to take place at three demonstration sites, Harike in Punjab, Kabartal in Bihar, and Sasthamkotta in Kerala with lessons drawn for application at national scale. Component 4 has been designed to enable effective monitoring and evaluation of interventions at the pilot sites, as well as dissemination of outcomes at national scale.

Since the launch, the prevailing pandemic situation has relegated the project to desk work. The PMU was recruited with three staff - National Project Coordinator (Ms. Suchita Awasthi), Wetlands Specialist (Dr. Prathna TC) and Project Associate (Mr. Anurag Banerjee). Updates to the Ramsar Information Sheets for 17 wetlands were completed. The team also evaluated 10 management plans submitted by State Governments in terms of their incorporation of wetlands ecosystem services and biodiversity values and threats thereon, and mapping of proposed interventions with the values and threats. These recommendations are used by the concerned wetlands managers in revising the plan.

Revisiting management plan of East Kolkata Wetlands

Pen Culture in Gompota Bheri, East Kolkata Wetlands

Wetlands International South Asia, at the request of East Kolkata Wetlands Management Authority took up a revision of the current management plan of East Kolkata Wetlands (EKW), enlisting actions required for 2021-2025.

Located to the eastern fringes of Kolkata City and spanning 12,500 ha, EKW is a mosaic of landforms including predominantly water dominated areas (used as fish farms) to land centric usages for agriculture, horticulture and settlements. The existing wetland regime is a remnant of a series of brackish wetlands connected to the freshwater as well as marine environments of the Gangetic Delta and the Bay of Bengal, in an ecological continuum with the Sundarbans. Over 260 shallow fish ponds in the EKW receive over 900 MLD pre-settled sewage from the Kolkata Metropolitan region through a network of locally excavated secondary and tertiary canals, which is used to produce annually 20,000 MT of fish, 50,000 MT of vegetables and irrigate 4700 ha of paddy lands. As the nutrient-rich effluent moves through the system, it is progressively cleaned, and nutrients are redirected to the growth of algae or agricultural products grown along the pond edges and agricultural lands. Algae and other aquatic

plants are used to feed up to 17 species of fish cultured in these ponds, which in turn create nitrogen and phosphorus-rich water to irrigate the adjacent rice fields. The traditionally evolved natural water purification waste recovery practice saves the Kolkata City nearly Rs. 4,680 million annually in terms of the treatment cost of up to 65% of the City's sewage. These wetlands also lock in over 60% of carbon from wastewater, thus reducing harmful Green House Gas emissions from the region. The wetland is inhabited by diverse species. Atleast 380 taxa under major flora including 93 plant families, 10 amphibians, 29 reptiles, 123 birds, 79 fish, 24 crustaceans, and 13 mammal species have been recorded from these wetlands. Marsh mongoose *Herpestes auropunctatus* is endemic to the region and also included in the schedule II of Indian Wildlife Protection Act, 1972.

Upon its establishment in 2006, EKWMA sought the services of Wetlands International South Asia for formulating a management plan for EKW in 2008 for a period of five years . Within the plan, seven management objectives related to institutional development, management zoning, water management, biodiversity conservation, sustainable fisheries development, sustainable agriculture development and livelihood improvement were identified, to be implemented with a budget of Rs. 304 crores over five years (including funds from convergence sources). The management plan was submitted to the MoEFCC for financial support under the National Wetlands Programme in 2009, and funding of Rs. 2.29 crores received during 2007-2013 for a limited number of activities, such as desilting of sewage channels, plantation, monitoring and implementation of zoning plan. In 2010, the Wetlands (Conservation and Management) Rules were notified by the Ministry of Environment, Forest and Climate Change (MoEFCC) , under the provisions of which discharge of sewage, dumping of solid waste and construction of permanent nature (except boat jetties) were prohibited in all notified wetlands, including all Ramsar Sites. Since these conditions remained unfulfilled for EKW, further funding from the Ministry was stopped. Various interventions as envisaged in the management plan could not be implemented, resulting in the 2008 management plan implementation being kept in abeyance.

Goltala Fisheries in East Koltaka Wetlands

The evaluation of various wetland features since the designation of EKW as Ramsar Site has indicated the following trends:

- ***Adverse land use change*** : During 2000 – 2019, the area under fish farms, settlements and landfill has been observed to increase by 26%, 50% and 81% respectively, while the area under horticulture and agriculture declined by 36% and 42% respectively. The increase in area under fish farm area is largely on account of transformation from agriculture (more prominent after 2015). There is a conspicuous conversion of fish farms in areas adjoining EM bypass.

- ***Increasing solid waste*** : There has been a significant increase in solid waste dumping in EKW, with an additional dumping site created at Molar bhery. Studies indicate contamination of groundwater at Dhapa.
- ***Waste treatment function of the wetland being compromised*** : An increase in the presence of heavy metals along with the organic nutrients in the supply sewerage has been observed predominantly due to mixing of Kolkata city's industrial effluents. Wetland function of treating raw sewage is reduced due to settling of heavy metals in the fish farm beds and also bioaccumulation of heavy metals in fish and plant species. Presence of heavy metal contaminants in wetlands pose health risk to the producers and consumers dependent on resource harvest from wetlands.
- ***Disturbed habitats*** : There is a significant reduction in the number of waterbird species being sighted; over 30 species have not been sighted in recent times. Increased urbanization in the periphery of wetland, habitat encroachment and shifting climate patterns has led to the reduction of key wetland species sighted in the area.
- ***Invasive fish species*** : The rapid spread and population increase of suckermouth armoured catfishes in EKW in recent times is of increasing concern, because of the notable possibility that these non-native catfishes are adversely affecting fish germplasm and commercial fishery of this unique ecosystem, the wetland biota remains under constant threat due to alien species invasion.
- ***Increasing population pressure*** : A rapid rise in population has been recorded in 2001-2011 for the mouzas which has grown as much as 4 times in some mouzas with rise in population density ranging from 100 to 4500 persons per square kilometre. This increased numbers have led to a greater demand for the wetland resources, particularly

fish and food crops. The number of people dependent on fisheries has grown from 12000 to 20000 in the last two decades.

- ***Increasing climate risks*** : The intensity of rainfall has increased while the duration has decreased meaning variations in freshwater flows. Wetland communities are highly vulnerable to impacts of climate change, including the risk of high floods and increase in temperature due to variating climate. The area around Salt Lake and Bantala is reported to have high rates of subsidence which can alter the topography and natural hydraulics of the wetland.

The management plan for 2021-25 has been designed to address the following objectives:

- Land use and land cover of the wetland is maintained in line with regulatory requirements under Wetlands (Conservation and Management) Rules, 2017 and East Kolkata Wetlands (Conservation and Management) Act, 2006.
- Sewage quantity and quality received within the wetland is efficiently treated applying traditional waste recovery practices.
- Diversity of biota within East Kolkata Wetlands is maintained.
- Livelihood vulnerability of wetland-dependent communities is reduced.
- Individual and collective capacity and opportunities for stakeholders and wetland communities to participate in wetland management and contribute to wetland wise use is enhanced.
- Systematic wetlands inventory, assessment and monitoring system is used to inform management decisions and assess effectiveness.
- Integration of multiple values of wetlands in sectoral developmental planning is enhanced.

The plan was reviewed and adopted by the Authority in its meeting held in March 2021, following which the document has been submitted to the MoEFCC for funding.

Support to State Governments

Director, Wetlands International South Asia, as an appointed member of the State Wetlands Authorities of Bihar, Uttar Pradesh, Delhi and Madhya Pradesh, participated in the meetings and provided inputs to issues related to wetlands inventorization, regulation and capacity development of stakeholders.

At request of the Forests and Environment Department, Government of Sikkim, a two two-day training workshop on wetlands management for the wetland committee of Khecheopalri, a sacred wetland in the West Sikkim district was conducted by Wetlands International South Asia. The workshop, held at Pelling on 11-12 March, 2021 resulted in a draft management framework for the wetland. In the field visit to the wetland and its catchments with the members, aspects of wetlands mapping, conservation of wetland hydrology, and regulation of touristic pressure were discussed.

Director, Wetlands International South Asia was appointed as a committee member to draft an environment management plan for restoration of Najafgarh Jheel. The plan, drafted with INTACH and BNHS and Center for Management of Degraded Ecosystems (CMDE), was endorsed by the Delhi Government and submitted to MoEFCC. A draft notification of the wetland from Government of NCT of Delhi has also been sent to the MoEFCC.

ENGAGEMENT WITH CONVENTIONS

Ramsar Convention on Wetlands

Wetlands International South Asia has been designated by the MoEFCC as a CEPA NGO partner to support implementation of the Ramsar Convention. The organization supported preparation of India's country report to the 14th Conference of Parties meeting scheduled to be held in the last quarter of 2022.

Under the GEF IMWBES project, the organization also provided support to updation of outdated Ramsar Information Sheets. These sheets, supposed to be updated once every six years, provide information on the status of wetlands ecological character, major threats and management. Of the 46 Ramsar sites, such updates are pending for 23 sites.

Under the GEF project, 12 pending RIS were updated. A factbook on Ramsar sites was also published, collaboratively with other knowledge partners of the Ministry, providing primary information on Ramsar site location, designation criteria, management authority, ecosystem service values and major threats.

The work on formalizing a South Asia platform was continued during the year. Following on the discussions and decisions of the meeting of Ramsar National Focal Points held in Sri Lanka in September 2019, a proposal for holding a regional training on 'wetlands and water' has been drawn up. Ramsar Regional Center East Asia has agreed to support the training, scheduled to be held in last quarter of 2021 in a virtual mode.

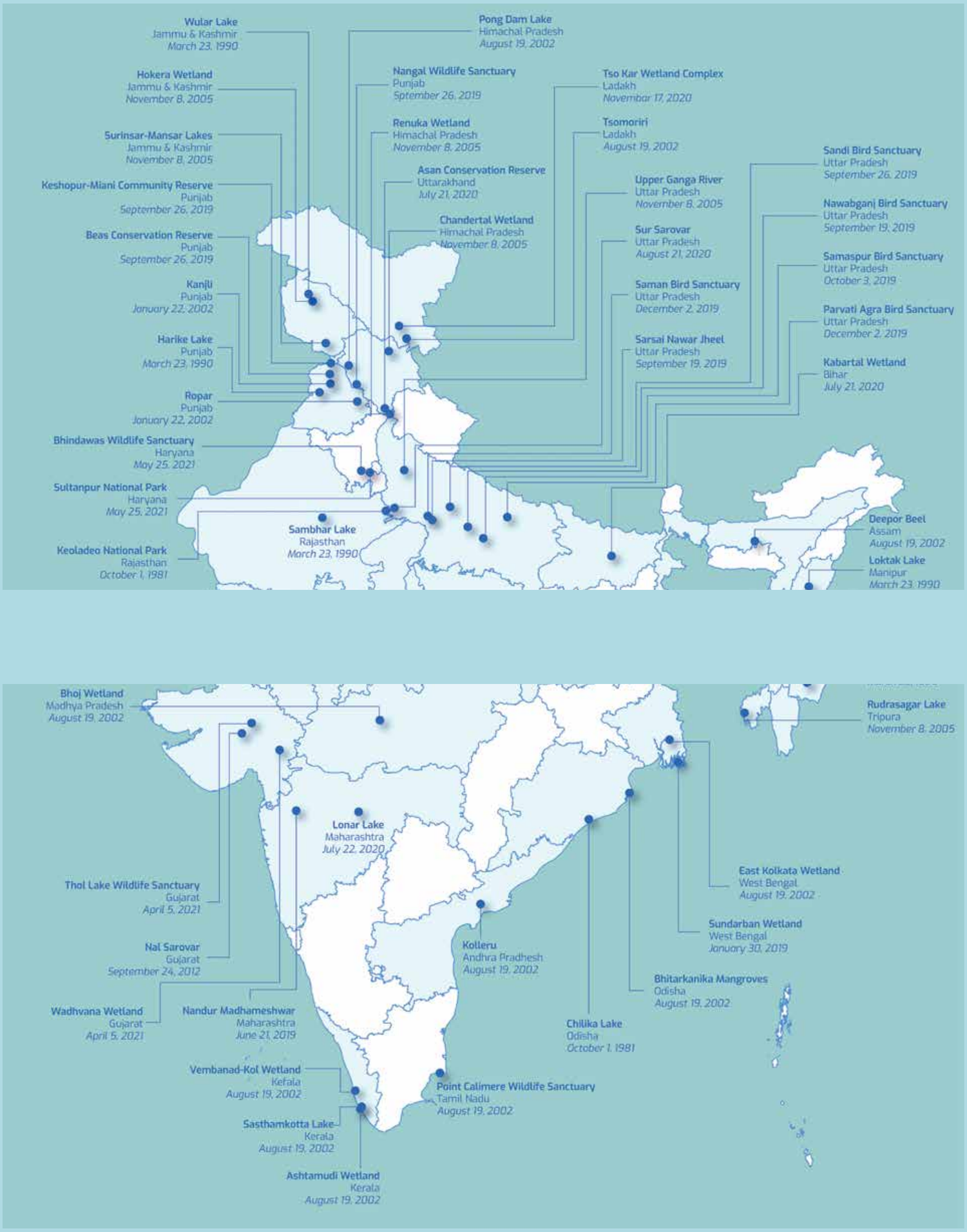
Central Action Flyway Action Plan

India organized the 13th meeting of the Conference of Parties (CoP) of Convention on the Conservation of Migratory Species of Wild Animals (CMS) in Gandhinagar, Gujarat from 15th to 22nd February, 2020. Being the CoP host country, India will be holding the CMS COP presidency for next three years.

The Hon'ble Prime Minister of India in his inaugural address to the CMS CoP 13 underlined India's commitment towards development of an institutional mechanism for Central Asian Flyway (CAF). He also offered support to range countries in facilitating preparation of Action Plans for conservation of migratory species. He stressed on the need to establish an institutional mechanism for undertaking research, studies, assessments, capacity development and conservation initiatives for migratory species by creating a common platform, with active cooperation of all the CAF Range Countries. The text of CoP 13 Document 26.1.4 on Flyways was accordingly amended to indicate steps facilitating establishment of the CAF Secretariat in India.

Bombay Natural History Society, Wildlife Institute of India, and Wetlands International South Asia were tasked with preparing a blueprint for establishment of a CAF Secretariat within India, particularly spelling out implementation modalities of various activities, and engagement with Range Country governments and stakeholders. The report was submitted to the Ministry in June 2020.

Ramsar Sites of India



Total number of site: 46

Map updated: September 2021

CITIZEN-SCIENCE FOR WATERBIRDS

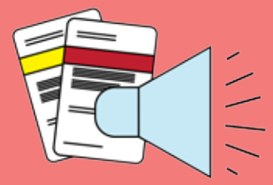
Wetlands International South Asia continued to coordinate the Asian Waterbird Census, the world's longest running citizen science programme on wetland species.

The mid-winter census in 2021 covered over 600 wetlands in 15 states and UTs. The census recorded presence of 201 waterbirds and wetland-dependent bird species. This included 7 species of high conservation concern (Andaman Teal, Common Pochard, Great Knot, Indian Skimmer, Lesser Adjutant, Pallas's Fish-Eagle, River Tern).

A specific census for NTPC Dadri was also conducted on January 15, 2021 at the request of UNDP India.

AWC 2021 in action at Garacharma Wetland, Andaman Nicobar Islands

STATES	NUMBER OF AWC 2021 SITES
Andaman and Nicabar Islands	*34*
Andhra Pradesh	*22*
Assam	*5*
Chhattisgarh	*7*
Gujarat	*65*
Karnataka	*54*
Kerala	*96*
Maharashtra	*36*
Madhya Pradesh	*2*
Odisha	*2*
Pondicherry	*30*
Rajasthan	*1*
Tamil Nadu	*191*
Telangana	*44*
West Bengal	*25*



CAPACITY DEVELOPMENT & OUTREACH

The communications and outreach strategy of the organisation revolves around extending the cause of wetlands conservation to policy makers, wetland practitioners, researchers, students and the general public. The organisation uses online platforms such as its website and social media channels to promote and highlight the importance of wetlands conservation.

Communities have hand-drawn the management actions for Tampara in Patta Chitra form, a local art tradition of Odisha

Newsletter Sarovar

Wetland International South Asia publishes newsletter Sarovar with focus on seminal themes related to wetlands management in South Asia. In February 2021, volume 7 of the newsletter on the theme Wetland Governance was published featuring 10 articles. The newsletter is available on the Wetlands International South Asia website. Over 300 print copies were also mailed to State Wetland Authorities, central government ministries, wetland site managers and CSOs.

Power of Wetlands campaign

In 2020, Wetlands International launched a Power of Wetlands campaign to make wetlands conservation and restoration a national and global priority. With specific focus on youth and in partnership with YEW (Youth Engaged in Wetlands Network), the campaign highlighted wetlands ambassadors from around the world who have taken proactive action to conserve wetlands. The Power of Wetlands campaign celebrates local action towards wetlands conservation. A letter penned by youth from different countries is being circulated around the world to gather support in the form of signatures to advocate for the cause of wetland conservation. During the year, the Power of Wetlands campaign gained momentum and reached out to hundreds of young people worldwide.

Wetlands International South Asia also collaborated with Mongabay India to produce a series on Wetland Champions, capturing 25 stories of change of everyday people who have worked towards conserving their wetlands. These are individuals and communities that have understood the ecological significance and the importance of the ecosystem services that wetlands provide, and have been working to conserve them. Mongabay India has published these stories on their online platform with impactful illustrations. A coffee table book on the series will also be developed later this year.

Development of resource and outreach material

Wetlands International has been engaged in developing resources to aid wetland managers, practitioners, conservationists and youth on diverse themes and subjects that come under wetland management and wise use.

During the year, the training kit on integrated wetlands management was further expanded by including a module on wetlands and water management.
A guidebook on management of HAW was also published to assist wetlands managers and stakeholders in developing and implementing integrated management plans for these fragile ecosystems. A brochure on designation of Ramsar sites was also published.

Capacity Development

Wetlands International South Asia has been pursuing integration of wetlands in the formal training curriculum of Indian Forest Service Probationers. Following a series of meetings with the MoEFCC at various levels, the recommendation was accepted in April 2020. The first training module was delivered online for the IFS probationer's batch of 2019-2021. Wetlands International South Asia developed the course structure alongwith the faculty of IGNFA and wetlands division of the MoEFCC and also delivered key modules.

The 100 Wetlands Rejuvenation Programme under the 169 Transformative Ideas of the Government of India was upscaled into all districts of the country in September 2020, with a target of reaching out to 1,000 wetlands, covering all districts of the country. Based on the experiences of the first phase, a four prong approach was standardized - with preparation of brief documents, rapid ecosystem health assessment, constitution of 'wetland mitra' (committees of local stakeholders) and preparation of integrated wetlands management plan as the constituent steps. Wetlands International South Asia is one of the five core knowledge partners of this initiative and provides handholding support to states in various stages of the programme. As on date, the programme now covers over 600 wetlands in the country.

At the request of Delhi Wetlands Authority, Wetlands International South Asia conducted a series of eight webinars for the eleven line departments having jurisdiction over wetlands. In these webinars, the concept of wetlands, wetlands management, provisions of Wetlands (Conservation and Management) Rules, 2019, wetlands delineation, preparation of brief documents, and developing integrated management plans were discussed and queries responded. The Delhi Government has also placed these online sessions on a dedicated you-tube channel for reach out to a wider audience. The line departments were able to prepare brief documents on over 300 wetlands of the 1040 wetlands identified in the National Capital Territory. These documents are currently being examined by the Technical Committee of the Delhi Wetlands Authority, of which Director, Wetlands International South Asia is a nominated member.

Celebrating World Wetlands Day

Wetlands International South Asia celebrated World Wetlands Day 2021 by organising a public webinar which was joined by 80 participants from India and neighboring countries.
Mr. Suresh Prabhu (Hon'ble Member of Parliament – Rajya Sabha) graced the occasion as the Chief Guest. Prof Asit K Biswas (Distinguished Visiting Professor, University of Glasgow) and a global authority on water policy and management issues delivered the keynote address. An eminent expert panel comprising Dr. Sonam Wangchuk (Founder and Advisor, Students' Educational and Cultural Movement of Ladakh), Mr. Sanjay Srivastava (Additional PCCF, Government of Uttar Pradesh) and Mr. Sanjib Sarangi (Associate Vice President, Indian Grameen Services Odisha) discussed diverse perspectives on wetlands – water integration .

Four publications, namely, Sarovar (Newsletter of Wetlands International South Asia), World Wetlands Day Poster, A Guidebook on Management of HAW and a Training Module on Wetlands and Water were also released during the event.

The discussions at the World Wetlands Day 2021 webinar highlighted the challenges and opportunities for integrating wetlands into water management policies and practices in the South Asia region.

Some key takeaways were:

- It is important to build community stewardship and capacity to manage the diverse wetland resources towards building water and food security. Solutions which are cost effective and tailored to local needs need to be explored diligently making use of modern technology.
- Wetlands as nature-based solutions can provide much needed flexibility to the conventional water infrastructure, however, there is a need to make management systems more effective, inclusive and transparent.
- Effective land and water governance is at the core of water-wetlands connect. By building convergence amongst different developmental schemes and implementing organisations, multiple goals of wetlands conservation, wildlife protection, water security and livelihoods can be met.

RESPONDING TO COVID-19

Covid -19 pandemic had direct impact on project implementation in field sites in Bihar. Responding to the situation, assistance to communities in the form of food, sanitization items and safety kits, and psychosocial support was built in the implementation plan of Partners for Resilience programme. The assistance was provided by partner organizations, SEEDS India and Caritas, through district administration and local panchayats.

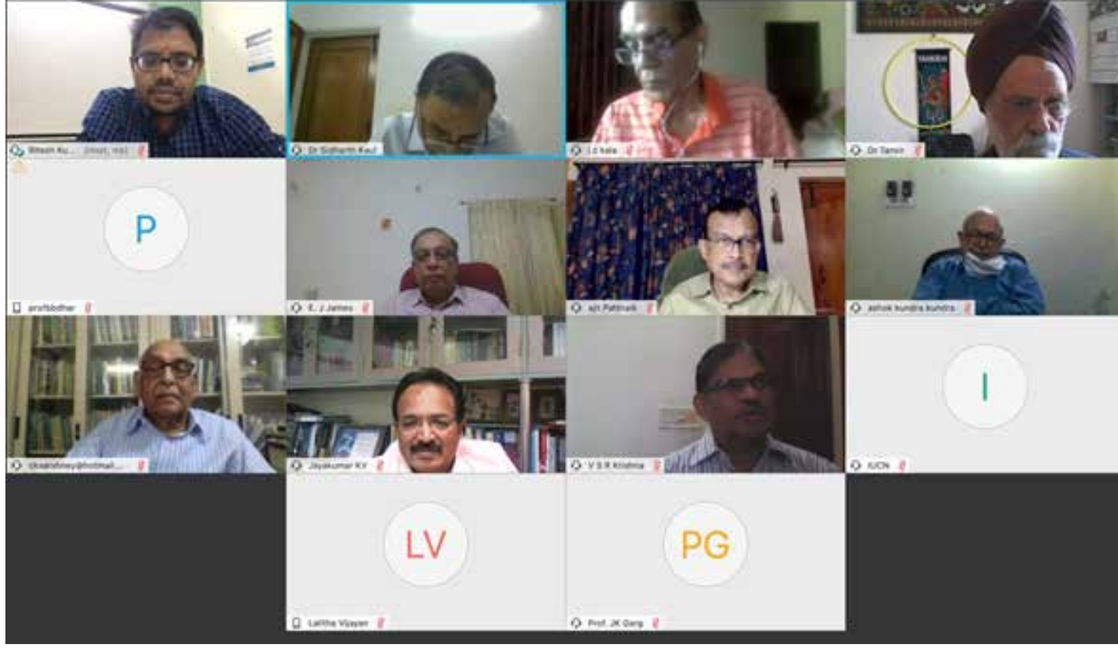
SEEDS India project team reached out to over 5,400 households in Saharsa district, Bihar. Isolation wards were set up for returning migrants and campaigns for raising awareness on safety measures and sanitation drives were conducted. Support was provided to 400 households with one month of ration which included masks, sanitisers and other food items. The support specifically targeted communities living around and directly dependent on wetlands.

Caritas, which works in Begusarai district under the project, reached out to 4,689 individuals providing psychosocial support and counselling, establishing handwashing and hygiene facilities, and providing essential safety kits. The project team also enlisted women self-help groups for preparing 2,600 face masks and distributed them to ASHA (Accredited Social Health Activists) and Aanganwadi (local mother and child care centres) workers and other community members. The project partners have also been part of coordination meetings with district administration.

GOVERNANCE

Highlights

- General Body met in September 2020 and approved Annual Report and Audited Accounts.
- Membership and networking strategy was adopted to widen stakeholder engagement.
- Rules and Regulation amended to diversify the Governing Body and smoothen organization functioning.



Screenshot of Virtual Annual General Body meeting in progress

Wetlands International South Asia is governed under a three-tier structure. The strategic directions and policies of the organization are set by the General Body of the Wetlands International South Asia Society which comprises eminent experts and conservation planners. The overall management of the society is vested in its Governing Body. The Office Bearers, comprising the President, Vice President, Treasurer and Secretary maintain oversight of implementation of various decisions and programme operations. The Director, appointed by the Governing Body, serves as the principal institutional representative of Wetlands International South Asia and responsible for implementing the strategy and activities of the organization.

Annual General Body Meeting

The 13th Annual Meeting of the General Body was held on September 30, 2020, virtually and attended by 14 members (and 5 requests for leave of absence). The annual report and audited financial statements for the period April 2019 – March 2020 were adopted. Amendment of Rules and Regulations of Wetlands International South Asia Society were also approved.

Meetings of Governing Body

The Governing Body met twice to consider management issues arising from the decisions of the General Body as well as from implementation of technical programmes. The eighteenth meeting of the Governing Body was held on September 25, 2020 virtually. A key decision at the meeting was to approve the membership and network strategy of the organization.

The nineteenth extraordinary meeting of the Governing Body was held on

September 28, 2020 virtually wherein the Governing Body discussed at length and approved the amendments to the Rules and Regulations for consideration of the General Body in their 13th meeting held on September 30th, 2020.

Meetings of Office Bearers

The Office Bearers met 7 times during April 2019 – March 2020 to assess implementation of decisions taken in various meetings of the Society, review technical programmes and prepare agenda for the meetings of Governing Body and General Body.

Membership and Networking Strategy

As the developmental pressures on wetlands increase, it is apt that Wetlands International South Asia plays a more strategic role and represents views and opinions of diverse stakeholders to promote the cause of conservation and wise use of these ecosystems. The Governing Body in their 18th meeting adopted a membership and networking strategy which would allow the organization to widen its geographical presence, engage with diverse stakeholder groups and gain access to additional capacities and skill-sets.

The approved strategy allows concerned individuals, students and researchers, experts and NGOs to gain membership of the Society, following an approval process. For each of these, a value proposition and membership rights and privileges have been specified, alongwith a fee structure to enable the organization to engage with the members. Within the office, a position of Manager (Operations and Partnerships) has been created to support the Director in strategy implementation.

Amendments to Rules and Regulations

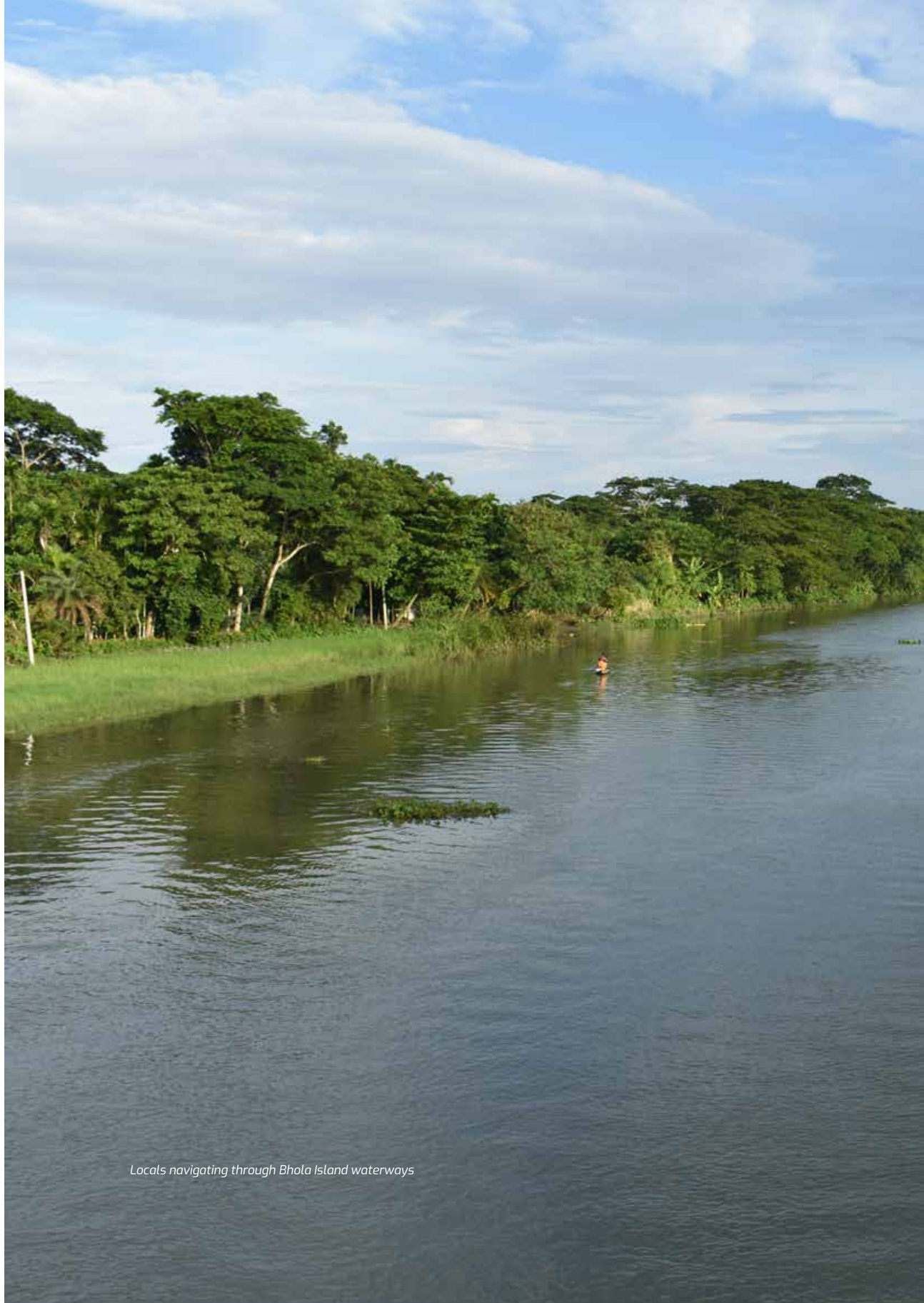
The General Body approved the following major amendments to the Rules and Regulations in their Annual Meeting:

- The Governing Body membership was expanded by four additional members to bring about diversity in expertise, age, and gender.
- The Global Network Partnership Agreement between Wetlands International Foundation and Wetlands International South Asia Society was referenced instead of now outdated Joint Venture Agreement.
- Membership Categories were harmonized in line with the approved Membership and Network Strategy.
- Provision for three-member non-contesting members is proposed to oversee the election process.

In addition, the following amendments were also adopted:

- Provision for Patron has been removed.
- Provision for half-yearly reporting by Director to the Office Bearers has been made.
- Provision for meeting notice by e-mail has been made. Agenda documents to be made available 10 days before the meeting. Members can introduce agenda items by seven days' advance notice to the Chairman.
- Provision for reimbursing travel by members has been made under a new clause.

The amendments have been filed with the Registrar of Societies for their approval.



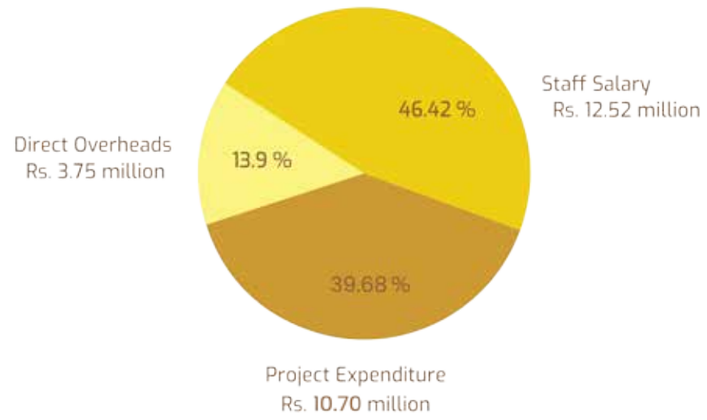
Locals navigating through Bhola Island waterways

ACCOUNTS AND AUDIT REPORT

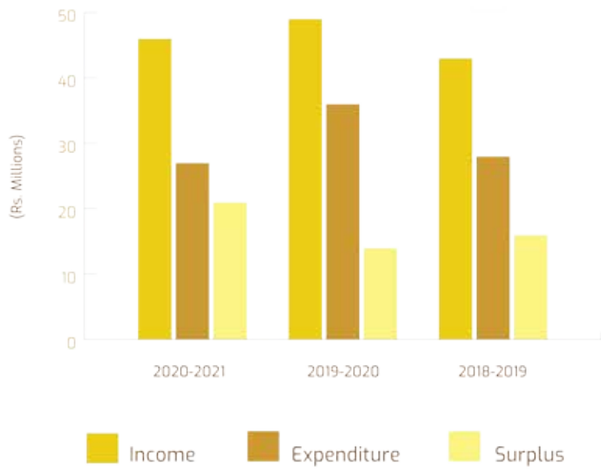
During the period April 2020 – March 2021, a total income of Rs. 47.71 million was received. Of this, Rs.41.82 million was on account of project funds received from 7 donor agencies, and the balance, Rs. 5.89 million as interest earned on the reserves.

The total expenditure incurred during the year towards various programmatic activities was Rs.26.97 million. Direct overheads stood at Rs. 3.75 million, forming 13.90 % of total expenditure. Project expenses were Rs.10.70 million, including Rs.12.52 million towards staff salary. On a net, a surplus of Rs.20.74 million was accrued. The total reserves at the end of the financial year stood at Rs. 84.76 million, which is an increase of Rs. 20.74 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.

TOTAL EXPENDITURE (APRIL 2020- MARCH2021)
Rs. 26.97 million



INCOME, EXPENDITURE AND SURPLUS (Rs. Millions)



Balance Sheet

All figures in Rupees

PARTICULARS		2020-2021	2019-2020	2018-2019
SOURCE OF FUNDS				
CAPITAL ACCOUNT		14,10,796	14,10,796	14,10,796
GENERAL RESERVE				
	Opening Balance	7,07,75,308	5,46,39,371	4,23,29,868
	Add Transfer during the year	1,39,85,780	1,61,35,937	1,23,09,503
	Closing Balance	8,47,61,088	7,07,75,308	5,46,39,371
INCOME & EXPENDITURE ACCOUNT				
	Opening Balance	1,82,16,406	2,03,66,562	1,65,40,128
	Add Surplus during the year	2,07,37,023	1,39,85,781	1,61,35,937
	Less Transfer to General Reserve	(1,39,85,781)	(1,61,35,937)	(1,23,09,503)
	Closing Balance	2,49,67,649	1,82,16,406	2,03,66,562
CURRENT LIABILITIES		69,42,247	2,11,44,651	55,38,021
TOTAL		11,80,81,780	11,15,47,160	8,19,54,750
APPLICATION OF FUNDS				
Fixed Assets				
	Opening Balance	19,15,971	8,97,438	8,53,508
	Additions during the year	6,32,780	14,98,555	2,78,300
	Less : Sale		(1,00,000)	(5,000)
	Less: Depreciation	(5,15,644)	(3,80,022)	(2,29,370)
	Closing Balance	20,33,108	19,15,971	8,97,438
CURRENT ASSETS, LOANS, ADVANCES, DEPOSITS& CASH BALANCES		11,60,48,669	10,96,31,191	8,10,57,314
ROUNDING OFF DIFFERENCE		3	-2	-2
TOTAL		11,80,81,780	11,15,47,160	8,19,54,750

Income and Expenditure Statement

All figures in Rupees

PARTICULARS		2020-2021	2019-2020	2018-2019
INCOME				
	Project Income	4,18,19,495	4,39,69,771	3,92,12,117
	Other Income	58,91,603	58,29,017	47,22,567
TOTAL		4,77,11,098	4,97,98,788	4,39,34,684
EXPENDITURE				
OVERHEAD COSTS				
	Salary	1,25,20,972	1,00,67,214	68,96,670
	Office running expenses	23,47,000	22,62,758	13,27,713
	Governance expenses	1,80,000	6,89,013	3,31,597
	Organisational Tax	7,07,297	-	-
	Depreciation	5,15,644	3,80,022	2,29,370
PROJECT COSTS				
	Sub-contractor/Project Grant	92,68,356	1,21,94,340	1,23,68,971
	Travel Costs	75,050	14,16,893	12,48,071
	Project Material	59,270	92,456	98,787
	Communication	1,28,044	1,13,384	89,326
	Financial Charges	10,256	11,53,433	(2,78,865)
	Publications	9,07,286	11,03,940	7,20,064
	Training/Workshops/ Meetings	2,54,901	63,39,555	47,67,043
TOTAL		2,69,74,075	3,58,13,008	2,77,98,747
SURPLUS DURING THE PERIOD		2,07,37,023	1,39,85,780	1,61,35,937
TOTAL		4,77,11,098	4,97,98,788	4,39,34,684

OUTLOOK 2021 AND BEYOND

In 2021, Wetlands International South Asia will be marking its Silver Jubilee Year, as its office in New Delhi began operations in 1996. As a significant milestone for the organization, and the intention to reach out to a wider network of community of practitioners, researchers, policy makers and those interested to join hands towards the cause of wetlands conservation, it is proposed to celebrate the year with a series of public events. The overarching two-fold aim is to expand the Wetlands International South Asia network base in South Asian countries, and increase the strength and representation of our work and voice for wetlands conservation.

Work in the year will be directed at the following expected science, policy and practice outcomes under the four strategy streams:

Healthy Wetlands Nature

- Diagnostic approaches for management planning of key wetlands in Himachal Pradesh, Bihar, Odisha, Punjab and Kerala have been initiated.
- Capacity Development of wetland managers and stakeholders in integrated management planning is enabled through targeted training programmes and inclusion of wetland management in curricula of key capacity development organisations (such as CASFOS, IGNFA and NIDM)
- Population estimates for conservation value of waterbird species in Central Asian Flyway developed to trigger conservation action.
- Management of Ramsar sites is strengthened by providing information on management effectiveness and addressing capacity and knowledge barriers through development modules, application of best practices and putting in place effective monitoring mechanisms.
- Incorporation of wetlands monitoring within National Biodiversity Mission framework is triggered through discussions with MoEFCC, ATREE and Biodiversity Collective Consortium.

Vibrant coasts and deltas

- A protocol for climate vulnerability assessment of Indian wetlands is developed and field tested to enable integration of climate risks in management planning processes.
- Attention to wetland loss and degradation induced vulnerability of urban landscapes is drawn in dialogue with Ministry of Urban Development and National Institute of Urban Affairs aimed at triggering systematic wetlands conservation as a part of Smart Cities and other urban development initiatives.

Replenished Water Stores

- Diagnostic approaches for management planning of High-Altitude Wetlands is demonstrated for Himalayan states and capacity built of wetland managers in replicating such techniques.
- Functional assessment-based wetland identification, prioritisation and management approaches are demonstrated in Gangetic floodplain wetlands of Uttar Pradesh as a basis of their integration in river basin management.
- Dialogue on establishment of a regional Himalayan wetlands conservation programme is initiated.
- Dialogue and engagement with National Mission on Clean Ganga for conservation of wetlands of Ganga Basin is initiated.

Peatland treasures safeguarded and restored

- Mapping of available evidence of peatland distribution in India provides a basis of their systematic assessment particularly consideration of their carbon stock potential in climate change programming

In the coming year, we will review our South Asia regional strategy and set targets for 2021 – 2030.

List of Members

List as on August 31, 2021
Total Members: 29

Founder Member ★
Nominated Member ▲
General Member ●

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

Dr. Ajit K. Pattnaik ★
Former 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 ★
Former 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. Sara Ahmed ▲
Founder, Living Waters Museum (Member, Governing Body)

Dr. Harini Nagendra ▲
Professor, Azim Premji University (Member, Governing Body)

Ms. Jane Madgwick ★
Chief Executive Officer, Wetlands International Global office, The Netherlands (Member, Governing Body, ex-officio)

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

Mr. J. C Kala ▲
Advisor, Amity Institute of Global Warming and Ecological Studies
Former Secretary, Ministry of Environment and Forests, Government of India

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

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

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

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

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

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

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

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

Mr. Thokchom Manihar ★
Former Project Director, Loktak Development Authority, Manipur

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

Dr. Lalitha Vijayan ▲
Honorary Director, Salim Ali Foundation, Thrissur, Kerala

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

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

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

Dr. Rahul Ratnakar Mahamuni ●
Lecturer, Department of Environmental Science,S.B.E.S.College of Science, Aurangabad, Maharashtra

Dr. Ajeet Kumar Singh ●
Guest Faculty, Department of Environmental Science, Kuvempu University, Shankaraghatta, Bihar

Dr. Tehmeena Yousuf ●
Associate Professor, Higher Education Department, Union Territory of Jammu and Kashmir

Dr. Ritesh Kumar
Director, Wetlands International South Asia (Secretary, ex-officio)

Wetlands International South Asia office

List as on August 31, 2021

5 + 12 = 17

Dr. Ritesh Kumar, Director

Technical Unit

Dr. Asghar Nawab, Programme Head - Aquatic Ecology

Ms. Kalpana Ambastha, Technical Officer - Natural Resource Management

Dr. Satish Prasad, Technical Officer - Landscape Planning

Ms. Nehha Sharma, Technical Officer - Socioeconomics

Ms. Namita Sharma, Technical Officer - Communication and Capacity Development

Mr. Dhruv Verma, Technical Officer- Ecology

Mr. Harsh Ganapathi, Technical Officer - Water Management

Mr. Kamal Dalakoti, Technical Officer - GIS and Remote Sensing

GEF Project Team

Ms. Suchita Awasthi, National Project Coordinator

Dr. Prathna T.C., Wetlands Specialist

Mr. Anurag Banerjee, Programme Associate

Office Operations, Administration and Finance

Mr. Sauryajit Chaudhuri, Manager - Operations and Partnerships

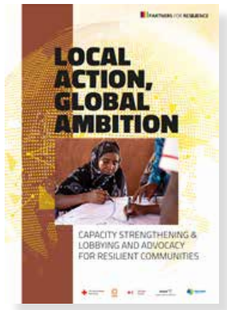
Mr. M. L. Khan, Administration and Finance Officer

Mr. Avinash Kumar Saroj, Accountant

Mr. Rakesh Verma, Office Assistant

Mr. Mahendra Kumar, Office Assistant

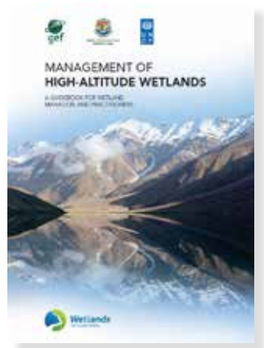
Publications



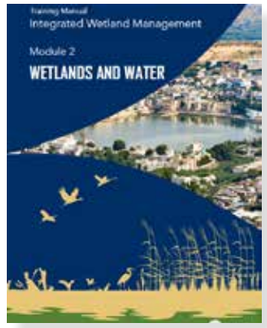
Partners for Resilience Flagship Report

Sarovar Volume 7 - Wetland Governance

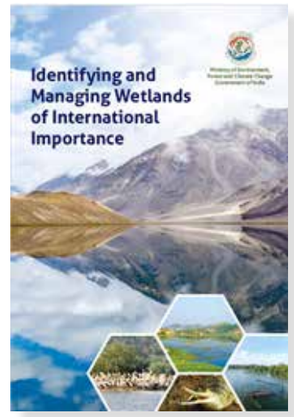
Wetlands Connect Water and Land Poster



A Guidebook for Managers and Practitioners on High Altitude Wetlands



Wetlands and Water Module



Designation of Ramsar Sites Brochure

Integrated Management of Wetlands and Ecosystem Services Project Brochure

STAY IN TOUCH

Wetlands International South Asia
A-25, Floors 1 & 2, Defence Colony
New Delhi – 110024, INDIA

wi.southasia@wi-sa.org

www.south-asia.wetlands.org

Wetlands International

@WetlandsInt_SA

Wetlands International